Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, District: Solapur (Maharashtra)
Tel.: (02186) 216063, 9503103757, Toll Free No.: 1800-3000-4131 e-mail.: coe@sveri.ac.in
Website.: www.sveri.ac.in (Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
NBA Accredited all eligible UG Programmes, NAAC Accreditated Institute,ISO 9001:2015 Certified Institute.
Accredited by The Institution of Engineers (India), Kolkata and TCS, Pune.

Ref.:- Date:-

1.3.3 Number of the student studied course on experimental learning through Project Work / Internship

Programme Name: Mechanical Engineering Programme Code: 1-1408968339			
Year of offering: 2019-2020			
Sr. No.	**Name of the Course that include experiential learning through project work/field work/internship**	**Course code**	**Number of the student studied course on experiential learning through project work/field work/internship**
1.	Manufacturing Processes	ME213	140
2.	Internal Combustion Engine	ME215 (B)	
3.	Manufacturing Technology	ME222	
4.	Power Plant Engineering	ME225 (B)	
5.	Mechanical Workshop-I	ME 226	
6.	Metrology and Mechanical Measurement	ME312	138
7.	Fluid Machinery & Fluid Power	ME315	
8.	Workshop Practices -IV	ME317	
9.	Internal Combustion Engine	ME322	
10.	CAD-CAM & CAE	ME323	
11.	Tool Engineering	ME325	
12.	Workshop Practice –V	ME328	

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Ref.:- Date:-

1.3.3 Number of the student studied course on experimental learning through Project Work / Internship

Programme Name: Mechanical Engineering Programme Code: 1-1408968339			
Year of offering: 2019-2020			
Sr. No.	**Name of the Course that include experiential learning through project work/field work/internship**	**Course code**	**Number of the student studied course on experiential learning through project work/field work/internship**
13.	Refrigeration and Air Conditioning	ME412	136
14.	Automobile Engineering	ME414 (C)	
15.	Project Work– I	ME416	
16.	Industrial Training	ME417	
17.	Plastic Engineering	ME424 (C)	
18.	Project Work– II	ME425	

PRINCIPAL,
College of Engineering
PANDHARPUR

SVERI's
College of Engineering, Pandharpur
Mechanical Engineering Department

Sponsored Project Record

Class: B.E. (Mech.)

A.Y.: 2019-2020

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
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Department of Mechanical Engineering

List of Sponsored Projects

Academic Year: 2019-2020

Sr. No.	Name of Project Student	Name of Project	Name of Project Guide	Name of Industry
1.	Gaikwad Pruthvijit Vasudev Gaikwad Sagar Navnath Phalake Suhas Shrimant Sawant Bhushan Pradyumna	Vibration analysis and fault diagnosis of injection moulding machine	Prof. S. Y. Salunkhe	Pask Industries Pvt. Ltd., Chakan MIDC, Pune
2.	Khaladkar Vyankatesh Yuvraj Ajit S. Jadhav Onkar P. Chidrewar Swami Pranav Vivekanand	Design and Development of the Jig for the Centering and Facing of Round Object	Prof. B. D. Gaikwad	S. G. Gears, MIDC, Tembhurni
3.	Deshmukh Ruturaj Abasaheb Aiwale Prathamesh Babu Chavan Aniket Dnyaneshwar Jadhav Shubham Jayshankar	Effect of vibration on surface quality of part manufactured in injection moulding machine	Prof. S. Y. Salunkhe	Pask Industries Pvt. Ltd., Chakan MIDC, Pune
4.	Chavan Aniket Balasaheb Pore Onkar Gulabrao Patil Pushkar Mahesh Shinde Sudarshan Balasaheb	Design and development of hybrid passenger tricycle	Prof. A. A. Mote	SPARTAN Technologies Pvt. Ltd. Machnur

(Prof. D.T. Kashid)
Project Coordinator

Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

HEAD,
Dept. of Mechanical Engg
C.O.E. Pandharpur.

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
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Department of Mechanical Engineering

List of Sponsored Projects

Academic Year: 2019-2020

Sr. No.	Name of Project Student	Name of Project	Name of Project Guide	Name of Industry
5.	Bhanvase Amar Maruti Gosavi Vaibhav Digambar Jadhav Rishabh Dnyaneshwar Godase Pavan Vilas	Design and analysis of phase change material Heat Exchanger	Prof. S. J. Shinde	Sitaram Engineering Works, Moshi, Pune-410105
6.	Shete Shivam Sanjay Chavan Nikhil Vijay Bhagwat Rushikesh Manoj Gaikwad Suraj Subhash	Parametric Optimization for PCM of Aluminum Copper	Dr. S. S. Wangikar	Dynamic Lasers, Chikali, Pune
7.	Khadatare Rahul Suresh Pravin Vikram Chavan Wagh Govind R. Atkale Shubhan R.	Design and Development of Mini-belt Grinding Machine	Prof. A. K. Parkhe	Leena Engineering Works, Solapur
8.	Naiknavare Mayur Baburao Popale Ganesh Navanath Landage Balaji Vitthal Charansinha U. Raut	Design and Retrofitting of Hybrid Personal Vehicle.	Prof. S. M. Kale	SPARTAN Technologies Pvt. Ltd. Machnur

(Prof. D.T. Kashid)
Project Coordinator

Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

HEAD.
Dept. of Mechanical Engg
C.O.E. Pandharpur

Pask Industries

An IATF 16949:2016 Certified Company

Mfg.of Plastic Injection Moulded Components

Plot No. 2, Gat No. 444/4, Village Nighoje, Tal. - Khed, Dist. - Pune, Maharashtra - 410501.
E-mail : info@paskindustries.in, Ph.: 020-65102755.

Ref. Pask/ 210/ 2019-20 Date: 03/09/19

To,
The HOD,
Mech. Dept.
SVERI,s COE Pandharpur.

Sub:- Sponsorship of final year project.

Dear Sir,

With reference to above subject following students from your department has approached our organisation for their final year project.They have identified Problem statement for their final year project as "**Vibration Analysis and Fault Diagnosis of Injection Moulding Machine**" .

Our organisation has provided sponsorship for the said title.

Name of Students:-
1)Pruthvijit Vasudev Gaikwad.
2)Suhas Shrimant Phalake.
3)Sagar Navnath Gaikwad.
4)Bhushan Pradyumna Sawant.
Under the guidance of Prof.S.Y.Salunkhe

Thank You...! .

For PASK,

PASK INDUSTRIES NIGHOJE

S. G. GEARS

MFG. OF : GEAR, GEAR BOXES & PRECISION MACHINED COMPONENTS

HEAD OFFICE : PLOT NO. 35, SECTOR 10, PCNTDA IND. AREA, BEHIND TIMES OF INDIA, BHOSARI, PUNE - 411 026 ☎ 020-66301152
E-mail sggears@gmail.com Web www.sggears.co.in

WORKS : PLOT NO. B-10/1/1, M.I.D.C., TEMBHURNI TAL. MADHA, DIST. SOLAPUR - 413 211

Date :- 20/08/2020

To,
The Principal,
SVERI's College of Engineering.
Pandharpur -413304.

Sub :- Allowing student for sponsorship of project.

Respected Sir,

We are S.G.Gears Tembhurni informing you that we are allowing bellow mentioned students of your college for the sponsorship of one of the project named as " Centering and Facing of the round bar ". We hope that they will give their best in technical as well as practical knowledge to full fill our requirements.

The Name of Students :-

1) Swami Pranav Vivekanand
2) Chidrewar Onkar Pramod
3) Khaladkar Vyankatesh Yuvraj
4) Jadhav Ajit Shankar.

Thank You.
Regards

S.G.Gears, Tembhurni
(Project Manager)

Pask Industries

An IATF 16949:2016 Certified Company

Mfg.of Plastic Injection Moulded Components

Plot No. 2, Gat No. 444/4, Village Nighoje, Tal. - Khed, Dist. - Pune, Maharashtra - 410501.
E-mail : info@paskindustries.in, Ph.: 020-65102755.

Ref. Pask/ 111/2019-20 Date: 09/09/19

To,
The HOD,
Mech. Dept.
SVERI,s COE Pandharpur.

Sub:- Sponsorship of final year project.

Dear Sir,

With reference to above subject following students from your department has approached our organisation for their final year project.They have identified Problem statement for their final year project as "**Effect of Vibration on Surface Quality of Part Manufactured in Injection Moulding Machine**" .

Our organisation has provided sponsorship for the said title.

Name of Students:-
1)Shubham Jayshankar Jadhav.
2)Ruturaj Abasaheb Deshmukh.
3)Aniket Dnyaneshwar Chavan.
4)Prathmesh Babu Aiwale.
Under the guidance of Prof.S.Y.Salunkhe

Thank You...! .

For PASK,

PASK INDUSTRIES NIGHOJE

SPARTAN TECHNOLOGIES PVT LTD

(An ISO 9001:2015 Certified Company)

Opposite to Hotel Venktesh,A-Machnur,P-Bramhpuri,Mangalwedha 413305,Dist-Solapur,Maharashtra.M:8806442443

E.mail-spartantechnosltd@gmail.com ,Website-www.spartantechnos.com

Date: 09/03/2020

To,

The Principal,
SVERI's College of Engineering Pandharpur

Subject: Project completion certificate

Respected Sir,

With reference to industry visit of following students from your department to our organization for their final year project, a sponsored project titled **"Design and development of hybrid passenger tricycle"** was offered.

Following students have worked on the project and successfully completed the project as per our requirements.

1. Chavan Aniket Balasaheb (BE Mechanical)
2. Pore Onkar Gulabrao (BE Mechanical)
3. Patil Pushkar Mahesh (BE Mechanical)
4. Shinde Sudarshan Balasaheb (BE Mechanical)

The student's performance during project completion found satisfactory and we wish them all the best for their future.

Thanking you.

Spartan Technologies Pvt.Ltd.
Near Airtel Tower, A/p. Machanur,
Tal. Mangalwedha,
Dist. Solapur - 413 305 (MS)

MR.SURAJ DOKE

M/S DYNAMIC LASER

Mob: 07709281159, Email:- dynamiclazzer@gmail.com

Address:- Gat No. 1402, Sonwane Wasti, Jyotiba Nagar, Chikhali Road, Chikhali, Pune-411062

Date: 09/09/2019

To,

The Head,
Department of Mechanical Engineering,
SVERI's College of Engineering Pandharpur

Subject: Sponsorship for Final Year Project

Dear Sir,

With reference industry visit of Dr. S. S. Wangikar and following students from your department to our organization for their final year project, a sponsored project titled **"Parametric Optimization for PCM of Aluminum Copper"** was offered.

Following students have worked on the project and successfully completed the project as per our requirements.

1. Shete Shivam Sanjay (B.E.-MECH)
2. Chavan Nikhil Vijay (B.E.-MECH)
3. Bhagwat Rushikesh Manoj (B.E.-MECH)
4. Gaikwad Suraj Subhash (B.E.-MECH)

The student's performance during project completion found satisfactory and we wish them all the best for their future.

Thanking you.

For,

M/S DYAMIC LASER

Leena
Engineering Works

Works & Offi.
(0217): 2601501
Resi : 2302010
M : 9403871054
9403871053

Plot No. 156, Industrial Estate,
Hotgi Road, Solapur – 413003
Email – leenaengwks@yahoo.co.in

Ref. No. LEW/2019-20/AUG/27

Date:

Date: 19th August 2019

To,
The Head,
Department of Mechanical Engineering,
SVERI's College of Engineering, Pandharpur.

Subject: Approval of Sponsorship for Final Year Project Work

Dear Sir,

With reference to the above subject, we are approving sponsorship for your following mentioned students for their final year project work. We will be in a role of guide during their project work in our industry. It is expected that they should focus on their project work and complete the same in the stipulated time.

Title of Project- Design and Development of Mini Belt Grinding machine

Name of Students-

1. Mr. Khadatare Rahul S.
2. Mr. Chavan Pravin V.
3. Mr. Wagh Govind R.
4. Mr. Atkale Shubham R.

Name of Project Guide- Prof. Avinash K. Parkhe

Thanking you.

For Leena Engineering Works, Solapur

LEENA ENGINEERING WORKS SOLAPUR

SPARTAN TECHNOLOGIES PVT LTD

(An ISO 9001:2015 Certified Company)

Opposite to Hotel Venktesh,A-Machnur,P-Bramhpuri,Mangalwedha 413305,Dist-Solapur,Maharashtra.M:8806442443

E.mail-spartantechnosltd@gmail.com ,Website-www.spartantechnos.com

Date: 14/03/2020

To,

The Principal,
SVERI's College of Engineering Pandharpur

Subject: Project completion certificate

Respected Sir,

With reference to industry visit of following students from your department to our organization for their final year project, a sponsored project titled **"Design and Retrofitting of Hybrid Personal Vehicle"** was offered.

Following students have worked on the project and successfully completed the project as per our requirements.

1. Naiknavare Mayur Baburao (BE Mechanical)
2. Popale Ganesh Navanath (BE Mechanical)
3. Landage Balaji Vitthal (BE Mechanical)
4. Charansinha U. Raut (BE Mechanical)

The student's performance during project completion found satisfactory and we wish them all the best for their future.

Thanking you.

Spartan Technologies Pvt.Ltd.
Near Airtel Tower, A/p. Machanur,
Tal. Mangalwedha,
Dist. Solapur - 413 305 (MS)

MR.SURAJ DOKE

.

SVERI's
College of Engineering, Pandharpur

Mechanical Engineering Department

Industrial Training/ Internship

Record

A.Y.: 2019-2020

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
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Department of Mechanical Engineering

List of Students those who have completed their Industrial Training / Internship

Academic Year: 2019-2020

Sr. No.	Roll No	Name of Student	Name of Company / Organization / Industry	Duration of Internship/Industrial Training
1.	TA 02	Shraddha dattatray Gajakosh	Precision Camshaft Limited, Solapur	11/12/2020 to 18/12/2020
			AFour Technologies Pvt Ltd Pune	10/05/2020 to 26/09/2020
2.	TA 03	Gayatri Vinayak Joshi	Smart Knower	01/11/2020 to 31/12/2020
			Precision Camshaft Limited, Solapur	11/12/2020 to 18/12/2020
3.	TA 07	Namrata Parvat	AFour Technologies Pvt Ltd Pune	28/05/2020 to 28/07/2020
			Techfest, IIT Bombay	01/07/2020 to 31/01/2021
4.	TA 25	Yash Gadekar	Intech Olympiad COEP Pune	28/05/2020 to 28/08/2020
			Precision Camshaft Limited, Solapur	11/12/2020 to 18/12/2020
5.	TA 55	Prajwal Dattatraya Musale	Precision Camshaft Limited, Solapur	11/12/2020 18/12/2020
6.	TB 03	Arati Lale	AFour Technologies Pvt Ltd Pune	28/05/2020 to 28/07/2020
7.	TB 05	Vaishali Dilip More	Wayup, Gate No. 89,Bhavya Enterprises, Makhadumpur, Digha, Patana-11	01/10/2020 to 30/10/2020
8.	TB 34	Patil Madan Kalyan	AFour Technologies Pvt Ltd Pune	28/05/2020 to 28/07/2020
9.	TB 56	Akash Prasad Ajgar	AFour Technologies Pvt Ltd Pune	28/05/2020 to 28/07/2020

(Dr. S. S. Wangikar)
Head, Mech. Engg. Dept.

HEAD,
Dept. of Mechanical Engg
C.O.E. Pandharpur.

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meets Performance

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+91 217 2357645
+91 9168646531/32/33
L24231PN1992PLC067126

Date - Friday, December 25, 2020

CERTIFICATE FOR INDUSTRIAL EXPOSURE TRAINING

Name	Shraddha Dattatray Gajakosh
Qualification	B.Tech (Mechanical) III
Name of the College	SVERI College of Engineering,Pandharpur
Type of Training	Industrial Exposure Training
Period of Training	11/12/2020 To 18/12/2020
Nature of Training	During her training period she has undergone orientation training in different Manufacturing Process, Tool Room, Industrial Engineering, Engineering Services, Quality Assurance, HR Dept. etc.

During the training period, her attendance and performance was satisfactory.We wish her bright future.

For Precision Camshafts Limited

R K Kashid
General Manager – HR

PRECISION CAMSHAFTS LTD. SOLAPUR

Virtual Labs
An MHRD Govt of India Initiative

INTECH OLYMPIAD
ONLINE SUMMER INTERNSHIP
CERTIFICATE

This is to certify that

Mr /Mrs / Ms **Shraddha Gajakosh**
from **SVERI's COE Pandhrpur**
participated and successfully completed the project " **Propose a Delivery system within city limits without human interaction with customer. OR Develop drone delivery system overcoming current challenges** " assigned in InTech Olympiad during Online Summer internship from 28th May 2020 to 28th july 2020

Mr. Mahesh A. Kulkarni
AFour Technologies

Prof. Sudhir D. Agashe
COEP

AFOUR TECHNOLOGIES

smartknower
STAY AHEAD OF THE CURVE

CERTIFICATE
OF INTERNSHIP

Best AWARD

THIS CERTIFICATE IS PROUDLY PRESENTED TO:

Gayatri Vinayak Joshi

Has successfully completed Internship On Robotics
from 01-11-2020 to 31-12-2020. During his/her internship,
the student was found to be dedicated, hardworking and intelligent

21-01-2021
DATE

P. Naveen
Academic Head

Certificate ID: 540365648

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meets **Performance**

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+91 9168646531/32/33
L24231PN1992PLC067126

Date - Friday, December 25, 2020

CERTIFICATE FOR INDUSTRIAL EXPOSURE TRAINING

Name	Gayatri Vinayak Joshi
Qualification	B.Tech (Mechanical) III
Name of the College	SVERI College of Engineering,Pandharpur
Type of Training	Industrial Exposure Training
Period of Training	**11/12/2020 To 18/12/2020**
Nature of Training	During her training period she has undergone orientation training in different Manufacturing Process, Tool Room, Industrial Engineering, Engineering Services, Quality Assurance, HR Dept. etc.

During the training period, her attendance and performance was satisfactory. We wish her bright future.

For Precision Camshafts Limited

PRECISION CAMSHAFTS SOLAPUR

R K Kashid
General Manager – HR

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INTECH OLYMPIAD
ONLINE SUMMER INTERNSHIP
CERTIFICATE

This is to certify that

Mr /Mrs / Ms **Namrata Parvat**
from **SVERI'S COLLEGE OF ENGINEERING PANDHARPUR**
participated and successfully completed the project " **Enforcement of Social distancing at any service provider at point of sale/service like shops/malls/Theatres/Ticket Booking Windows/Restaurants etc** " assigned in InTech Olympiad during Online Summer internship from 28th May 2020 to 28th july 2020

Mr. Mahesh A. Kulkarni
AFour Technologies

Prof. Sudhir D. Agashe
COEP

AFOUR TECHNOLOGIES

September 7th, 2020

InTech Olympiad
Online Summer internship
Letter of Recommendation

To Whom It May Concern

I have known Namrata Parvat for last three month, since the beginning of her virtual internship with InTech Olympiad. During the internship, Namrata worked as a Member of a Team with a group assignment on *"Social Distancing at any service provider at point of sale / service"*.

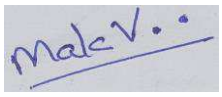
This was a remote assignment during which the Team Members at different & distant locations collaborated *on-line* for arriving at the subject Road Map.

I, the undersigned, mentored the team on behalf of InTech Olympiad, an Organization in Pune conducting various experiments to identify and bridge the gap in Industry's expectations regarding Skills available with Fresh Graduate Engineers. During this Internship, as a Mentor, I interacted with the Team as well as Individuals frequently, during routine and periodic progress review meetings.

During the interactions, I noted Namrata with abilities in terms of learning the user interface design process and making prototype of the solution.

I highly recommend Namrata for her team spirit specifically for career opportunities user interface design and development. I note her team interaction skills with special emphasis.

With Warm Regards



Mentor, Intech Olympiad

Makarand Vaidya
Founder Director
CoreView Systems Private Limited
Email: makarand.vaidya@coreviewsystems.com

Techfest™
Asia's Largest Science & Technology Festival

CERTIFICATE OF APPRECIATION

This certificate is awarded to

Namrata Parvat

for successfully completing **Social Media Marketing Internship**

as a **College Ambassador** of Techfest, IIT Bombay

with a **GOLD** medal.

Prof. R.S. Pant
Faculty Advisor
Techfest, IIT Bombay

Bhuvanesh Gupta
Overall Coordinator
Techfest 2020-21

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INTECH OLYMPIAD
ONLINE SUMMER INTERNSHIP
CERTIFICATE

This is to certify that

Mr /Mrs / Ms **Yash Gadekar**
from **SVERI's COE Pandhrpur**
participated and successfully completed the project " **Propose a Delivery system within city limits without human interaction with customer. OR Develop drone delivery system overcoming current challenges** " assigned in InTech Olympiad during Online Summer internship from 28th May 2020 to 28th july 2020

Mr. Mahesh A. Kulkarni
AFour Technologies

Prof. Sudhir D. Agashe
COEP

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+91 9168646531/32/33
L24231PN1992PLC067126

Date - Friday, June 25, 2020

CERTIFICATE FOR INDUSTRIAL EXPOSURE TRAINING

Name	Yash Yuvraj Gadekar
Qualification	B.Tech (Mechanical) III
Name of the College	SVERI College of Engineering, Pandharpur
Type of Training	Industrial Exposure Training
Period of Training	**11/12/2020 To 18/12/2020**
Nature of Training	During his training period he has undergone orientation training in different Manufacturing Process, Tool Room, Industrial Engineering, Engineering Services, Quality Assurance, HR Dept. etc.

During the training period, his attendance and performance was satisfactory. We wish him bright future.

For Precision Camshafts Limited

R K Kashid
General Manager – HR

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+91 217 2357645
+91 9168646531/32/33
L24231PN1992PLC067126

Date - Friday, June 25, 2020

CERTIFICATE FOR INDUSTRIAL EXPOSURE TRAINING

Name	Prajwal Dattatray Musale
Qualification	B.Tech (Mechanical) III
Name of the College	SVERI College of Engineering, Pandharpur
Type of Training	Industrial Exposure Training
Period of Training	**11/12/2020 To 18/12/2020**
Nature of Training	During his training period he has undergone orientation training in different Manufacturing Process, Tool Room, Industrial Engineering, Engineering Services, Quality Assurance, HR Dept. etc.

During the training period, his attendance and performance was satisfactory. We wish him bright future.

For Precision Camshafts Limited

R K Kashid
General Manager – HR

PRECISION CAMSHAFTS LTD. SOLAPUR

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INTECH OLYMPIAD
ONLINE SUMMER INTERNSHIP
CERTIFICATE

This is to certify that

Mr /Mrs / Ms **Arati Lale**
from **SVERI'S COLLEGE OF ENGINEERING PANDHARPUR**
participated and successfully completed the project " **Achieve Effective Online / Remote / Distance education in Rural areas considering limited resources - With Unsupervised learning and Eval and assessment frame work** " assigned in InTech Olympiad during Online Summer internship from 28th May 2020 to 28th july 2020

Mr. Mahesh A. Kulkarni
AFour Technologies

Prof. Sudhir D. Agashe
COEP

AFOUR TECHNOLOGIES

UDYOG Aadhar : BR26D0067761

Date : 16.12.2020
Ref no.: WayupX135

To whom it may concern,

This is to certify that Ms. Vaishali Dilip More of SVERI's college of engeenering, Pandharpur has successfully completed 28Days internship programme in Social Media Marketing and has completed her tasks with perfection. During the period of her internship programme with us she was found punctual, hardworking and inquisitive.
We wish her every success in life.

From Wayup

Abhishek Raj

Abhishek Raj

Proprietor,WayUp

Mobile: +91 9060496946
Address: Gate No.89,Bhavya Entreprises,Makhdumpur,Digha,Patna-11
Email: ask.wayup@gmail.com

Virtual Labs
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INTECH OLYMPIAD
ONLINE SUMMER INTERNSHIP
CERTIFICATE

This is to certify that

Mr /Mrs / Ms **Madan Patil**
from **SVERI's College of Engineering, Pandharpur**
participated and successfully completed the project " **Low cost Automation Project in industry driven by Covid 19 Social Discipline** " assigned in InTech Olympiad during Online Summer internship from 28th May 2020 to 28th july 2020

Mr. Mahesh A. Kulkarni
AFour Technologies

Prof. Sudhir D. Agashe
COEP

AFOUR TECHNOLOGIES

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INTECH OLYMPIAD

ONLINE SUMMER INTERNSHIP

CERTIFICATE

This is to certify that

Mr /Mrs / Ms **Akash Ajgar**
from **SVERI's COE Pandhrpur**
participated and successfully completed the project **" Propose a Delivery system within city limits without human interaction with customer. OR Develop drone delivery system overcoming current challenges "** assigned in InTech Olympiad during Online Summer internship from 28th May 2020 to 28th july 2020

Mr. Mahesh A. Kulkarni
Abour Technologies

Prof. Sudhir D. Agasha
COEP

AFOUR TECHNOLOGIES

SVERI'S COLLEGE OF ENGG., PANDHARPUR.

DEPARTMENT OF MECHANICAL ENGINEERING.

INDUSTRIAL EXPOSURE TRAINING REPORT

Submitted By

NAME: Shraddha Dattatray Gajakosh

CLASS: B.Tech(Third year)

DATE: 11/12/2020- 18/12/2020

ROLL NO: A02

DEPARTMENT OF MECHANICAL ENGINEERING

SVERI'S COLLEGE OF ENGG,

PANDHARPUR-413304

A

INDUSTRIAL EXPOSURE TRAINING

Conducted at

"PRECISION CAMSHAFTS LIMITED, SOLAPUR.

Submitted By

Miss.Shraddha Dattatray Gajakosh

T.Y.(Mech Engg)

Roll no: A02

Under the guidance of

Prof. Kuldeep S. Pukale

SVERI's College of Engg,

Pandharpur.

CERTIFICATE OF APPROVAL BY EXAMINERS

This is to certify that Industrial exposure training has been

Completed by Miss. Shraddha Dattatray Gajakosh (T.Y.Mechanical, Div-A, Roll no-02) at **PRECISION CAMSHAFTS LIMITED,SOLAPUR** during **11/12/2020** to **18/12/2020** is a bonafide work in the partial fulfilment for the award of the degree of **Bachelor of Technology(Mechanical Engineering)**

as prescribed by the Punyashlok Ahilyadevi Holkar Solapur University.

Dr.Sandip S. Wangikar

Head of Mech Dept,

SVERI's Coe pandharpur.

PRECISION
where Passion meets Performance
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+91 9168646531/32/33
L24131PN1992PLC067126

Date - Friday, December 25, 2020

CERTIFICATE FOR INDUSTRIAL EXPOSURE TRAINING

Name	Shraddha Dattatray Gajakosh
Qualification	B.Tech (Mechanical) III
Name of the College	SVERI College of Engineering,Pandharpur
Type of Training	Industrial Exposure Training
Period of Training	11/12/2020 To 18/12/2020
Nature of Training	During her training period she has undergone orientation training in different Manufacturing Process, Tool Room, Industrial Engineering, Engineering Services, Quality Assurance, HR Dept. etc.

During the training period, her attendance and performance was satisfactory. We wish her bright future.

For Precision Camshafts Limited

R K Kashid
General Manager – HR

PRECISION CAMSHAFTS SOLAPUR

INTRODUCTION

As a part of internship program for B.Tech student, I had my vocational training with PRECISION CAMSHAFTS LIMITED Based in Chincholi MIDC Solapur. It is well known company which manufactures camshafts.

A camshaft on an internal combustion heat engine is a device that controls the both the input of fuel and the expulsion of exhaust fumes. It consists of several radial cams, each displacing intake or exhaust valves.

The machining of the casted camshafts is difficult process if we go by manual operations due to this the machining of casted camshafts is mostly done on computerized machines.

PRECISION CAMSHAFTS LIMITED is Asia's leading company and has created monopoly in manufacturing of camshafts. Company is able to produce 150 varieties of camshafts for car engines, tractor and locomotive engines according to customer requirement.

INDEX

HISTORY OF THE COMPANY

Since its incorporation in 1992, PCL has emerged as one of the market leaders in the camshaft manufacturing.

Let's look at the timeline of the company to have better look at their development.

COMPANY OVERVIEW OUR EVALUATION

- 1992 :-1)Incorporation of PCL.

  2)Started with supply of 600 camshafts /month.

- 1997 :-1) Investment by private equity investor CDC.

  2)expansion of machine shop and foundry capacity.

- 1999:-1)Technical and financial JV with G. Clancey Limited,UK European camshaft manufacturer.
- 2006:- 1)Acquistition og G.Clancey Limited stake in JV.
- 2008:-1)Tata capital invests in PCL by purchasing shares from CDC.
- 2011:-1)Incorporation of 100% owned subsidiary 'PCL Company Limited' in China.
- 2012:-JV with shenglong Automotive Powertrain Company China for camshaft manufacturing.
- 2013:- JV with shenglong Automotive Powertrain Company China for Setting up foundry unit.
- 2014:- Exclusive agreement with EMAG ,German tooling and machining company.
- 2016:-Listing on BSE and NSE with a successful IPO raising – Rs0240 cr fresh issue- Rs 170.2 cr offer for sale.

BOARD OF MEMBERS

- **Mr.YATIN SHAHA**(CHAIRMAN & MANAGING DIRECTOR):
  Mr. Yatin Shah is the founder and Managing Director of Precision Camshafts Limited. Leading a group of over 2000 employees, Mr. Yatin Shah has been the strategist and mind behind the vision called Precision.

- **Dr.SUHASINI SHAHA**(Non-Executive Director, PCL)
  Dr. Suhasini Shah heads the legal department at Precision Camshafts Limited and is the founder trustee of the Precision Foundation.

- **Mr.RAVINDRA JOSHI**(DIRECTOR & CFO**)**
  Mr. Ravindra Joshi has 27 years of experience with expertise in the areas of finance and accounting, mergers and acquisition, managing revenue, profitability and maintaining and contributing to the financial health of the organization

- **Mr.KARAN SHAHA**(Whole time direcror business Development**)**
  An MBA (Masters in Business Administration) from Harvard Business School, Boston USA (May 2016) and a Bachelor of Science in Mechanical Engineering from Purdue University, West Lafayette, USA (August 2012), Mr. Karan Shah has 2 years' experience as a manufacturing engineer at Cummins, USA. He joined PCL as an Executive - Business Development in February 2017 and has played a key role in the Company's recent acquisitions, Motoren und Fahrzeugtechnik GmbH (MFT), Germany and Emoss Mobile Systems B.V., Netherlands.

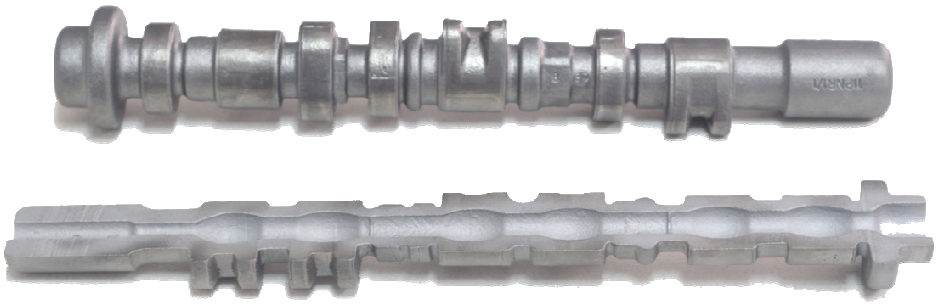
- **INDEPENDENT DIRECTOR**

  1)Mr.Sarvesh joshi
  2)Mr.Pramod mehendale
  3)Mr.Vedant Pujari
  4)Mr.Vaibhav mahajani
  5)Mrs.Savani Laddha

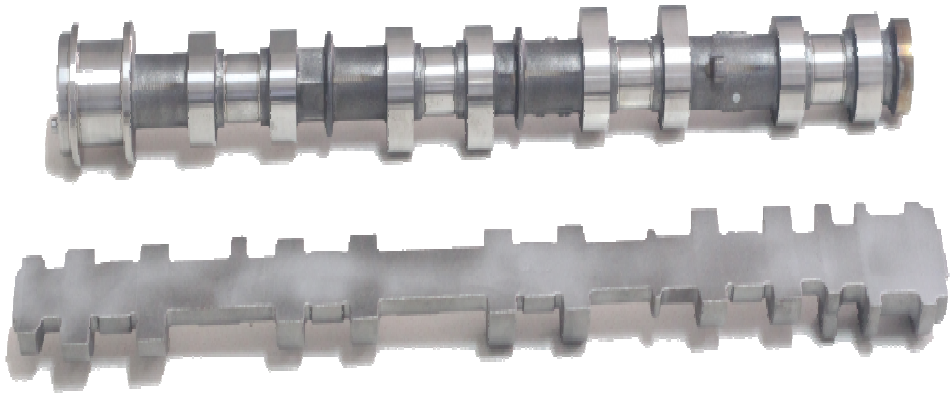
PRODUCTS

1)CHILLED CAST IRON

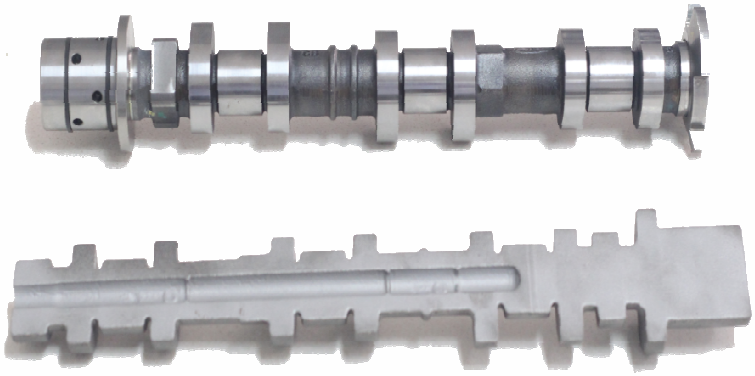
The automotive industry demands valve-train components that work well at high stress and offer low wear resistance at marginal lubrication. They also want these components at a low cost, with improved emissions, and guaranteed high-performance materials behaviour, together with a robust and proven manufacturing technology. PCL has been meeting these requirements in the American, European, and Asian markets, including the Indian Subcontinent and Japan. PCL today manufactures fully machined and as cast camshafts as per customer requirement for SOHC, DOHC, V6 & V8 engines with VCT or Non VCT application.



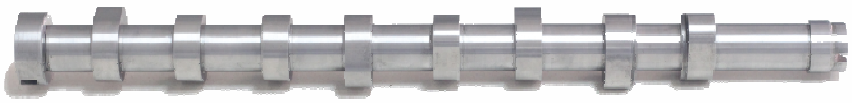
2) DUCTILE CAST IRON CAMSHAFTS



3) HYBRID CAMSHAFTS



4) ASSEMBLED CAMSHAFT



VARIOUS DEPARTMENTS

The precision Camshafts at Chincholi MIDC have 4 foundries and 3 machine shops. The working and functioning of each section and internal departments is given below.

FOUNDRIES:-

- Total 4 foundries named as F1, F2, F3, and F4. The process is same at each foundry . Following steps are performed to manufacture a camshaft.
- The mould is also made in foundry which takes cycle time of 3 min. The baked mould is passed over conveyors and it goes for pouring process.
- The raw materials along with important alloys is measured and mixed and melted in furnaces at temperature 1530 degree Celsius.
- There are proper overhead cranes for proper transfer of materials.
- The molten metal is poured through ladle into the sand castings which has the shape of camshafts to be obtained after solidifying.
- After solidifying camshafts , they are go for finishing process such as shot blasting , grinding process in 3 stages etc. for removal of particles on the surface of camshafts
- After finishing process , camshafts goes for hardness check , inspection and quality check
- There are two procedures while exporting the camshafts, for some companies they send the camshafts after inspection without finishing operations on them or few companies demand the fully finished camshafts, machining on them is done in machine shops.

- The total manufacturing capacity is 13.38 million camshaft casting per annum

MACHINE SHOPS:-

- There are total of 3 machine shops, out of which 2 are running in full capacity, and M3 is proposed to be the biggest machine shop.
- Most of the machines there are automated CNC machines, with fixed programs and fixed machining time.
- There is complete line, at the start of which is casted camshaft and at the end camshaft is packed and is ready for export.
- Quality of the machining is checked at every start and end of a shift.
- The specialization in 3 and 4 cylinder chilled cast iron camshafts, with machining capacity to produce over 2.22 million camshafts per annually.

INESPECTION DEPT:-

- Ready castings are tested by some tests. These tests include spectrometer test, hardness tester, run-out fixture, dimensional inspection. After all these tests the “ok” camshafts are packed and dispatched.
- All camshafts are checked for their sizes and shapes by using different types of gauges and instrument and camshafts for rework are separated that from others.

R & D DEPTARTEMENT:-

- Since precision camshaft is large scale and ever expanding company, it becomes very necessary for them to continually do the research and refine the processes, reduce the defects, manage the inventory in proper way.
- Other parameters like cost saving, time saving etc. are researched.

MAINTENANCE DEPT:

- The various types of machines require routine checkups and maintenance and record are kept every time a maintenance is carried out.

H.R.DEPARTMENT:-

- The H.R. Department provides everything when it comes to employee benefits such as health insurance, retirement's benefits, transportation, dining area etc.
- PCL equipped with strong WIFI, the training rooms, to promote the values and intelligence of employees.
- Training programs are specifically designed for employee to help them to increase their efficiency and productivity.

CLIENT LIST

The precision camshafts provides camshafts to the following companies,

- FORD MOTORS
- TATA MOTORS
- MAHINDRA
- FIAT
- MARUTI SUZUKI
- GM
- MERCEDES BENZ
- INDIAN RAILWAYS
- HYUNDAI
- FORCE MOTORS
- MAHALE
- ESCORTS
- VOLKSVAGON

Mercedes-Benz

PLANT LAYOUT

LEARNING AREAS

The following are the things we learnt from our 7 days internship program:-

1. We got to see the processes which we learnt in our manufacturing process subject.
2. We got to see how all the processes are managed and cross flow is avoided to save precious time.
3. We learnt more about management of man power, how workers, managers, supervisors are treated
4. The most important thing from my perspective we learnt was about the discipline that shown all over the place, from workers entering and leaving in the lines, neatness and cleanliness of environment to the strict rules and regulations which are strictly followed.

CASE STUDY

FINISHING PROCESSES AFTER CASTING

Cleaning of Castings After the solidification of the casting, the mould is knocked out and solidified casting is taken out of the moulding sand. At this juncture the cast product is attached with risers, and gates. many times the moulding sand also get adhered to the casting as some of the sand gets fused with the molten metal. The cleaning of castings refers to the removal of gates, risers and sand. Also, cleaning may involve machining or abrasive finishing of the cast product. The cleaning operations usually performed on a casting are given below:

1. Removal of gates, in-gates, riser, feeder etc.
2. Surface cleaning
3. Trimming

There are various methods of removal of unwanted metallic parts from the solidified cast product in case of brittle material, the gates, risers, and feeder can be removed by impact force. This is usually done in shakeout or knocks out devices. Other processes that may be used to cut off the metallic parts include, band saws, grinding machine, shearing machine, cutting torches, etc.

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Shot blasting is commonly used for:

The cleaning of iron, steel, non-cast parts, forgings, etc.

Mechanical cleaning of sheets, rods, coils, wire, etc.

Shot peening to alter mechanical properties (increasing resistance to fatigue for springs, gears, etc.)

CONCLUSION

From 7 days of industrial exposure training at precision camshafts, following points were concluded:-

1. I understand the different foundry and machining processes working efficiently in company.
2. The training at PCL for period of 7 days helped me for clarifying the concept about industrial organization and its functioning.
3. This training shows the importance of practical knowledge of various manufacturing process such as casting, fettling, cam grinding, hardening etc.
4. I saw the various types of material handling equipment's such as conveyor, chain, conveyor, trolley, fork lift trucks etc.
5. I have learned the company culture, discipline, environment and rules and regulations of company.
6. At the PCL, I have learnt about the implementation of theory in practice and also show that there are some difference in actual practice and theory

SVERI's
College of Engineering, Pandharpur
Mechanical Engineering Department

Project Work-I & II Record

Class: B.E. (Mech.)

A.Y.: 2019-2020

SVERI's College of Engineering, Pandharpur

DEPARTMENT OF MECHANICAL ENGINEERING

Academic Year – 2019-2020

Project Group for B.E. (Mechanical)

List of Students undertaking Project Work- I & II

Group No.	Sr. No.	Name of Student	Name of Project Guide	Title of the Project
1.	1	Waghmare Vishal Balasaheb	Prof. D. D. Ronge	Design, experiment and numerical anlysis of EAHE system for weather condition of Solapur, India.
	2	Kadam Vishal Janarath		
	3	Kate Pankaj Lalachand		
	4	Shende Suraj Kundalik		
	5	Patil Onkar Dadaso		
2.	6	Bhanvase Amar Maruti	Prof. S. J. Shinde	Design and performance analysis of PCM heat exchanger
	7	Gosavi Vaibhav Digambar		
	8	Jadhav Rishabh Dnyaneshwar		
	9	Godase Pavan Vilas		
3.	10	Chavan Sumit Sanjay	Prof. S. S. Jadhav	Experimental Study and optimization of process parameters for AISI H21 Material using DOE (Design Of Experiment) Techniques
	11	Tate Sudarshan Sushenrao		
	12	Sonage Ravikiran Siddharam		
	13	Patil Vikas		
	14	Akshay Narayan Ghodake		
4.	15	Khaladkar Vyankatesh Yuvraj	Prof. B. D. Gaikwad	Design and Developement of the Jig for the Centering and Facing Of Round Object
	16	Ajit S. Jadhav		
	17	Onkar P. Chidrewar		
	18	Swami Pranav Vivekanand		
5.	19	Ghodake Swapnil Prakash	Prof. B. T. Gadade	Fabrication of automatic pneumatic jack
	20	Mote Rama Appa		
	21	Panchal Nagesh Balaji		
	22	Kshirsagar Sushant		
6.	23	Shaikh Amir Makbul	Prof. S. N. More	Design & development of root based crop harvesting machine
	24	Ghodake Dattatraya Lahu		
	25	Ajinkya Sid		
	26	Sachin Waghmare		
7.	27	Devkar Samadhan Tanaji	Prof. S. B. Bhosale	Manufacturing and Analysis of Natural Sisal Fiberand Sugar Cane Powder Hybrid Composite.
	28	Gaikwad Siddheshwar Subhash		
	29	Bhosale Hemant Dilip		
8.	30	Deshmukh Ruturaj Abasaheb	Prof. S. Y. Salunkhe	Effect of vibration on surface quality of a part manufactured in an injection moulding machine.
	31	Aiwale Prathamesh Babu		
	32	Chavan Aniket Dnyaneshwar		
	33	Jadhav Shubham Jayshankar		
9.	34	Chavan Aniket Balasaheb	Prof. A. A. Mote	Development and Analysis of hybrid passenger tricycle
	35	Pore Onkar Gulabrao		
	36	Patil Pushkar Mahesh		
	37	Shinde Sudarshan Balasaheb		
10.	38	/Deshmukh Jyoti Balasaheb	Prof. O. L. Mahajan	Analysis of Natural Hybrid Composites made by Sugarcane waste powder (Baggase powder)
	39	/Kolekar Supriya Ravindra		
	40	/Patil Shruti Anil		
	41	/Deshmukh Aishwarya		
11.	42	/Abhangrao Komal Balbhim	Dr. R. R. Gidde	Design,fabrication and analysis of micromixer with circular baffles used in microfluidics applications
	43	/Kale Pallavi Rajkumar		
	44	/ Pujari Aruna Govardhan		
	45	/Lamgunde Pooja Somnath		
12.	46	Mhetre Gurudev Nagesh	/Prof. P. K. Bhuse	Diesel Engine Performance and Emissions Analysis by Using Duel Biodiesel and it's Blends
	47	Patil Shivprasad Namadeo		
	48	Vastre Ganesh Shankar		
	49	Deshpande Abhiram		
	50	Rathod Sumit R.		
13.	51	Gosavi Sachin Ramchandra	Prof. M. B. Kulkarni	Performance evalution of VCRS by using natural and artificial refrigerant
	52	Kawale Chaitanya Mukund		
	53	Devmare Avinash Arjun		
	54	Ghodake Mahesh Bharat		

(Prof. D.T. Kashid)
Project Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's College of Engineering, Pandharpur
DEPARTMENT OF MECHANICAL ENGINEERING
Academic Year – 2019-2020
Project Group for B.E. (Mechanical)
List of Students undertaking Project Work- I & II

Group No.	Sr. No.	Name of Student	Name of Project Guide	Title of the Project
14.	55	Pardeshi Amit Bandu	Prof. Y. M. Khedkar	Manufacturing and testing of convectional damper by magnetorheological approach .
	56	Pore Rohan Haridas		
	57	Dhat Sakharam Ekanath		
	58	Jadhav Arohan Anandrao		
15.	59	Shete Shivam Sanjay	Dr. S. S. Wangikar	Parametric optimisation of photochemical machining for Al-Cu material.
	60	Chavan Nikhil Vijay		
	61	Bhagwat Rushikesh Manoj		
	62	Gaikwad Suraj Subhash		
16.	63	Shalu Vishal Sudhakar	Dr. S. B. Salunkhe	Water desalination using Nanoporous Graphene Membrane
	64	Gade Omkar Govind		
	65	Debojeet Bhattacharjee		
	66	Gaikwad Viswas Savata		
17.	67	Bhosale Onkar Shashikant	Dr. S. B. Salunkhe	Agricultural water filtration using Graphene filters
	68	Kadlaskar Sourabh Sanjay		
	69	Deshpande Mihir Milind		
	70	Kulkarni Kedar Mahesh		
18.	71	Sakhare Rohit Pandurang	Prof. N. S. Shaikh	Design of water pumping system by using wind and solar energy
	72	Lohar Aakash Narayan		
	73	Vyavahare Yogesh Maruti		
	74	Gate Hanumant Dadasaheb		
19.	75	Masal Shriram Chandrakant	Prof. S. R. Gavali	Design and Fabrication of micromixer for Lab on Chip Applications
	76	Deshmukh Shrinath Jayavant		
	77	Dune Kiran Mahipati		
	78	Waghmode Onkar Suryakant		
20.	79	Ippanpalli Pranav Hiralal	Prof. S. M. Khomane	Design and fabrication of polishing machine for metallurgical specimen.
	80	Rakate Akash Bharat		
	81	Wadgave Indrajit		
	82	Ingle Sachin Suresh		
	83	Tele Nitin Shankar		
21	84	Ghongade Vishal Bapurao	Prof. C. C. Jadhav	Hybrid Sugar Cane Lifting Machine
	85	Karande Akshay Ravasaheb		
	86	Kotyal Shridhar		
	87	Shaikh (Shikalgar) Mujammil		
22	88	Vivek Vijay Waydande	Prof. K. S. Pukale	Process optimization of Photo chemical machining on 3D surface (stainless steel)
	89	Vijay Prakash Jadhav		
	90	Prashant Bharat Vansale		
	91	Sachin Vaman Torane		
23	92	Bhingare Vijay Arjun	Prof. A. K. Parkhe	Analysis of roller conveyor chain and composite blade using conditioning monitoring approach.
	93	Ronge Nagesh Sudhakar		
	94	Ranadive Savata Sadhu		
	95	Hake Akshay Arun		
24	96	Gaikwad Pruthvijit Vasudev	Prof. S.Y. Salunkhe	Vibration analysis and fault diagnosis of injection moulding machine.
	97	Gaikwad Sagar Navnath		
	98	Phalake Suhas Shrimant		
	99	Sawant Bhushan Pradyumna		

(Prof. D.T. Kashid)
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(Dr. S. A. Sonawane)
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SVERI's College of Engineering, Pandharpur
DEPARTMENT OF MECHANICAL ENGINEERING
Academic Year – 2019-2020
Project Group for B.E. (Mechanical)
List of Students undertaking Project Work- I & II

Group No.	Sr. No.	Name of Student	Name of Project Guide	Title of the Project
25	100	Chavan Adarsh Valu	Prof. V. R. Chavan	Humped Shape Type Fin And Tube Heat Exchanger By Using New Shape of Vertex Genrator
	101	Torane Sunil Mohan		
	102	Khade Sagar Bhimashankar		
	103	Vikram Vhanmane		
26	104	Naiknavare Mayur Baburao	Prof. S. M. Kale	Design and Retrofitting of Hybrid Personal Vehicle.
	105	Popale Ganesh Navanath		
	106	Landage Balaji Vitthal		
	107	Charansinha U. Raut		
27	108	/Makar Supriya	Prof. S. V. Jadhav	Effect of different obstacles size variation on the performance of microchannel.
	109	/Kame Mansi		
	110	/Namde Pooja		
	111	/Sarvagod Manali		
28	112	Karan P. Warkhedkar	Prof. D. T. Kashid	Analysis of Drag and Lift Forces on blades of wind turbine by the case study of NACA 4415 aerofoil
	113	Keskar Krushnadev Arjun		
	114	Sayyad Sameer Mansub		
	115	Laxman Pachkawade		
29	116	Khadatare Rahul Suresh	Prof. A. K. Parkhe	Design and Development of Mini Belt Grinding Machine.
	117	Pravin Vikram Chavan		
	118	Wagh Govind R.		
	119	Atkale Shubhan R.		
30	120	Kale Shubham Shankar	Prof. D. T. Kashid	Design and Development of Spreadability Testing Apparatus For Semisolids
	121	Khot Sagar Balu		
	122	Tamboli Sultan Motilal		
	123	Mahapure Suraj Bapu		
31	124	Shubham Ashok Dixit	Prof. S. S. Jadhav	PERFORMANCE OF HEAT PIPE WITH DIFFERENT INCLINATION ANGLES USING ALUMINIUM NANOFLUID
	125	Pritam Madhukar Gaikwad		
	126	Pansare Kamlesh		
	127	Shubham Nirgun Kolekar		
32	128	Katale Ganesh Karan	Prof. A. A. Mote	Fabrication and characterization of composite from sugarcane bagasse and waste plastic for domestic thermal insulation
	129	Sonwalkar Ashutosh H.		
	130	Mali Mayur		
	131	Gunjal Ravindra		
33	132	Aniket Gawade	Prof. C. C. Jadhav	Generation of electric power with INVELOX venturi wind turbine
	133	Suraj Netake		
	134	Pratap Netake		
	135	Kiran Babar		
	136	Akshay Vibhute		

(Prof. D.T. Kashid)
Project Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI

Engineering for Excellence

SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled

"Design, experiment and numerical anlysis of EAHE system for weather condition of Solapur, India."

has been submitted by

Project Group No.:- 01

1) Waghmare Vishal Balasaheb
2) Kadam Vishal Janarath
3) Kate Pankaj Lalachand
4) Shende Suraj Kundalik
5) Patil Onkar Dadaso

For partial fulfillment of Bachelor Degree in Mechanical Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. D. D. Ronge)
Project Guide

(Dr. S. S. Wangikar)
Head, Mech. Engg. Dept.

(Dr. B. P. Ronge)
Principal

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Engineering for Excellence

SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled
"Design and performance analysis of PCM heat exchange."
has been submitted by

Project Group No.:- 02

1) Bhanvase Amar Maruti
2) Gosavi Vaibhav Digambar
3) Jadhav Rishabh Dnyaneshwar
4) Godase Pavan Vilas

For partial fulfillment of Bachelor Degree in Mechanical Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. S. J. Shinde)
Project Guide

(Dr. S. S. Wangikar)
Head, Mech. Engg. Dept.

B. Ronge

(Dr. B. P. Ronge)
Principal

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Engineering for Excellence

SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled

"Experimental Study and optimization of process parameters for AISI H21 Material using DOE (Design Of Experiment) Techniques"

has been submitted by

Project Group No.:- 03

1) Chavan Sumit Sanjay
2) Tate Sudarshan Sushenrao
3) Sonage Ravikiran Siddharam
4) Patil Vikas Dasharath
5) Akshay Narayan Ghodake

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"Design and Developement of the Jig for the Centering and Facing Of Round Object"

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2) Ajit S. Jadhav
3) Onkar P. Chidrewar
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"Design & development of root based crop harvesting machine"

has been submitted by

Project Group No.:- 06

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This is to certify that the dissertation entitled

"Manufacturing and Analysis of Natural Sisal Fiber and Sugar Cane Powder Hybrid Composite."

has been submitted by

Project Group No.:- 07

1) Mr. Devkar Samadhan Tanaji
2) Mr. Gaikwad Siddheshwar Subhash
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This is to certify that the dissertation entitled

"Effect of vibration on surface quality of a part manufactured in an injection moulding machine"

has been submitted by

Project Group No.:- 08

1) Mr. Deshmukh Ruturaj Abasaheb
2) Mr. Aiwale Prathamesh Babu
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"Development and Analysis of hybrid passenger tricycle"

has been submitted by

Project Group No.:- ०९

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This is to certify that the dissertation entitled

"Analysis of Natural Hybrid Composites made by Sugarcane waste powder (Baggase powder)"

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This is to certify that the dissertation entitled

"Design,fabrication and analysis of micromixer with circular baffles used in microfluidics applications"

has been submitted by

Project Group No.:- 11

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CERTIFICATE

This is to certify that the dissertation entitled

"Diesel Engine Performance and Emissions Analysis by Using Duel Biodiesel and it's Blends"

has been submitted by

Project Group No.:- 12

1) Mr. Mhetre Gurudev Nagesh
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This is to certify that the dissertation entitled

"Performance evalution of VCRS by using natural and artificial refrigerant"

has been submitted by

Project Group No.:- 13

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This is to certify that the dissertation entitled

"Manufacturing and testing of convectional damper by magnetorheological approach"

has been submitted by

Project Group No.:- 14

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This is to certify that the dissertation entitled

"Parametric optimisation of photochemical machining for Al-Cu material"

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"Water desalination using Nanoporous Graphene Membrane"

has been submitted by

Project Group No.:- 16

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has been submitted by

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"Design of water pumping system by using wind and solar energy"

has been submitted by

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CERTIFICATE

This is to certify that the dissertation entitled

"Design and Fabrication of micromixer for Lab on Chip Applications"

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"Design and fabrication of polishing machine for metallurgical specimen"

has been submitted by

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"Process optimization of Photo chemical machining on 3D surface (stainless steel)"

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2) Mr. Vijay Prakash Jadhav
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CERTIFICATE

This is to certify that the dissertation entitled

"Analysis of roller conveyor chain and composite blade using conditioning monitoring approach"

has been submitted by

Project Group No.:- 23

1) Mr. Bhingare Vijay Arjun
2) Mr. Ronge Nagesh Sudhakar
3) Mr. Ranadive Savata Sadhu
4) Mr. Hake Akshay Arun

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This is to certify that the dissertation entitled

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This is to certify that the dissertation entitled

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3) Miss. /Namde Pooja
4) Miss. /Sarvagod Manali

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This is to certify that the dissertation entitled

"Analysis of Drag and Lift Forces on blades of wind turbine by the case study of NACA 4415 aerofoil"

has been submitted by

Project Group No.:- 28

1) Mr. Karan P. Warkhedkar
2) Mr. Keskar Krushnadev Arjun
3) Mr. Sayyad Sameer Mansub
4) Mr. Laxman Pachkawade

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"Design and Development of Mini Belt Grinding Machine"

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Project Group No.:- 29

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This is to certify that the dissertation entitled

"Design and Development of Spreadability Testing Apparatus For Semisolids"

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Project Group No.:- 30

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This is to certify that the dissertation entitled

"PERFORMANCE OF HEAT PIPE WITH DIFFERENT INCLINATION ANGLES USING ALUMINIUM NANOFLUID"

has been submitted by

Project Group No.:- 31

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This is to certify that the dissertation entitled

"Fabrication and characterization of composite from sugarcane bagasse and waste plastic for domestic thermal insulation"

has been submitted by

Project Group No.:- 32

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This is to certify that the dissertation entitled

"Generation of electric power with INVELOX venturi wind turbine"

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Project Group No.:- 33

1) Mr. Aniket Gawade
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Sample Project Report

A.Y.: 2019-2020

A

Project Report

on

"Static & Dynamic analysis of Composite Blade using conditioning monitoring approach"

Submitted & Presented in the fulfillment of the requirement for the award of

Bacholor Degree In Mechanical Engineering

To

Punyashlok Ahilyadevi Holkar Solapur University,Solapur.

By

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DEPARTMENT OF MECHANICAL ENGINEERING
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Academic Year: 2019-2020

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ACKNOWLEDGEMENT:

This work is just not an individual contribution till its completion. We take this opportunity to thank all for bringing it close to theconclusion.

First of all, we thankful to **Prof. Dr. S. S. Wangikar, Head of Mechanical Engineering Department**, for accepting our studentship, continuously assessing our work and providing great guidance by timely suggestions and discussions at every stage of this work. We convey our deepest gratitude to **our guide Prof. A. K. Parakhe** for his expert guidance, inspiration, suggestion and constant encouragement during entire course of this project work, which enabled us to bring out this report in an eloquent manner. Without his guidance, directions and constructive criticisms, this Dissertation would have been impossible. Therefore we deeply thank to our guide from our inner heart.

We also thankful to **Prof. D. T. Kashid** and **Prof. C. K. Vhare** for helping us at every stage without which this work would not have been possible.

Signatures:

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Abstract:

The use of composite materials has been increased in different industries like civil, mechanical, aerospace engineering due to their better properties. The rotating blade plays an important role in engineering structures such as turbine blades, airplane propellers, and helicopter blades. This deals with static analysis of composite blade to estimate the material uncertainty by measuring the deflection. The composite blade is fixed like a cantilever beam. To measure this deflection the Hall Effect Sensor is developed which is non contact device works on magnetic field. If magnet is come in front of sensor it creates magnetic field between them and that change in voltage or field is calibrated in terms of deflection of blade. The same process is carried for all the blades to check their uncertainty present in it. Also, it is deals with the dynamic analysis of blade to check their behavior in the axis under rotating condition for different RPM. The acceleration is considered as performance parameter to check the behavior of blade. Also, the setup is developed for accelerations measurement GY-521 Accelerometer. The accelerometer has kept at free end of blade and accelerations are taken in three directions for each rpm and it is represented in a graphical form. The analysis is carryout for both damaged and undamaged blade. The both studies are carried out using condition monitoring approach to observe their behavior of blade in static & dynamic condition before used in any application.

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Chapter 1

Introduction to Composite Material

1.1 Introduction:

Fiber - reinforced composite materials have been used over the past few decades in a variety of structures. Thin-walled structural shapes made up of composite materials, which are usually produced by pultrusion, are being increasingly used in many engineering fields. Composite materials are widely used in the aircraft industries because of their superior fatigue characteristics, greater damage tolerances, and larger stiffness-to-weight ratios as compared with their metal counterparts. In helicopter rotor applications, composite materials can bring additional features like drastic reduction in the number of parts and bulkiness, especially for the rotor hub system, which is typically a large source of the profile drag. Despite these advantages, composite materials generally increase the level of uncertainties for the overall structural system. [2]

A composite material can be defined as a combination of two or more materials that results in better properties than those of the individual components used alone. In contrast to metallic alloys, each material retains its separate chemical, physical, and mechanical properties. The two constituents are reinforcement and a matrix. The main advantages of composite materials are their high strength and stiffness, combined with low density, when compared with bulk materials, allowing for a weight reduction in the finished part. The composite blade has the features of high efficiency, low consumption and good mechanical characteristic, so its prospect of development and application in engineering structures is broad and promising. To meet the needs of space navigation, mechanics and the construction industry, the design and analysis of the mechanical behavior of thin-walled composite blade have become an active research area. [1]

In composites, materials are combined in such a way as to enable us to make better use of their virtues while minimizing to some extent the effects of their deficiencies. This process of optimization can release a designer from the constraints associated with the selection and manufacture of conventional materials. He can make use of tougher and lighter materials, with properties that can be tailored to suit particular design requirements. And because of the ease with which complex shapes can be

manufactured, the complete rethinking of an established design in terms of composites can often lead to both cheaper and better solutions. [2]

1.2 Composite Overview:

Materials can be classified as Isotropic, Anisotropic, and Orthotropic Materials; Isotropic material: Isotropic materials have the same material properties in all directions, and normal loads create only normal strains. A material is isotropic if the properties are independent of direction within the material. Anisotropic material: They have different material properties in all directions at a point in the body. There are no material planes of symmetry, and normal loads create both normal strains and shear strains. Orthotropic Material: Composites are a subclass of anisotropic materials that are classified as orthotropic. Orthotropic materials have properties that are different in three mutually perpendicular directions. They have three mutually perpendicular axes of symmetry, and a load applied parallel to these axes produces only normal strains. However, loads that are not applied parallel to these axes produce both normal and shear strains. Therefore, orthotropic mechanical properties are a function of orientation.

1.3 Common Categories of Composite Materials:

A typical composite material is a system of materials composing of two or more materials (mixed and bonded) on a macroscopic scale. Generally, a composite material is composed of reinforcement (fibers, particles, flakes, and/or fillers) embedded in a matrix (polymers, metals, or ceramics).The matrix holds the reinforcement to form the desired shape while the reinforcement improves the overall mechanical properties of the matrix. When designed properly, the new combined material exhibits better strength than would each individual material. The following is an introduction to composite materials constituents, product forms, and fabrications processes. [1]

a) Reinforcements:

The principal purpose of the reinforcement is to provide superior levels of strength and stiffness to the composite. In a continuous fiber-reinforced composite, the fibers provide virtually all of the strength and stiffness. Even in particle reinforced composites, significant improvements are obtained As mentioned earlier, typical

reinforcing materials (graphite, glass, SiC, alumina) may also provide thermal and electrical conductivity, controlled thermal expansion, and wear resistance in addition to structural properties. By far the most widely used reinforcement form in high performance OMCs are fiber tows. These typically consist of thousands of fine filaments arranged in a single bundle. A fiber tow can be handled as a single unit and so can be wrapped or woven using commercial equipment. [3]

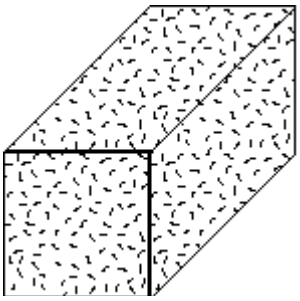
b) Matrices:

The purpose of the matrix is to bind the reinforcements together by virtue of its cohesive and adhesive characteristics, to transfer load to and between reinforcements, and to protect the reinforcements from environments and handling. The matrix also provides a solid form to the composite, which aids handling during manufacture and is typically required in a finished part. This is particularly necessary in discontinuously reinforced composites, because the reinforcements are not of sufficient length to provide a handle able form. Because the reinforcements are typically stronger and stiffer, the matrix is often the "weak link" in the composite, from a structural perspective. As a continuous phase, the matrix therefore controls the transverse properties; inter laminar strength, and elevated-temperature strength of the composite. However, the matrix allows the strength of the reinforcements to be used to their full potential by providing effective load transfer from external forces to the reinforcement. [3]

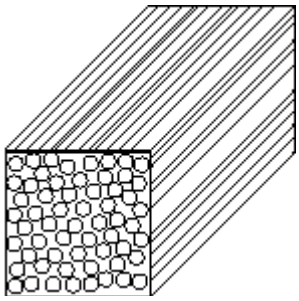
The matrix holds reinforcing fibers in the proper orientation and position so that they can carry the intended loads and distributes the loads more or less evenly among the reinforcements. Further, the matrix provides a vital inelastic response so that stress concentrations are reduced dramatically and internal stresses are redistributed from broken reinforcements. [3]

Based on the form of reinforcement, common composite materials can be classified as follows:

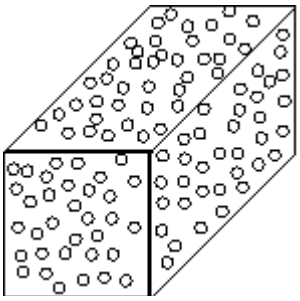
1. Fibrous reinforced composites:
    a. Random fiber (short fiber) reinforced composites
    b. Continuous fiber (long fiber) reinforced composite.
2. Particles as the reinforcement (Particulate composites)
3. Flat flakes as the reinforcement (Flake composites)



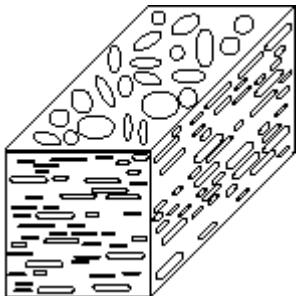
Random reinforced composite



Continuous reinforced composite



Particulate composites



Flake composites

Figure 1.1 Classification of composite materials

1.4 Introduction and Terminology of Composite:

A composite material is a macroscopic combination of two or more distinct materials, having a recognizable interface between them. Composites are used not only for their structural properties, but also for electrical, thermal, Tribological, and environmental applications. Modern composite materials are usually optimized to achieve a particular balance of properties for a given range of applications. A fiber has a length that is much greater than its diameter. The length-to-diameter (l/d) ratio is known as the aspect ratio and can vary greatly. Continuous fibers have long aspect ratios, while discontinuous fibers have short aspect ratios. Continuous-fiber composites normally have a preferred orientation, while discontinuous fibers generally have a random orientation. Examples of continuous reinforcements include unidirectional, woven cloth and helical winding, while examples of discontinuous reinforcements are chopped fibers and random mat. Continuous-fiber composites are often made into laminates by stacking single sheets of continuous fibers in different orientations to obtain the desired strength and stiffness properties with fiber volumes as high as 60 to 70 percent. Fibers produce high-strength composites because of their small diameter;

they contain far fewer defects (normally surface defects) compared to the material produced in bulk. As a general rule, the smaller the diameter of the fiber, the higher its strength, but often the cost increases as the diameter becomes smaller. In addition, smaller-diameter high-strength fibers have greater flexibility and are more amenable to fabrication processes such as weaving or forming over radii. Typical fibers include glass, aramid, and carbon, which may be continuous or discontinuous fiber [3].

1.4.1 Reinforcement of Composite:

a) Continuous fiber composite

Continuous fiber-reinforced composites contain reinforcements having lengths shorter than their cross-sectional dimensions. When the length of the fiber is such that any further increase in length does not, for example, further increase the elastic modulus or strength of the composite, the composite is considered to be continuous fiber reinforced. Most continuous fiber (or continuous filament) composites, in fact, contain fibers that are comparable in length to the overall dimensions of the composite part. The continuous phase is the matrix, which is a polymer, metal, or ceramic. Polymers have low strength and stiffness, metals have intermediate strength and stiffness but high ductility, and ceramics have high strength and stiffness but are brittle. The matrix (continuous phase) performs several critical functions, including maintaining the fibers in the proper orientation and spacing and protecting them from abrasion and the environment. In polymer and metal matrix composites that form a strong bond between the fiber and the matrix, the matrix transmits loads from the matrix to the fibers through shear loading at the interface. In ceramic matrix composites, the objective is often to increase the toughness rather than the strength and stiffness; therefore, a low interfacial strength bond is desirable [3].

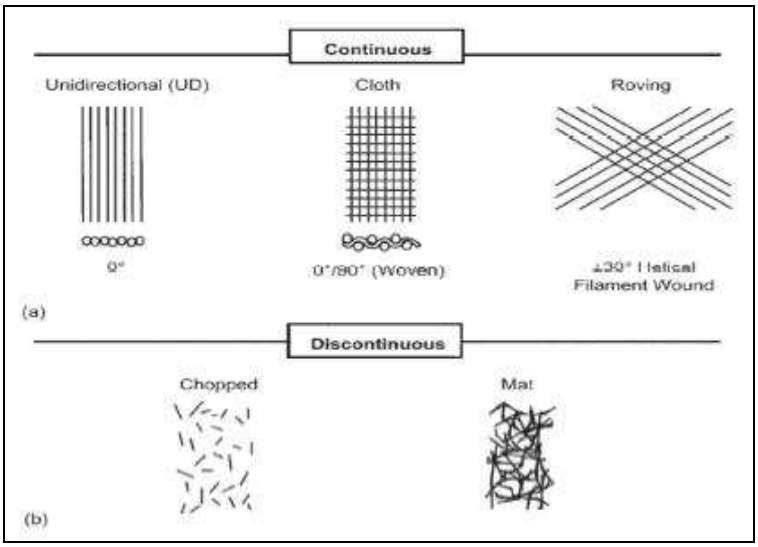


Figure 1.2 Typical reinforcement types

b) Discontinuous fiber composite:

Discontinuous-fiber composites are normally somewhat random in alignment, which dramatically reduces their strength and modulus. However, discontinuous-fiber composites are generally much less costly than continuous-fiber composites. Therefore, continuous-fiber composites are used where higher strength and stiffness are required (but at a higher cost), and discontinuous-fiber composites are used where cost is the main driver and strength and stiffness are less important. Both the reinforcement type and the matrix affect processing. The major processing routes for polymer matrix composites are shown in Fig. 1.4 Two types of polymer matrices are shown: thermosets and thermoplastics. A thermoset starts as a low-viscosity resin that reacts and cures during processing, forming an intractable solid. A thermoplastic is a high-viscosity resin that is processed by heating it above its melting temperature. Because a thermoset resin sets up and cures during processing, it cannot be reprocessed by reheating. [2]

1.4.2 Ply angle orientation of composite:

Orthotropic materials have properties that are different in three mutually perpendicular directions. They have three mutually perpendicular axes of symmetry, and a load applied parallel to these axes produces only normal strains. However, loads that are not applied parallel to these axes produce both normal and shear strains. Therefore, orthotropic mechanical properties are a function of orientation. However,

if the material is anisotropic (for example, the composite ply shown in Fig. 1.5), it has properties that vary with direction within the material. In this example, the moduli are different in each direction (E0° ≠ E45° ≠ E90°). While the modulus of elasticity is used in the example, the same dependence on direction can occur for other material properties, such as ultimate strength, Poisson's ratio, and thermal expansion coefficient. Bulk materials, such as metals and polymers, are normally treated as isotropic materials, while composites are treated as anisotropic. However, even bulk materials such as metals can become anisotropic—for example, if they are highly cold worked to produce grain alignment in a certain direction. [1]

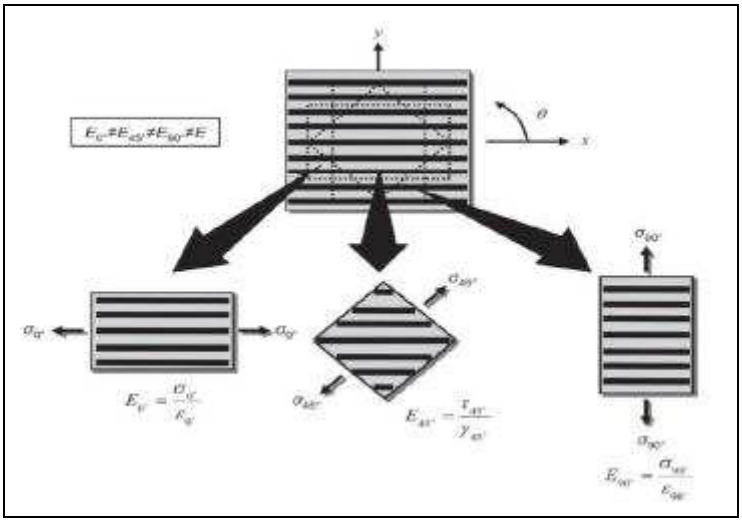


Figure 1.3 Element of composite ply material under stress [2]

Consider the unidirectional fiber-reinforced composite ply (also known as a lamina) shown in Fig. 1.3. The coordinate system used to describe the ply is labeled the 1-2-3 axes. In this case, the 1-axis is defined to be parallel to the fibers (0°), the 2 axis is defined to lie within the plane of the plate and is perpendicular to the fibers (90°), and the 3-axis is defined to be normal to the plane of the plate. The 1-2-3 coordinate system is referred to as the principal material coordinate system.

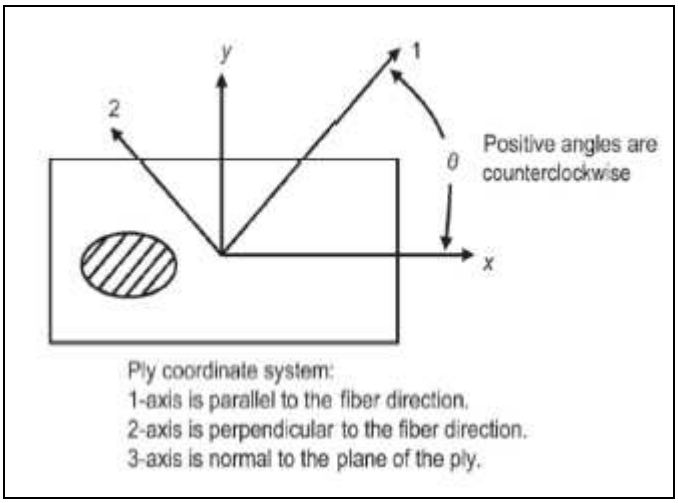


Figure 1.4 Ply angle definition [2]

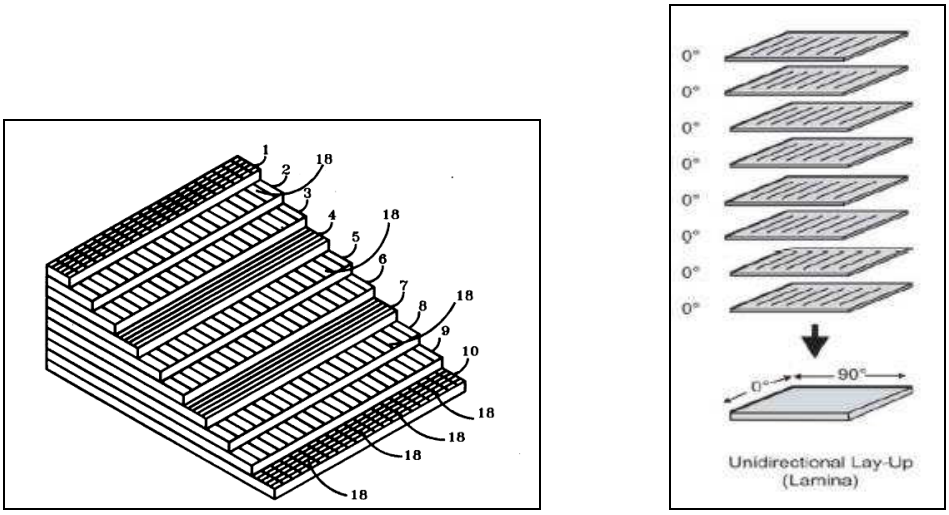
If the plate is loaded parallel to the fibers (one- or zero-degree direction), the modulus of elasticity E11 approaches that of the fibers. If the plate is loaded perpendicular to the fibers in the two- or 90-degree direction, the modulus E22 is much lower, approaching that of the relatively less stiff matrix. Since E11 >> E22 and the modulus varies with direction within the material, the material is anisotropic. Thus, when the fibers are aligned parallel (0°) or perpendicular (90°) to the direction of applied stress, the lamina is known as a specially orthotropic lamina ($\theta = 0°$ or 90°). A lamina that is not aligned parallel or perpendicular to the direction of applied stress is called a general orthotropic lamina ($\theta \neq 0°$ or 90°). [2]

1.4.3 Laminates:

When there is a single ply or a lay-up in which all of the layers or plies are stacked in the same orientation, the lay-up is called a lamina. When the plies are stacked at various angles, the lay-up is called a laminate. Continuous-fiber composites are normally laminated materials (Fig. 1.7) in which the individual layers, plies, or laminae are oriented in directions that will enhance the strength in the primary load direction. Unidirectional (0°) laminae are extremely strong and stiff in the 0° direction. [1]

Composites are rarely used in the form of unidirectional laminates, since one of their great merits is that the fibres can be arranged so as to give specific properties in any desired direction. Thus, in any given structural laminate, predetermined proportions of the unidirectional plies will be arranged at some specific angle, θ, to the stress direction. In order to calculate the properties of such a multi-ply laminate, it is first

necessary to know how the elastic response of a single unidirectional lamina, such as that which we have been considering so far, will vary as the angle to the stress direction is changed [1]. However, they are very weak in the 90° direction because the load must be carried by the much weaker polymeric matrix. Because the fiber orientation directly impacts mechanical properties, it seems logical to orient as many of the layers as possible in the main load-carrying direction. [1]



[02/90/02/90/02] la up **Lamina**

Figure 1.5 Lamina and laminate lay-up [2]

One of the most common forms of fiber-reinforced composite materials is the cross plied laminate, in which the fabricator lays up a sequence of unidirectional reinforced plies" as indicated in following fig.1.6. Each ply is typically a thin (approximately 0.2 mm) sheet of collimated fibers impregnated with an uncured epoxy or other thermosetting polymer matrix material. The orientation of each ply is arbitrary, and the layup sequence is tailored to achieve the properties desired of the laminate. [1]

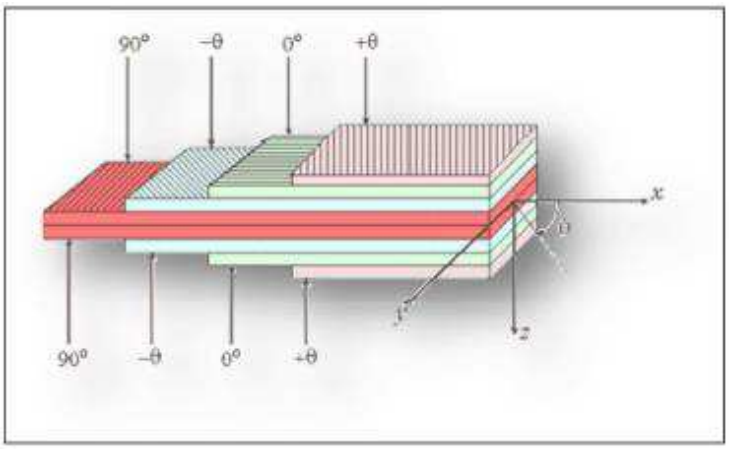


Figure 1.6 Laminated composite [1]

The longitudinal tension and compression loads are carried by the fibers, while the matrix distributes the loads between the fibers in tension and stabilizes the fibers and prevents them from buckling in compression. The matrix is also the primary load carrier for inter laminar shear (i.e., shear between the layers) and transverse (90°) tension. Because the fibre orientation directly impacts mechanical properties, it seems logical to orient as many of the layers as possible in the main load-carrying direction. While this approach may work for some structures, it is usually necessary to balance the load-carrying capability in a number of different directions, such as the 0°, +45°,-45°, and 90° directions. [1]

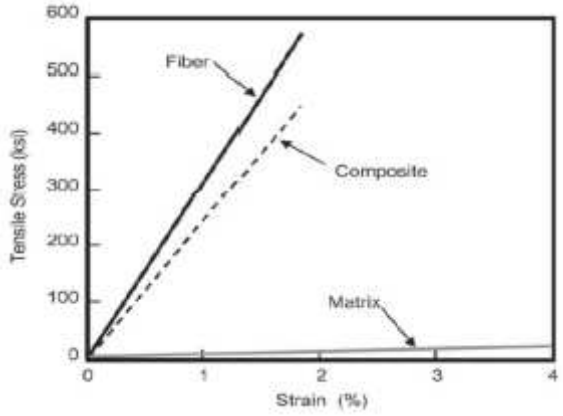


Figure 1.7 Comparison of tensile properties of fiber, matrix, and composite [1]

Laminates are composite material where different layers of materials give them the specific character of a composite material having a specific function to perform. Fabrics have no matrix to fall back on, but in them, fibers of different compositions combine to give them a specific character. Reinforcing materials generally withstand maximum load and serve the desirable properties [1].

1.5 Objectives and Methodology:

Objectives of the study and brief methodology to achieve these objectives are summarized below:

1. **To study Experimental Analysis of Composite blade in Static and Dynamic Condition:**
   It is important to conduct analysis of thin walled carbon fiber composite blade in non-rotating condition to get various basic parameters that are useful in rotating condition analysis. So, the Deflection at free end is to be carried out under point load is applied at free end of the beam, therefore composite blade is considered as

cantilever type. This analysis is carried out in static condition. Also Dynamic analysis is carried out for different rpm.

2. **To study behavior of damaged Composite blade in Dynamic condition:**

   Behavior of composite blades in rotating condition depends on its various factors such as design of blade, balancing, and speed etc. Therefore, there is need to study the effects of RPM or number of rotations of blades on damaged and undamaged composite blade to check its behavior in rotation condition.

1.6 Organisation of thesis:

CHAPTER 1:

This chapter gives the overview about composite material. There are different categories or types of composite material, are also explained in this chapter. The common terminology for composite material is given. Then types of composite, its layup sequence, ply angle, lamina etc. all this details are given in this chapter. Finally, objectives and methodology of the proposed work is explained in detail.

CHAPTER 2:

A lot of research has been done on composite blade both experimentally and numerically and analytically. This chapter deals with the literature review of static and dynamic analysis of composite blade , modeling of composite blade , natural frequency analysis of blade in undamaged-damaged condition, behavior of damaged composite blade in rotating condition.

CHAPTER 3:

In this study the composite blade is used for analysis in different conditions. The details of blade are explained in this chapter. Dimensions, material used for particular blade , its layup sequence, and material properties are also given in detail. Then, the fabrication process of composite material is also explained in detail with experimental setups.

CHAPTER 4:

This chapter details with static analysis of composite blade for different parameters like deflection. The experimentation is carried out on blade to find uncertainty present in material using deflection parameter.

CHAPTER 5:

This chapter is deals with experimental study on to check the behavior of undamaged and damaged composite blade in rotating condition for different rpm with different locations. Hence, blade is damaged at different locations by producing the cracks on it. The experimentation is carried on rotating composite blade to measure the accelerations for different rpm using GY-521 accelerometer and Arduion setup. This is also carried out for both undamaged and damaged blade and obtained results are represented in graphical form.

1.7 Summary:

The overview about composite material is explained in this chapter. Then, the common categories and types of composite materials are also explained in details. Also material with different ply angle, lay up sequence, matrix, terminology of composite material all this information is given in detail. Then, the objectives, methodology and organisation of thesis are explained in shortly.

Chapter 2

Literature Review

A lot of research has been done on composite blade, both experimentally and numerically and analytically. This chapter deals with the literature review of static and dynamic analysis of composite blade of blade in undamaged-damaged condition, behavior of damaged composite blade in rotating condition. This chapter is divided into the following sections:

1) Static analysis of composite blade
2) Dynamic analysis of composite blade in rotating condition
3) Behavior of undamaged and damaged composite box beam in rotating condition

2.1 Static analysis of composite blade:

Vlasov et al. [1] developed the theory of thin-walled members made of isotropic materials. Up to the present, investigation into the stability and vibration behavior of these members has received widespread attention and has been carried out extensively. Many numerical techniques have been used to solve the dynamic analysis of these members. One of the most effective approaches was done to derive the exact stiffness matrices based on the solution of the differential equation of beam. Numerical results are obtained for thin-walled composite box beams to investigate the effects of axial force, fiber orientation and modulus ratio on the natural frequencies, load–frequency interaction curves and corresponding vibration mode shapes. Thin walled beams made of isotropic materials have been studied by many authors .Some works have been devoted to the analysis of the flexural-torsion properties of thin walled composite beams. Vlasov's theory was extended for the bending and twisting of thin-walled composite beams with open cross-section made from symmetric fiber reinforced laminates and for composite beams with arbitrary geometric and material sectional properties. Some papers have also been published dealing with the optimization of composite thin-walled cross-section beams.

Barradas et al. [2] has performed the optimal design of cross-section properties of thin-walled laminated composite beams. These properties are expressed as integrals based on the cross-section geometry, on the warping functions for torsion, shear

bending and shear warping, and on the individual stiffness of the laminates constituting the cross-section. The finite element method is used in discretizing the theory. For design sensitivity calculations, the cross-section is modeled throughout design elements. Geometrically, these elements may coincide with the laminates that constitute the cross-section. The developed formulation is based on the concept of adjoint structure. After a warping function is calculated for the cross-section, an adjoint problem may be formulated for each of the properties and a corresponding adjoint warping is determined. It can be applied in a unified way to open, closed or hybrid cross-sections. Design optimization is performed by nonlinear programming techniques. Laminate thickness and lamina orientations are considered as design variables.

Kato et al. [3] described an optimization strategy of fiber reinforced composites. Although the methodical concept is very general we concentrate on Fiber Reinforced Concrete with a complex failure mechanism resulting from material brittleness of both constituent's matrix and fibers. Because of these unfavorable characteristics the interface between fiber and matrix plays a particularly important role in the structural response. A prominent objective for this kind of composite is the improvement of ductility. The influential factors on the entire structural response of this composite are (i) material parameters involved in the interface, (ii) the material layout at the small scale level, and (iii) the fiber geometry on the macroscopic structural level. Paper gives the structural ductility of the fiber reinforced composites applying an optimization method with respect to the geometrical layout of continuous long textile fibers. The method proposed is achieved by applying a so-called embedded reinforcement formulation. This methodology is extended to a damage formulation in order to represent a realistic structural behavior. For the optimization problem a gradient-based optimization scheme is assumed. An optimality criteria method is applied because of its numerically high efficiency and robustness. The performance of the method is demonstrated by a series of numerical examples; it is verified that the ductility can be substantially improved.

Pawar et al. [4] studied a cantilever composite box beam with 0^0 and 90^0 plies is used for Eigenvalue analysis. In the present work, COMSOL Multiphysics, a structural solid mechanics tool, is used to study the Eigenvalue analysis of composite box beam.

The beam is analyzed at different Eigen frequency value and different angular velocity for getting different mode shapes. And also for the different rotational speed the displacement value of composite box beam is analyzed.

Aktas et al. [5] investigated deflection function of orthotropic cantilever beam subjected to point load are obtained using anisotropic elasticity. The deflection at the free end of the beam is calculated numerically using obtained formulas for different fiber directions.

Mehdi et al. [7] presented presents the Computational modal analysis of a composite beam with and without cracks. In this work, the mechanical properties of aluminum and fiber (Nylon and Glass fiber reinforcement plastic) are measured a universal testing machine. The three-dimensional finite element models of composite beam with and without cracks are constructed and then computational modal analysis on ANSYS-14 is then performed to generate natural frequencies and mode shapes. The location of cracks will vary from 10 to 90 % of beam length. The finite element model agrees well with the analytical values.

Yasmeen et al. [8] studied that two Fiber- Reinforced Plastic (FRP) materials, Graphite Fibre Reinforced Polyamide and E-Glass Fibre Reinforced Polymer have been selected as beam materials for modal analysis using ANSYS 13.0. The analysis is carried out for these two beams in different ways. Initially the analysis is carried out for different orientation of fibers for two beams. Later the effect of dimensions is analyzed by varying one dimension of the beam at a time by keeping the other two constant. In the next step the analysis is performed for constant dimensions of each beam for same layer orientation and constant volume fraction of fiber by introducing transverse cracks of different depths at various positions along the length of the beam. The results obtained are analyzed.

Kumar et al. [8] investigate of the effects of cracks on a cantilever composite beam, made of Aluminum- reinforced GFRP and Aluminum reinforced Nylon. The mechanical properties of aluminum and fibers (Nylon and Glass fiber reinforcement polymer) are measured with universal testing machine. The beams are made of Aluminum and synthetic fibers of dimensions 500x30x6 mm. The Cracks are provided on the cantilever beam which is varying from 10 to 90% of beam length, and

we investigate the natural frequency of all five mode shapes with zero cracks to ninth cracks on the beam.

Prasad et al. [9] investigates the accuracy of predicting the dynamic response by finite element modeling of structures with cracks. Steel and composite materials are widely used in various construction elements and composites in particular have increased substantially over the past few years. These materials are subjected to various types of damage, mostly cracks and delamination. These result in local changes of the stiffness of elements from such materials and consequently their dynamic characteristics are altered. The cracks are modeled as such in case of stress analysis to study the stress pattern at those local regions of crack; while in case of dynamic analysis an equivalent model is built with many assumptions.

2.2 Dynamic analysis of composite blade in rotating condition:

Chung et al. [14] presented a finite element analysis for a rotating cantilever beam. Based on a dynamic modelling method using the stretch deformation instead of the conventional axial deformation, three linear partial differential equations are derived from Hamilton's principle. Two of the linear differential equations are coupled through the stretch and chordwise deformations. The other equation is an uncoupled one for the flapwise deformation. From these partial differential equations and the associated boundary conditions, are derived two weak forms: one is for the chordwise motion and the other is for the flapwise motion. The weak forms are spatially discretized with newly defined two-node beam elements. With the discretized equations, the behaviors of the natural frequencies are investigated for the variation of the rotating speed. In addition, the time responses and distributions of the deformations and stresses are computed when the rotating speed is prescribed. The effects of the rotating speed profile on the vibrations of the beam are also investigated.

Yao et al. [11] investigated the nonlinear dynamic responses of the rotating blade with varying rotating speed under high-temperature supersonic gas flow. The varying rotating speed and centrifugal force are considered during the establishment of the analytical model of the rotating blade. The rotating blade is treated as a pretwist, presetting, thin-walled rotating cantilever beam. Using the isotropic constitutive law

and Hamilton's principle, the nonlinear partial differential governing equation of motion is derived for the pretwist, presetting, thin-walled rotating beam. Based on the obtained governing equation of motion, Galerkin's approach is applied to obtain a two-degree-of-freedom nonlinear system. Numerical simulations are performed to study the nonlinear dynamic response of the rotating blade. In summary, numerical studies suggest that periodic motions and chaotic motions exist in the nonlinear vibrations of the rotating blade with varying speed.

Ohtsuka et al. [12] studied the deformation and the stress of an axial flow compressor rotor blade under the loading of centrifugal forces. Coupled deformation of extension, bending, torsion and transverse shear of a pretwisted curved bar with arbitrary cross section is considered. Governing equations derived by means of the principle of virtual work are solved numerically by finite difference method. The warping functions used in the analysis were obtained by the use of finite element method. Measurement of the untwist angles and the stresses were carried out for the verification of the numerical analysis and they were found to be in good agreement.

Sina, et al. [13] studied the Axial–torsional vibrations of rotating pretwisted thin-walled composite box beams exhibiting primary and secondary warping are investigated. Considering the nonlinear strain–displacement relations, the coupled nonlinear axial–torsional equations of motion are derived using Hamilton0s principle. Ignoring the axial inertia term leads to differential equation of motion in terms of elastic torsion in the case of axially immovable beams. Centrifugal load in the presence of material anisotropy and pretwist angle leads to an induced static torque. The nonlinear equation should be linearized about the corresponding equilibrium state to obtain the linear differential equation of motion. Extended Galerkin0s method is utilized to achieve the proper Eigenvalue problem. The results obtained in this paper seek to clarify the individual and collective effects of axial loading, pretwist, stagger and fiber angles on the torsional behavior of the non-uniform thin-walled composite blades. The results are compared to available analytical and experimental results in the literature which reveals excellent agreements. The outcomes of this study are expected to offer better predictions of the dynamic behavior of this kind of structures in general, and in design of rotor blades of turbo-machinery, in particular.

Rao, et al. [14] establishes the stiffness and mass matrices of a rotating twisted and tapered beam. The angle of twist, breadth and depth are assumed to vary linearly along the length of beam. The effects of shear deformation and rotary inertia are also considered in deriving the elemental matrices. The first four natural frequencies and mode shapes in bending-bending mode are calculated for cantilever beams. The effects of twist, offset, speed of rotation and variation of depth and breadth taper ratios are studied.

Della, et al. [15] develops a finite element (FE) model to study the free vibration of a rotating laminated composite beam with a single delamination. The rotary inertia and shear deformation effects, as well as the bending–extension, bending–twist and extension–twist coupling terms are taken into account in the FE model. Comparison between the numerical results of the present model and the results published in the literature verifies the validity of the present model. Furthermore, the effects of various parameters, such as delamination size and location, fiber orientation, hub radius, material anisotropy and rotating speed, on the vibration of the beam are studied in detail. These results provide useful information in the study of the free vibration of rotating delaminated composite beams.

Sakar et al. [16] presents a finite element model for the static and dynamic stability of a rotating pretwisted aerofoil cross-section two bladed packet subjected to uniform radial periodic force. The effects of various parameters such as shroud dimensions, pretwist angle, stagger angle, rotational speed and distance of shear center from the centroid on the stability of the blade packets are presented. The numerical results show that pretwist angle and the coupling effect are important in high-frequency modes depending on shear center distance from the centroid on dynamic stability regions. The increase in stagger angle makes the pretwisted two-bladed packet less stable. However, the increase in rotational speed makes the pretwisted two-bladed packet more stable.

Stoykov et al. [17] studied the nonlinear vibrations of 3Dbeams with rectangular cross section and that rotate about a fixed axis are investigated by the p version finite element method. Two types of nonlinearity are taken into account: one comes from then online are strain–displacement relation; the other appears because of the inertia forces due to the rotation of the beam.

2.3 Behavior of undamaged and damaged composite blade in rotating condition:

Librescu et al. [18] described a geometrically non-linear theory to study the dynamic behavior of a thin-walled composite beam. The model is based on a small strain and large rotation and displacements theory, which is formulated through the adoption of a higher-order displacement field and takes into account shear flexibility (bending and warping shear). In the analysis of a weakly nonlinear continuous system, the Ritz's method is employed to express the problem in terms of generalized coordinates. Then, perturbation method of multiple scales is applied to the reduced system in order to obtain the equations of amplitude and modulation. In this paper, the non-linear 3D oscillations of a simply-supported beam are examined, considering a cross-section having one symmetry axis. Composite is assumed to be made of symmetric balanced laminates and especially orthotropic laminates. The model, which contains both quadratic and cubic non-linearity's, is assumed to be in internal resonance condition. Steady-state solution and their stability are investigated by means of the Eigenvalue of the Jacobin matrix. The equilibrium solution is governed by the modal coupling and experience a complex behavior composed by saddle noodle.

Chung et al. [24] has introduced a non-linear model for dynamic analysis of rotating thin-walled composite beams. The theory is deduced in the context of classic variation principles and the finite element method is employed to discretize and furnish a numerical approximation to the motion equations. The model considers shear flexibility as well as non-linear inertial terms, Coriolis effects, among others. The clamping stiffness of the beam to the rotating hub is modeled through a set of spring factors. The model serves as a mean deterministic basis to the studies of stochastic dynamics, which are the objective of the present article. Uncertainties should be considered in order to improve the predictability of a given modeling scheme. In a rotating structural system, uncertainties are present due to a number of facts, namely, loads, material properties, etc. In this study the uncertainties are incorporated in the beam-to-hub connection (i.e. the connection angle and the springs) and the rotating velocity. The probability density functions of the uncertain parameters are derived employing the Maximum Entropy Principle. Different numerical studies are

conducted to show the main characteristics of the uncertainty propagation in the dynamics of rotating composite beams.

Yongsheng et al. [25] described Smart structure with active materials embedded in a rotating composite thin walled beam is a class of typical structure which is using in study of vibration control of helicopter blades and wind turbine blades. The dynamic behavior investigation of these structures has significance in theory and practice. However, so far dynamic study on the abovementioned structures is limited only the rotating composite beams with piezoelectric actuation. The free vibration of the rotating composite thin walled beams with shape memory alloy (SMA) fiber actuation is studied. SMA fiber actuators are embedded into the walls of the composite beam. The equations of motion are derived based on Hamilton's principle and the asymptotically correct constitutive relation of single cell cross section accounting for SMA fiber actuation. The partial differential equations of motion are reduced to the ordinary differential equations of motion by using the Galerkin's method. The formulation for free vibration analysis includes anisotropy, pitch and precone angle, centrifugal force and SMA actuation effect. Numerical results of natural frequency are obtained for two configuration composite beams. It is shown that natural frequencies of the composite thin walled beam decrease as SMA fiber volume and initial strain increase and the decrease in natural frequency becomes more significant as SMA fiber volume increases. The actuation performance of SMA fibers is found to be closely related to the rotational speeds and ply angle.

Bao et al. [26] derived an element stiffness matrix of a beam with a crack from an integration of stress intensity factors, and then a finite element model of a cracked beam is established. This model is applied to a cantilever beam with an edge-crack, and the Eigen frequencies are determined for different crack lengths and locations. Finally, a simple and direct method for determining the crack position, based on the relationship between the crack and the Eigen couple (Eigenvalue and eigenvector) of the beam, is proposed and this method can be suggested to complex structures with various cracks, if their stress intensity factors are known to us.

Zak et al. [28] discussed the theories of beam and flexural behavior is compared. This analysis includes various one-, two- and three-dimensional beam behavior theories comprising the classical one-dimensional Bernoulli, Bernoulli– Rayleigh,

Timoshenko and Reddy theories, as well as various higher order and/or higher-mode theories of beam flexural behavior developed by the authors. The dispersion curves obtained by the use of Hamilton's principle and associated with each theory discussed in the paper have also been presented and analyzed. The wide investigation programme carried out by the authors aimed at showing major differences and similarities between the beam theories and to discuss various numerical aspects of their application. Great attention has been paid on properties, limitations as well as difficulties associated with the use of particular theories of beam flexural behavior. Based on a wide program on numerical calculations, the authors draw certain general conclusions that are valid not only in the field of wave propagation related problems, but also in the field of dynamics of engineering beam-like structures.

Banerjee at al. [29] described the Cracks reduce the service life of structures. A crack in a structural member introduces local flexibility that would affect vibration response of the structure. Both the mode shape and frequency change significantly due to the presence of crack. The objective of this paper is to obtain information about the location and depth of transverse open multiple cracks in a rotating cantilever beams. Vibration parameter in the form of mode shape of damaged rotating beam is obtained using finite element simulation. Using fractal dimension of mode shape profile, damage is detected. It is also shown that this method can produce satisfactory results with some limitation based on profile.

Tahani et al. [30] presented Material discontinuity could cause in-plane stress gradients that it arises inter laminar stresses in regions of sudden transition of material properties. A layer wise laminated beam theory that is a modification of a layer wise laminated plate theory is developed and it is used to analyze analytically the inter laminar stresses at material discontinuities in rotating composite beams. Equations of motion are obtained by using Hamilton's principle. It is assumed that the beam is divided into two regions with different layups which are joined together. The predicted inter laminar stress distributions at the ply interfaces are shown to be in good agreement with comparative three-dimensional finite element analysis.

2.5 Summary:

The literature review is carried out in this chapter. A lot of research has been done on composite box beams, both experimentally and numerically and analytically. The literature study is done in four section mentioned above. Most of the numerical studies are carried out on composite material or beams. By taking the references of it; I have carried out the experimentations on composite box beam.

Chapter 3

Design and Fabrication of Composite Blade

3.1 Details of Composite Blade:

For manufacturing of composite blade some design parameters are required. The 3D drawing of blade, its dimensions, and material properties is given below.

Table 3.1 Dimensions of composite blade

Parameters	Dimensions (mm)
Length	800
Width	60
Height	22
Thickness	4

With the help of above mentioned dimensions, 3D drawing is created in the AutoCAD. The lay-up sequence of composite blade is [0₃/90]s - 8 Layer.

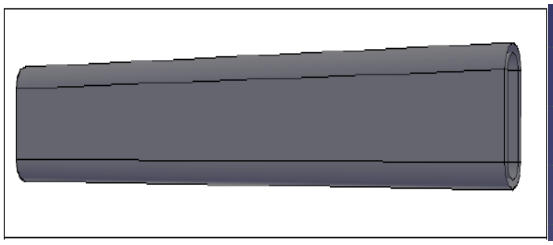


Figure 3.1 3D drawing of composite blade

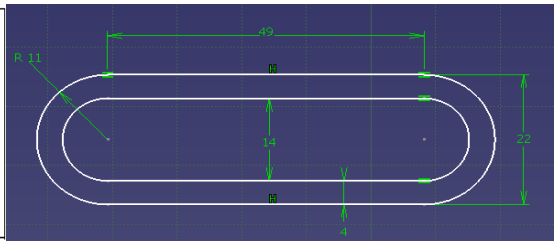


Figure 3.2 Front view of composite blade

The material properties of carbon fiber composite blade used for experimental and theoretical analysis are given below. Also material used for blade and lay up sequence of geometry is given. Same properties are used during numerical study or simulation of composite blade.

3.1.1 Material:

- Carbon Fibre Unidirectional Fabric
- 6 KUD Fabric – 360 GSM

3.1.2 Layup Sequence:

- 0-0-90-0-0-90-0-0 - 8 Layer Geometry

3.1.3 Material Properties:

Table 3.2 Material Properties of Composite blade

Material Properties	Carbon Fibre Unidirectional
Young's Modulus	135 Gpa (Ex Dir.)
	10 Gpa (Ey Dir.)
	10 Gpa (Ez Dir.)
Poisson's Ratio	0.26
Mod. of Rigidity	5 Gpa
Density	1600 kg/m^3

3.2 Fabrication of composite blade

Composite materials are formed by combining two or more materials that have quite different properties. The different materials work together to give the composite unique properties, but within the composite you can easily tell the different materials apart – they do not dissolve or blend into each other. Most composites are made up of just two materials. One material (the matrix or binder) surrounds and binds together a cluster of fibers or fragments of a much stronger material (the reinforcement).

3.2.1 Choosing materials for the reinforcement:

The composite blade used in the experimentation is having the **carbon fiber as reinforcement.** Although glass fibers are by far the most common reinforcement, many advanced composites now use fine fibers of pure carbon. Carbon fibers are much stronger than glass fibers, but are also more expensive to produce. Carbon fiber composites are light as well as strong. They are used in aircraft structures and in sporting goods (such as golf clubs), and increasingly are used instead of metals to repair or replace damaged bones. Carbon Fibre, Standard grade carbon fiber (T300, HTA, etc) have mechanical properties without resin of approx. 3-3.5 GPa tensile strength and 230 - 240 GPa Tensile modulus, is used for the manufacturing purpose.

3.2.2 Choosing materials for the matrix

For the matrix, many modern composites use thermosetting or thermo softening plastics (also called resins). (The use of plastics in the matrix explains the name 'reinforced plastics' commonly given to composites). The plastics are polymers that hold the reinforcement together and help to determine the physical properties of the

end product. Two main kinds of polymers are thermosets and thermoplastics. Thermosets have qualities such as a well-bonded three-dimensional molecular structure after curing. They decompose instead of melting on hardening. For the fabrication of the carbon fiber composite box beam used in the experimentation **Epoxy is used as a matrix** which is type of thermosets polymer. Epoxy resins are widely used in filament-wound composites and are suitable for moulding prepress. They are reasonably stable to chemical attacks and are excellent adherents having slow shrinkage during curing and no emission of volatile gases. These advantages, however, make the use of epoxies rather expensive.

Following table shows the material properties of the carbon fiber epoxy resin used for the fabrication of the composite box beam.

Table 3.3 Details of T300/5208 Carbon/Epoxy Unidirectional

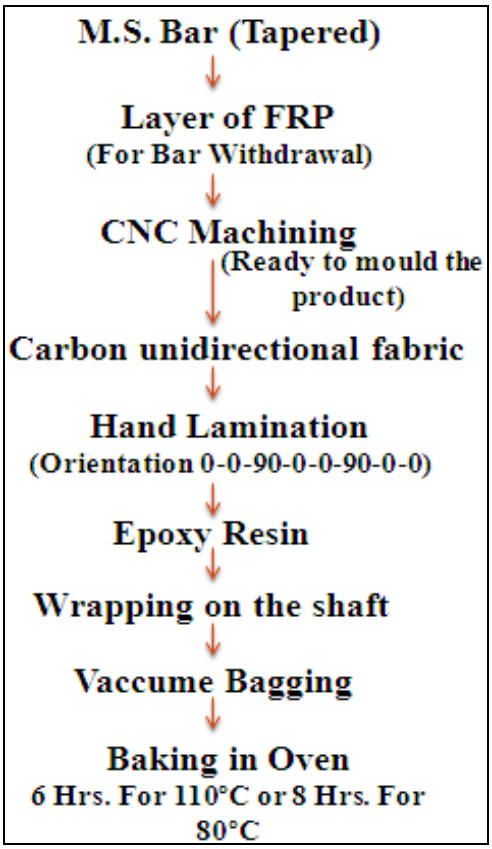
Fiber	Matrix	Form	V_f	Rho(g/cc)	Temp(^{0}C)	Cond.
T300 Carbon	5208 Epoxy	UD	0.70	1.60	22.2	Dry

3.2.3 Choosing the manufacturing process:

Making an object from a composite material usually involves some form of mould. The reinforcing material is first placed in the mould and then semi-liquid material is sprayed or pumped in to form the object. Pressure may be applied to force out any air bubbles, and the mould is then heated to make the matrix set solid.

a) Vacuum Bag Molding:

Today bag molded (vacuum and pressure) composites provide higher performance that results from optimization of process controls, design refinements and improved materials. Vacuum bagging techniques have been developed for fabricating a variety of aerospace components and structures. The process is principally suited to prepreg materials. This method utilizes a flexible film or rubber bag that covers the part layup. The bag permits evacuation of the air to apply atmospheric pressure. The primary limitation of this method is the limited pressure that can be applied. The fabrication process of composite box beam is given below in detail.

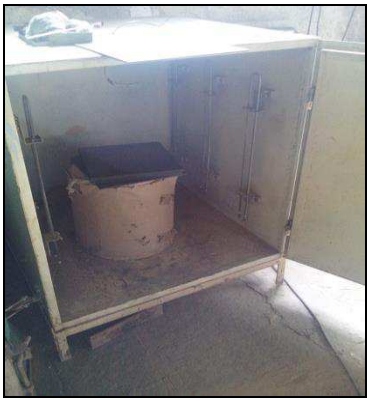


Carbon Fibre

CNC Machining

Hand Lamination

Vaccume Bagging



Baking Oven

Figure 3.3 Fabrication process of composite blade

3.3 Summary:

In this study the composite blade is used for analysis in different conditions. The details of blade are explained in this chapter. Dimensions, material used for particular beam, its layup sequence, and material properties are also given in detail. Then, the fabrication process of composite material is also explained in detail with experimental setups. The Vaccume Bagging is one the process which is mostly used for composite blade fabrication.

Chapter 4

Experimental Analysis of Composite Blade in Static Condition

In this study static analysis is carried out for composite blade to find out the tip defection of the blade by applying load at its free end. For that blade is fixed like a cantilever beam. For applying the load at free end, we have used the different weights (10N to 80N). This particular study has carried out to find the material uncertainty present in material or in beam. The experimental study has carried for deflection The details of this entire are discussed below. [5]

4.1 Experimental Study for Deflection measurement of blade:

The experimental study is carried out for composite blade to measure it's deflection at free end. The composite blade is like a cantilever beam, where one end is fixed and at the other end load is applied. Due to this load deflection is take place at free end of beam. This parameter is used to find the material uncertainty present in material or in beam. In previous study deflection is calculated using Dial Gauge. The dial gauge is placed at bottom side of beam by making it's stylus in point contact with blade and will shows zero reading. If load is applied at free end of the beam will move in downward direction. Due to point contact of beam with stylus it also moves and shows some reading. The change in reading is directly taken as deflection of blade in mm or cm. But due to some contact between them will create instrumental errors during measurement.

To avoid this situation non contact device is developed called as Hall Effect Sensor. The Hall Effect sensor is electronic device which is works on electromagnetic field. If magnet is come in front of Hall Effect sensor it create magnetic field between them. If magnet will moves away from it change in voltage will take place due to change in distance between them. The change in voltage is calibrated in terms of deflection of blade. Therefore, in this study magnet is stick on blade at its free end and Hall Effect sensor is mount on its top side by keeping some distance between them i.e. 1 to 2 mm. The output of this sensor is to another electronic device named as Arduino (Uno) will give required output only.

The details of this two devices and its operation for our study is discussed below along with its setup for different loading conditions. The Experimental setup for deflection of blade at free end is show below.

Figure 4.1 Experimental setups for Deflection measurement of blade using Hall Effect sensor

4.1.1 Introduction to Hall Effect Sensor:

The Hall Effect is an ideal sensing technology. The Hall element is constructed from a thin sheet of conductive material with output connections perpendicular to the direction of current flow. When subjected to a magnetic field, it responds with an output voltage proportional to the magnetic field strength. The voltage output is very small (μV) and requires additional electronics to achieve useful voltage levels. When the Hall element is combined with the associated electronics, it forms a Hall Effect sensor.

Although the Hall Effect sensor is a magnetic field sensor, it can be used as the principle component in many other types of sensing devices (current, temperature, pressure, position, etc.). Hall Effect sensors can be applied in many types of sensing devices. If the quantity (parameter) to be sensed incorporates or can incorporate a magnetic field, a Hall sensor will perform the task. Figure 2 shows a block diagram of a sensing device that uses the Hall Effect. In this generalized sensing device, the Hall sensor senses the field produced by the magnetic system. The magnetic system responds to the physical quantity to be sensed (temperature, pressure, position, etc.) through the input interface. The output interface converts the electrical signal from the Hall sensor to a signal that meets the requirements of the application.

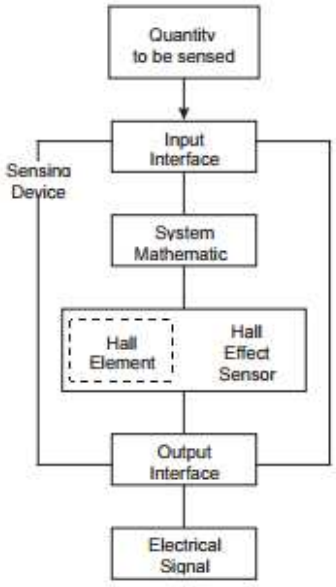


Figure 4.2 General sensor based on the Hall Effect

4.1.2 Why use the Hall Effect?

The reasons for using a particular technology or sensor vary according to the application. Cost, performance and availability are always considerations.

General features of Hall Effect based sensing devices are:

- True solid state
- Long life
- High speed operation - over 100 kHz possible
- Operates with stationary input (zero speed)
- No moving parts
- Logic compatible input and output
- Highly repeatable operation

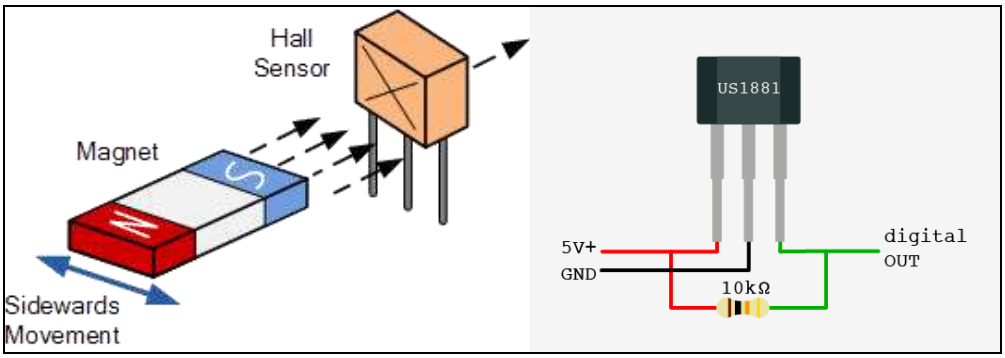


Figure 4.3 Principle of Hall Effect Sensor

4.1.3 Introduction to Arduino:

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board – you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.

The Uno is one of the more popular boards in the Arduino family and a great choice for beginners. We use the Arduino Uno for our study and the configuration of it as shown in figure below.

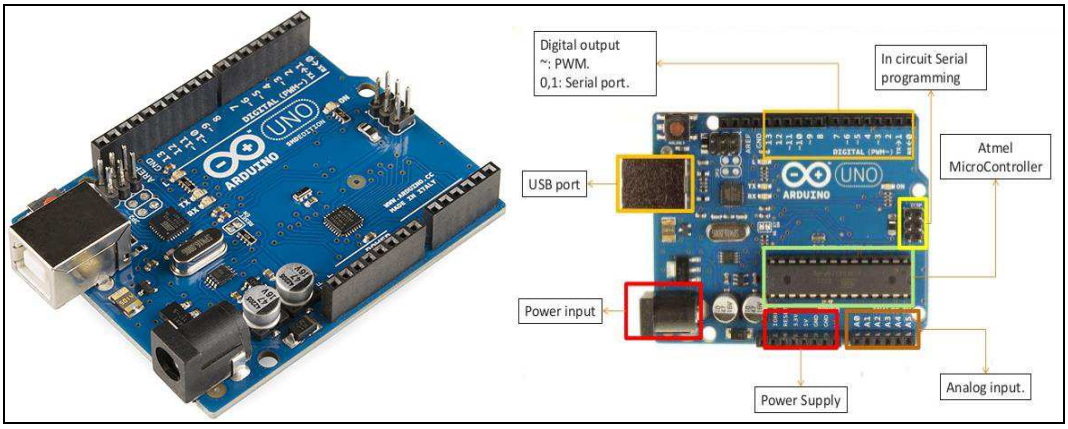


Figure 4.4 Arduino UNO with connections

Some of the key features of the Arduino Uno include:

- An open source design. The advantage of it being open source is that it has a large community of people using and troubleshooting it.
- Very convenient power management and built-in voltage regulation. You can connect an external power source of up to 12v and it will regulate it to both 5v and 3.3v. It also can be powered directly off of a USB port without any external power.
- And last, but not least, a button to reset the program on the chip.

4.1.4 Experimental Results for different loads:

The experimental results are carried out for deflection of blade at free end for different loads using Hall Effect sensor. The same study is carried out for four composite blade to find material uncertainty present in material using deflection parameter. The experimental setup for this study is shown by figure. Hall Effect sensor will give maximum voltage up to 220 volt, if distance between sensor and magnet is up to 6 mm. Initially, I put 1 mm distance between sensor and magnet then it shows some constant voltage i.e. 460-465 volt and it is assumed as zero. When 10 N load is applied at free end of the blade distance between them is increases and voltage is varied from 464 volt to 480 volt is shown by the graphs and voltage difference is 16 volt after loading. The change in voltage difference is calibrated in terms of deflection of blade. The same process is carried out for other loads (20N to 80N) and its voltage differences are calculated using graphs to find deflection of blade.

Figure 4.5 Composite box blade in unloading and loading condition

If blade is deflected up to 6 mm from its initial position then 220 volt maximum voltage is generated. For 10 N load 16 v voltage generated and using that voltage I have required to calculate how much blade is deflected for that particular load? The same process has carried on four blade. The sample calculations of first blade for 10 N and 20 N loads are given below.

1) **Sample calculation for 10 N:**

$$\frac{6\text{ mm}}{220\text{ V}} = \frac{\delta}{16\text{ V}}$$

Therefore,

$$\delta = 0.43\text{ mm}$$

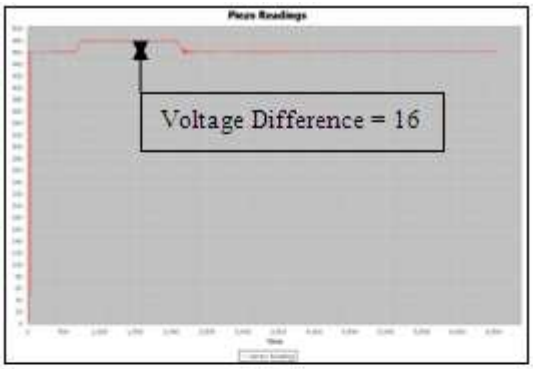
2) Sample calculation for 20 N:

$$\frac{6\text{ mm}}{220\text{ V}} = \frac{\delta}{25\text{ V}}$$

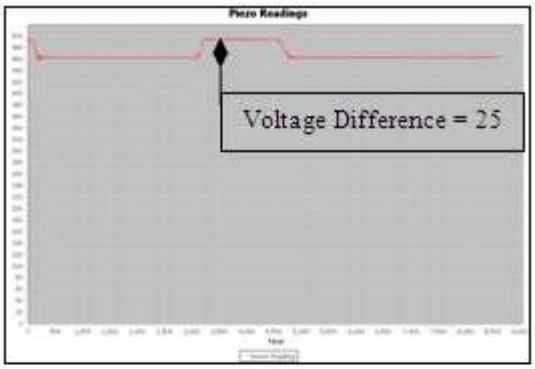
Therefore,

$$\delta = 0.68\text{ mm}$$

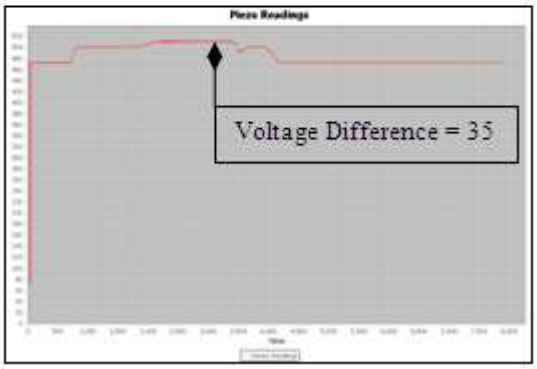
By the same process deflection is found out for other loads and remaining three blade. The voltage difference in initial and final reading for different loads is shown by following graphs. The following graphs are generated during the experimentation of first blade. The same voltage differences are calculated for remaining three blade by generating the same graphs to find its deflection for different loads.



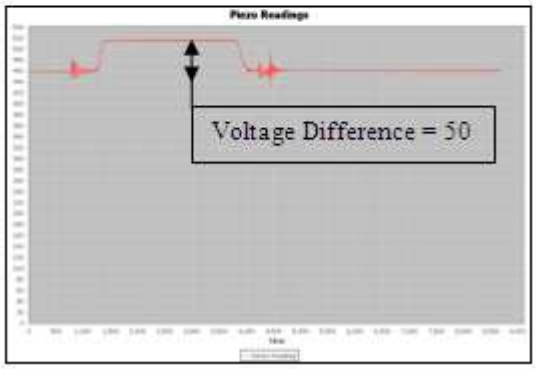
10 N



20 N



30 N



40 N

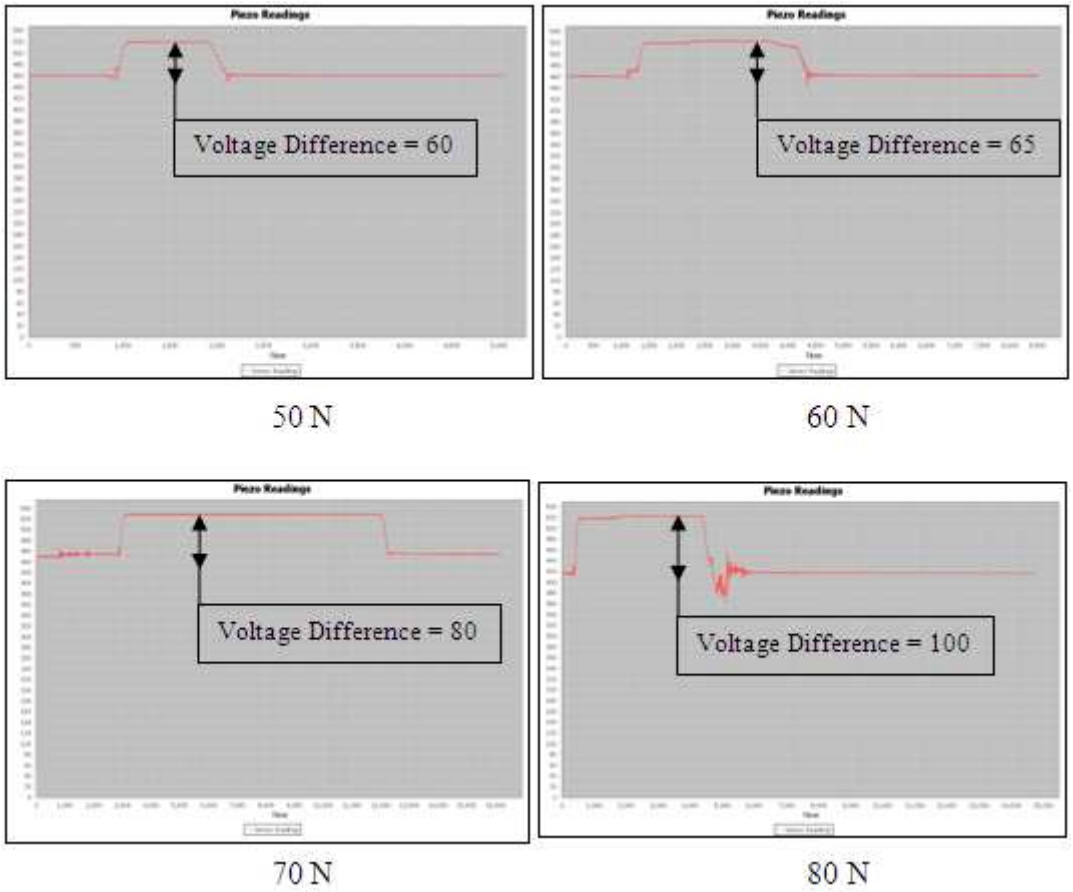


Figure 4.6 Voltage difference in initial and final reading of first blade for different loads

Following table represents voltage difference of four composite blade along with its free end deflection for different loads.

Table 4.1 Experimental Deflection of four blade with voltage differences for different loads

Sr. No.	Load (N)	Voltage difference between Initial & Final Reading				Experimental Deflection (mm)			
		Beam 1	Beam 2	Beam 3	Beam 4	Beam 1	Beam 2	Beam 3	Beam 4
1.	10	16	15	16	14	0.43	0.40	0.43	0.38
2.	20	25	25	23	27	0.68	0.68	0.62	0.73
3.	30	35	37	35	36	0.95	1.00	0.95	0.98
4.	40	50	48	51	50	1.36	1.30	1.39	1.36
5.	50	60	61	62	58	1.63	1.66	1.69	1.58
6.	60	65	65	63	62	1.77	1.77	1.71	1.69
7.	70	80	81	79	82	2.18	2.20	2.15	2.23
8.	80	100	102	102	98	2.72	2.78	2.78	2.67

The experimental results of deflection of four blade for different loads are also shown by following graph. The deflection is gradually increased with increasing load.

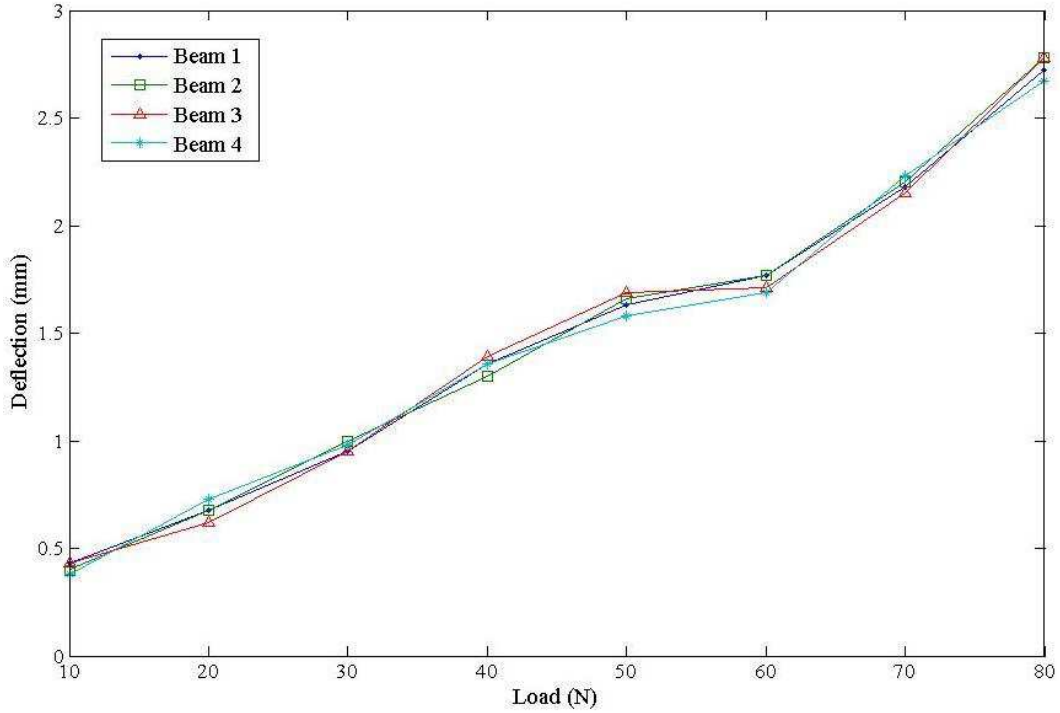


Figure 4.7 Graph of Load Vs Deflections for Four composite blades

Chapter 5

Experimental study on the Behavior of Rotating Composite Blade in Undamaged and Damaged Condition

5.1 Overview:

The experimental analysis is carried out on undamaged and damaged composite blade in rotating condition for different rpm. The Vertical Load Balancing Machine is used for this study. The detail specifications of that machine are given below. Also the Telemetry Strain Data Acquisition System is used for strain data transformation which is wireless device mounted on balancing machine. Initially, experimental results are found for undamaged blade for different rpm at different locations like near root, at mid and at tip. Then blade is damaged near root, at mid and at tip by producing cracks. The experimental results are represented in graphical form to analyze the behavior at different locations. Finally, results are compared for undamaged and damaged blade for different rpm. [36] [37]

5.2 Experimental Study:

The experimental setup for rotating condition analysis of composite blade is shown below. The balancing machine is fixed at location, the composite blade are mounted on balancing plate which is rotating for different rpm on which strain data acquisition system is also mounted. The detailed specifications of the instruments used for analysis are given below.

Figure 5.1 Experimental setup for Rotating Analysis of Composite Blade

5.2.1 Specifications of Vertical Load Balancing Machine:

Figure 5.2 Balancing Machine with control panel

- Max Weight of Rotor: 30kg
- Max Diameter of Rotor: 1.5m
- Speed of Rotor: 300 rpm to 1000 rpm variable speed
- Digital control system
- Computerized control panel for measurement of angle and unbalanced mass

5.3 Free Vibration Analysis of Rotating Composite Blade using GY-521 Accelerometer:

This study deals with free vibration analysis of composite blade which is rotating at different rpm. The analysis has carried out by considering the accelerations as output parameters. The experimental has designed and developed to carry out analysis on rotating blade. Also for accelerations measurement the setup is developed using GY-521 Accelerometer and Arduino. In this analysis the accelerometer has kept on composite blade and rotates it for different rpm. During rotating condition accelerations are taken in three directions (i.e. X, Y and Z) for each rpm using that proposed setup and are represented in graphical form to analyze free vibrations for rotating blade by estimating the accelerations.

This particular analysis has carried out on both undamaged and damaged condition of composite blade. Initially, experimentation has carried out in undamaged

condition of blade and after that blade is damaged by producing crack at different locations like near root, at mid and at tip. Then same experimentation has carried out on damaged beam. Then both acceleration results are represented in graphical form to analyze the effect of damage on accelerations of rotating blade for different rpm. Also this study is useful to analyze the behavior of rotating blade in undamaged and damaged condition using the same parameter. The experimental setup for the above study is shown by following figures.

5.4 Experimental setup for Acceleration measurement:

The experimental setup for acceleration measurement in rotating condition is shown below. During analysis blade is mounted on rotating disk then the accelerometer (GY-521) in mounted on free end of rotating blade and is connected with Arduion setup which is also fixed on rotating disk. The blade is rotating for different rpm (100 rpm to 500 rpm) and acceleration are measured to this rpm's. By using this particular setup both undamaged and damaged analysis has carried on composite blade.

Figure 5.3 Experimental setup for acceleration in rotating composite blade using GY-521 Accelerometer

5.4.1 Accelerometer GY-521:

In this analysis we have developed one accelerometer using GY-521 and Arduion setup for measurement of accelerations in rotating condition. The Gy-521 is

mounted on rotating blade at its free end as shown in figure below and connected with wires to Arduion. It will take 5 volt supply from Arduion.

In rotating condition the GY-521 will capture the accelerations in three direction and this all analog data to Arduion then Arduion will convert that data in digital data and stored it in SD card.

Figure 5.4 Accelerometer GY-521 mounting on free end of composite blade

5.4.2 Arduino Setup:

The Arduion setup connected with accelerometer is shown by following figure. In this setup the battery (5 Volt) is used to give the supply to Arduion and one SD card setup is also connected with it. The Arduion will receive the data from GY-521 and stores it in SD card in digital form from which further graphs are drawn.

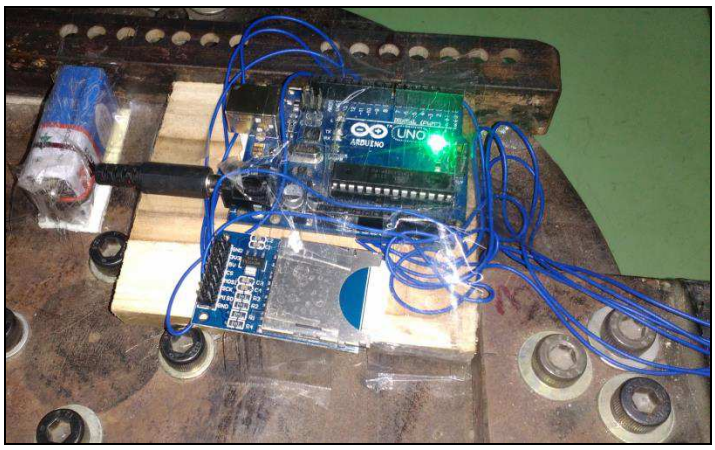


Figure 5.5 Arduino setup connected with GY-521 Accelerometer

5.5 Acceleration in rotating composite blade for different rpm in different directions:

The experimentation has carried out on rotating composite blade to measure the accelerations for the different rpm. In this analysis we have developed the accelerometer using GY-521 and Arduino setup. The experimental setup for this particular study is shown by the above figures. The blade mounted on rotating disk and rotating it for different rpm and using that proposed setup the accelerations are measured. Here we required to find the accelerations of rotating blade in terms of g value because direct reading of sensor are not considered as accelerations, we want make some conversions or calculations to obtain requires results only. The values obtained from the GY-521 accelerometer or raw values are used to find the ax, ay, az in terms of g value. For our GY-521, acceleration seems to be in limit of 2g. So, scaling factor = 16384. The scaling factor is depends on acceleration limit. The following table shows the scaling factors for acceleration limit as per standards available.

Table 5.1 Scaling factors for accelerometer values

Acceleration Limit	Sensitivity or Scaling factor
2g	16384
3g	8192
4g	4096
5g	2048

Converting the raw data:

$$\text{Required value or } (ax, ay, az) = \frac{\text{raw value}}{\text{Sensivity or Scaling factor}} \text{ (in g value)}$$

For example, in the first data, we got,

accel x, y, z: -31203, -1850, -3428

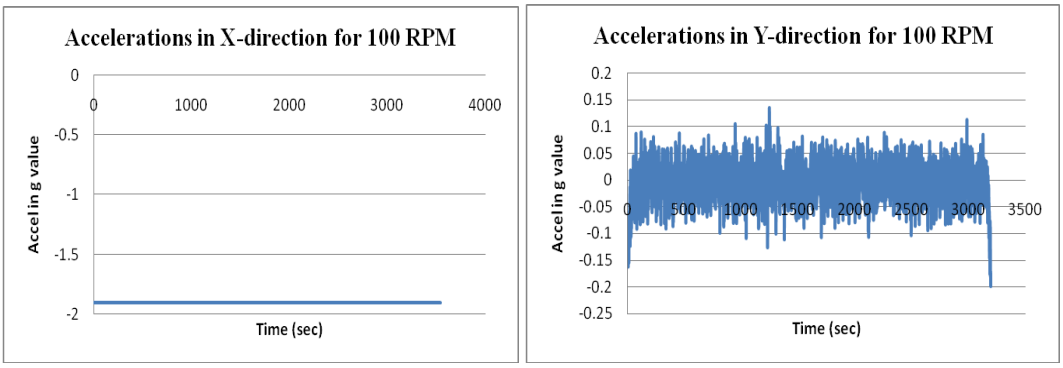
Therefore, from the formula the accelerations are found out by the following way:

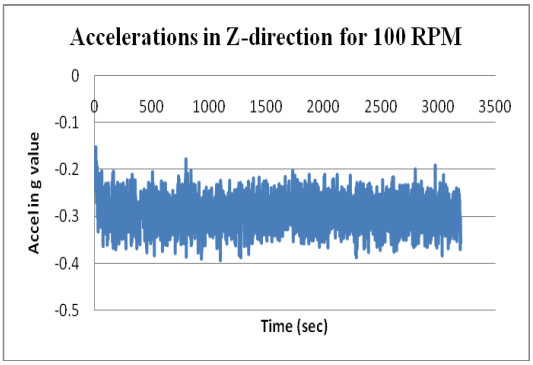
$$ax = \frac{-31203}{16384}g \qquad ay = \frac{-1850}{16384}g \qquad az = \frac{-3428}{16384}g$$

5.5.1 Accelerations in undamaged rotating composite blade for different rpm:

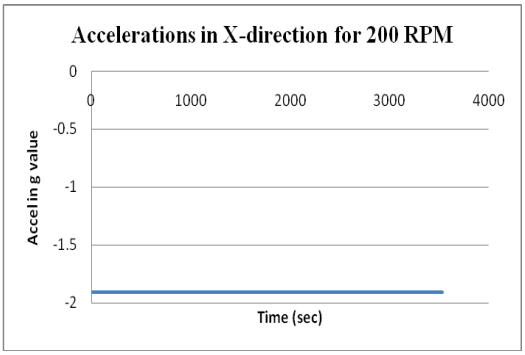
Initially, the experimentation has carried out on undamaged blade for different rpm. During the experimentation we got some raw data in three directions. Hence by using the above formula and scaling factor here we have calculated the accelerations in terms of g value. The graphical results for accelerations in terms of g value for different rpm are shown by the following graphs.

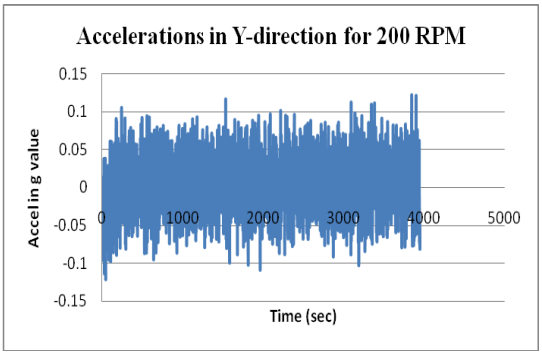
1. Accelerations for 100 rpm:

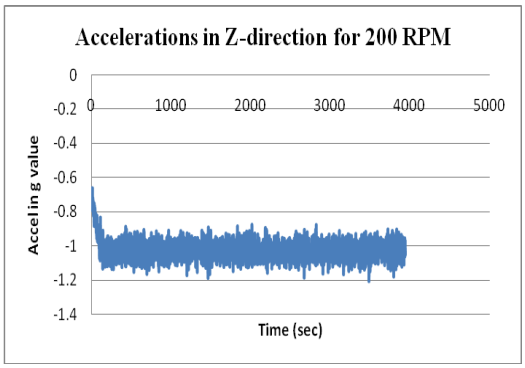




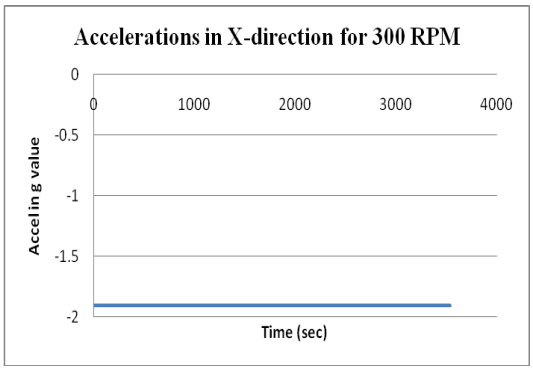
2. Accelerations for 200 rpm:

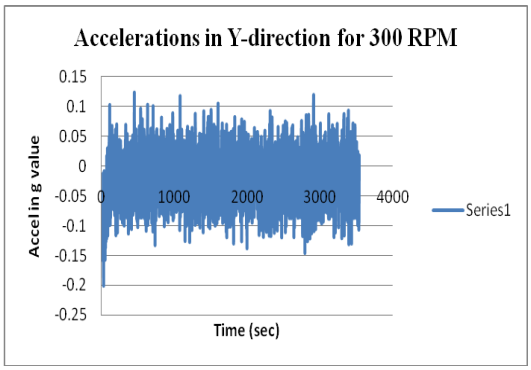


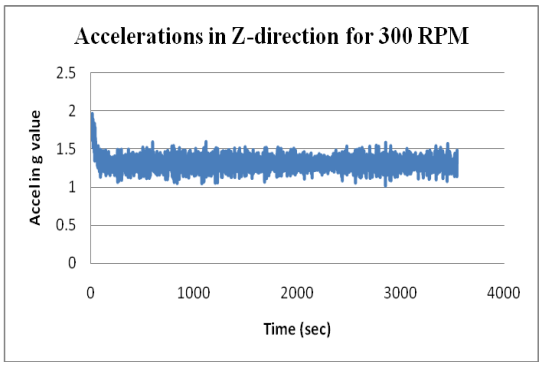




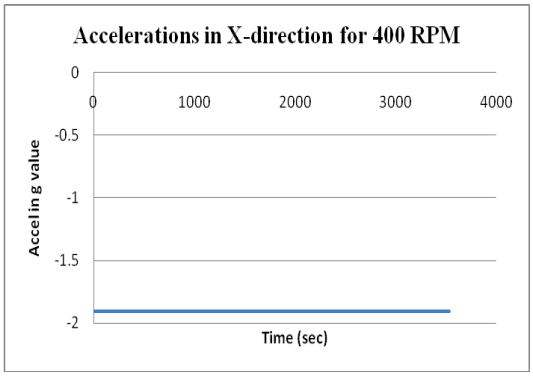
3. Accelerations for 300 rpm:

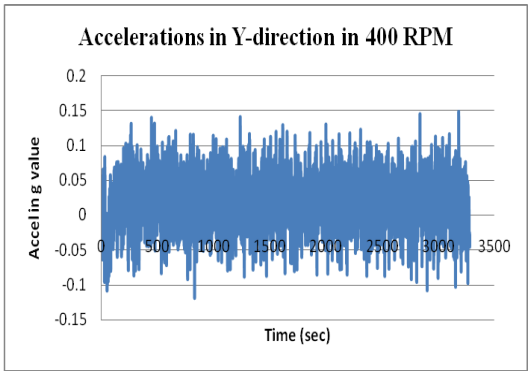


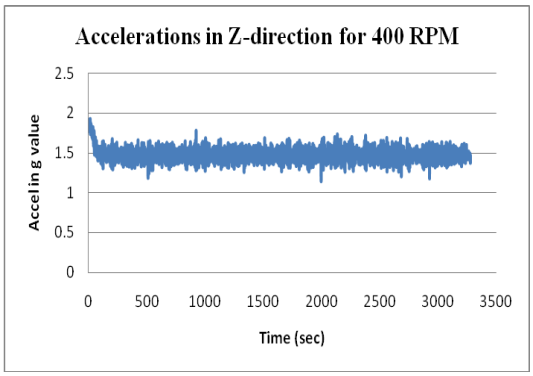




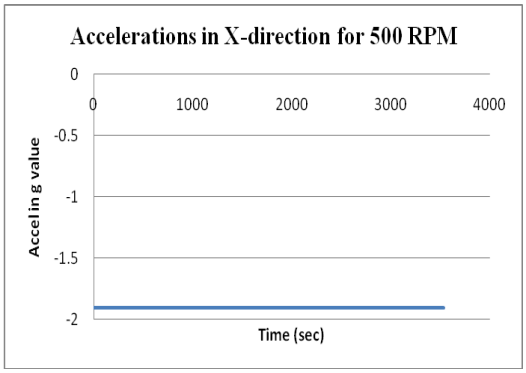
4. Accelerations for 400 rpm:

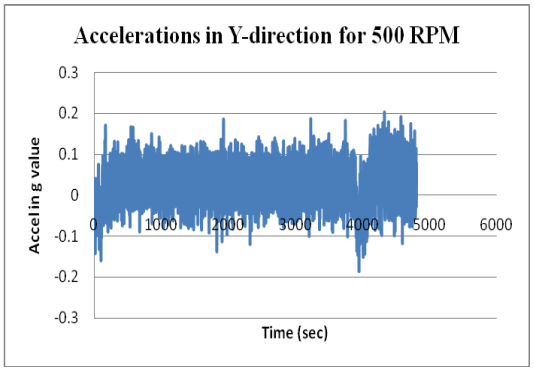






5. Accelerations for 500 rpm:





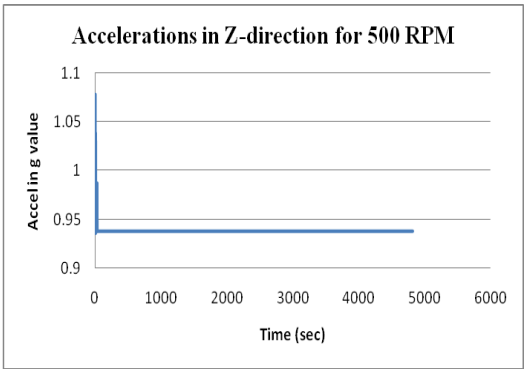


Figure 5.6 Accelerations in undamaged rotating composite blade for different rpm

The above graphical results are drawn for accelerations (in g value) in rotating composite blade for different rpm and in different directions (i.e. X, Y, and Z). The X direction represents axial direction, Y direction represents the horizontal rotating direction of beam and Z represents the vertical movement of blade in rotating condition. By making comparison between above results the following conclusions are drawn:

- If blade is rotating for some rpm then it has observed that there is zero acceleration in x-direction or in axial direction because the blade is rigid at

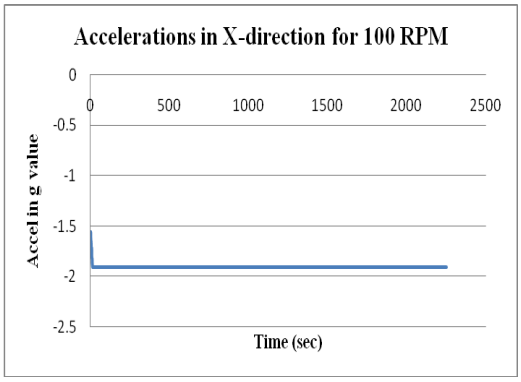
one direction so there is no any movement will take place in this direction. Also for all the remaining rpm (i.e. 100 to 500) same results are obtained in x-direction of rotating blade are shown by above figures.

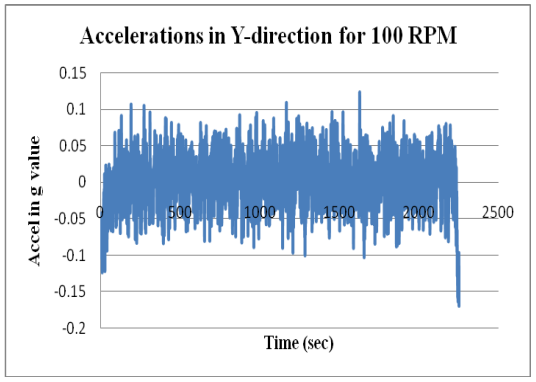
- From the above results in y-direction it has observed that the maximum accelerations are produced and they are continuously increases with increases with increase in rpm because in rotating condition of blade flapping will taking place in horizontal direction due to this flapping acceleration are produced in this direction. The accelerations are continuously produced in this direction for rotating beam. The results obtained during experimentation for the 100 to 500 rpm are represented by the figures.
- For rotating blade the vertical movement is also taking place and this is represented by z-direction. From the above results it is observed that up to certain rpm the accelerations are produced in z-direction due vertical movement of blade and after that there is no any acceleration in this direction after some rpm. From the above results we can say that for 100 to 400 rpm accelerations are produced in z-direction and if rpm is increases up to 500 rpm then zero acceleration are produced in blade because after some rpm the movement of blade will stopped in this direction.

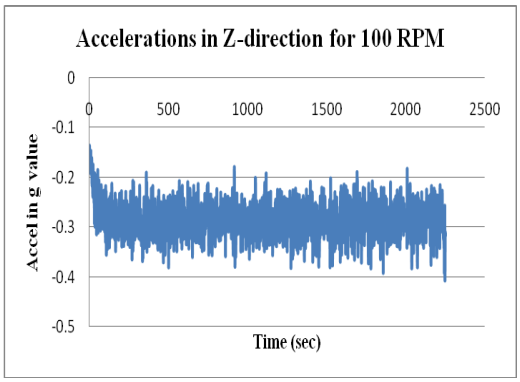
5.5.2 Accelerations in damaged rotating composite blade for different rpm:

The same experimentation has carried on undamaged to find the accelerations in rotating blade for different rpm. In this condition blade is damage at three locations by producing crack near root, at mid and at tip. The results are taken for different rpm and represented in graphical form in three directions such as X, Y, and Z.

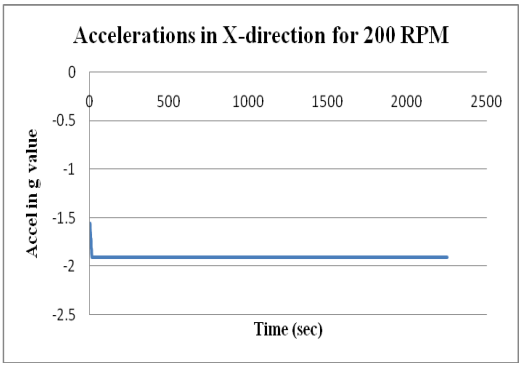
1. **Accelerations for 100 RPM:**

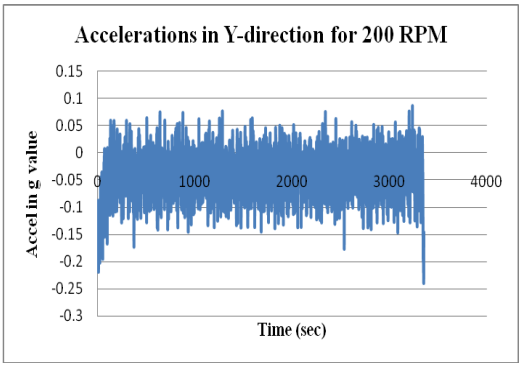


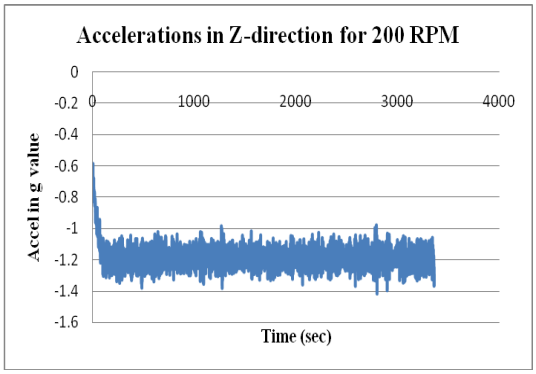




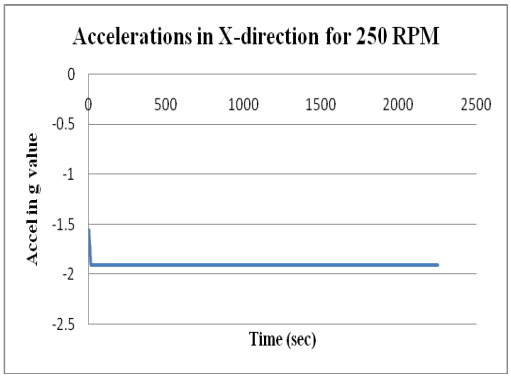
2. Accelerations for 200 RPM:

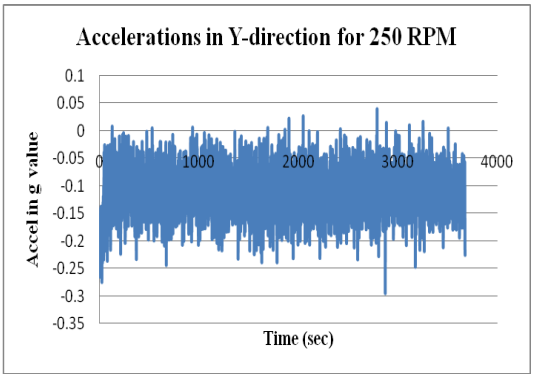


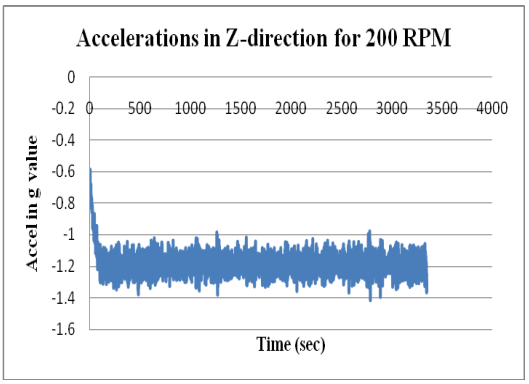




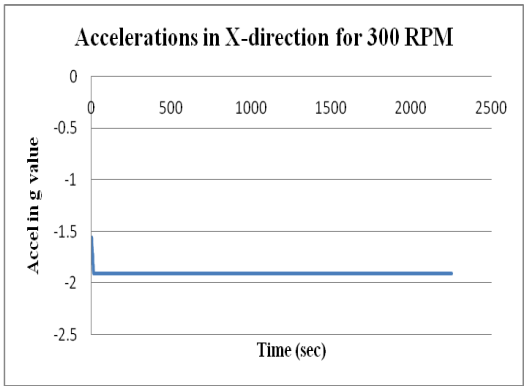
3. Accelerations for 250 RPM:

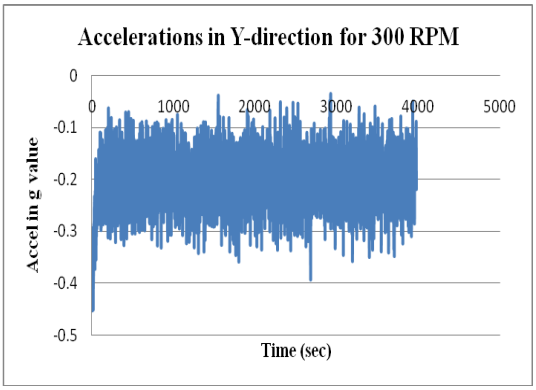


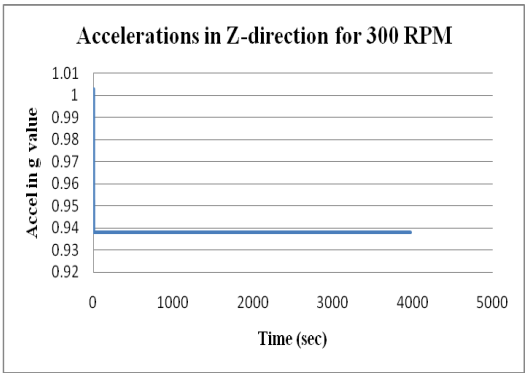




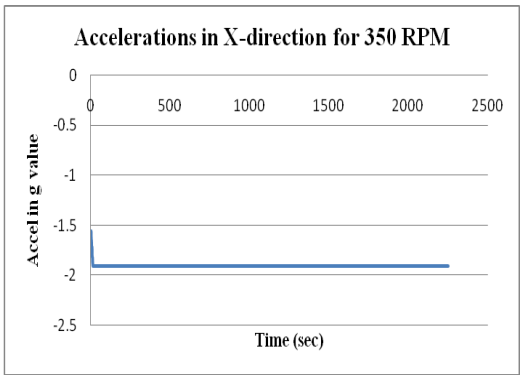
4. Accelerations for 300 RPM:

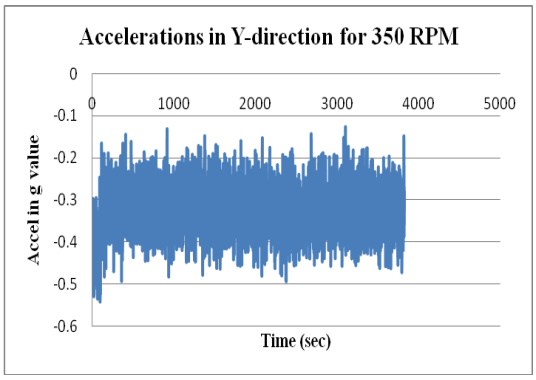


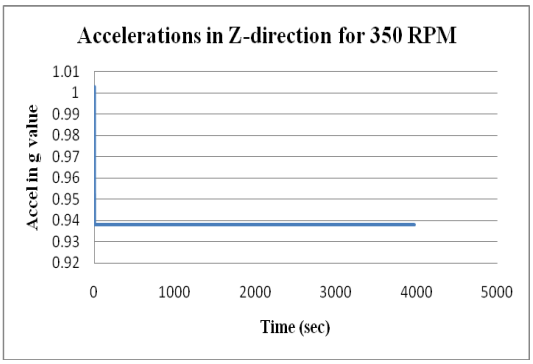




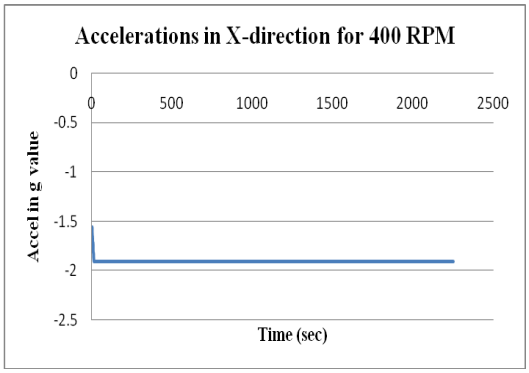
5. Accelerations for 350 RPM:

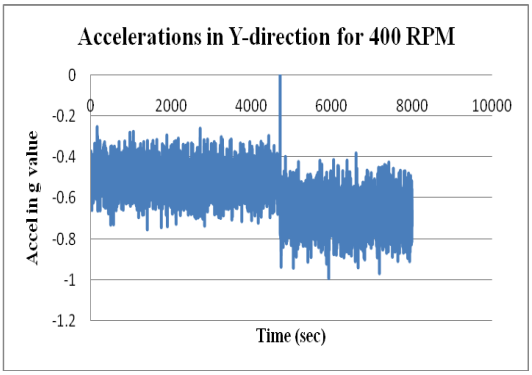


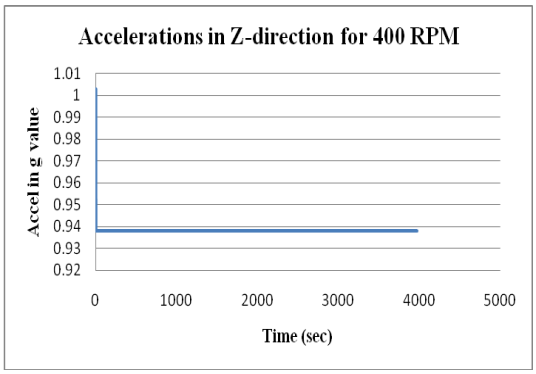




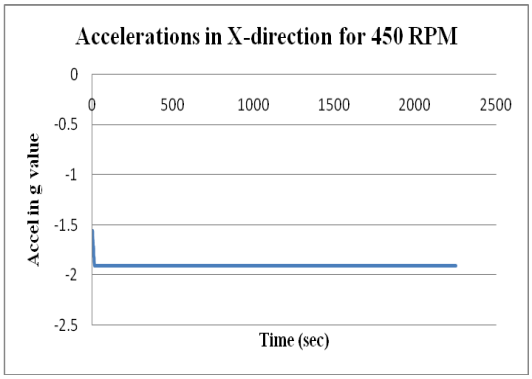
6. Accelerations for 400 RPM:

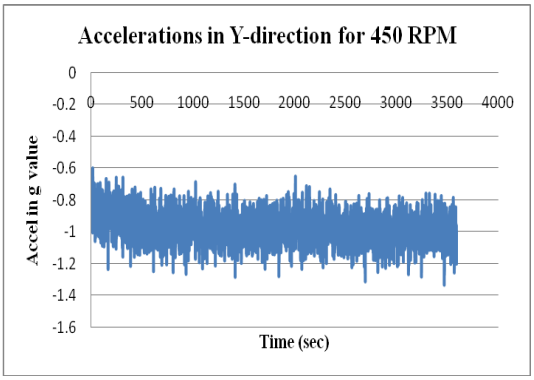


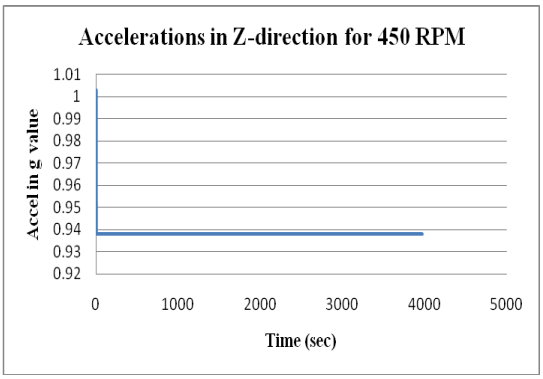




7. Accelerations for 450 RPM:







8. Accelerations for 500 RPM:

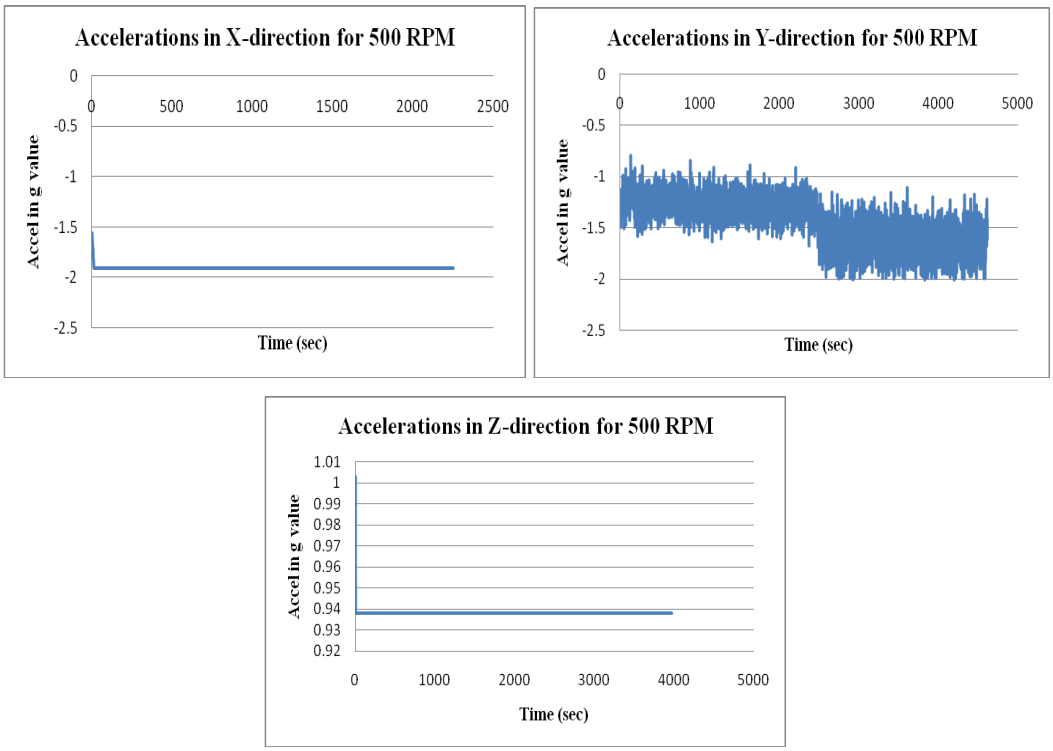


Figure 5.7 Accelerations in damaged rotating composite blade for different rpm

The above graphical results represent the accelerations in g value for damaged rotating composite blade for different rpm. From the above results the following conclusions are drawn:

- If damaged blade is rotating for some rpm the accelerations produced in it are same like accelerations in undamaged blade and it observed if both results are compared with each other for the particular rpm. There are no accelerations in X-direction.
- If rpm is increases continuously then system will get disturbed because maximum accelerations are produced in beam due to damaging of blade. The maximum changes are observed in accelerations for 350 to 450 rpm and it in the Y-direction only is shown by above graphs and in Z-direction the accelerations will remains constant after some rpm.
- The changes are observed for undamaged and damaged blade if all graphical results are compared with each other for this particular rpm.

From the above all results of undamaged and damaged blade it has that observed that maximum accelerations are produced in damaged blade. The maximum variations are

taking place in direction of Y. The following graphs represent the peak to peak variations for undamaged and damaged in Y and Z direction for the different rpm.

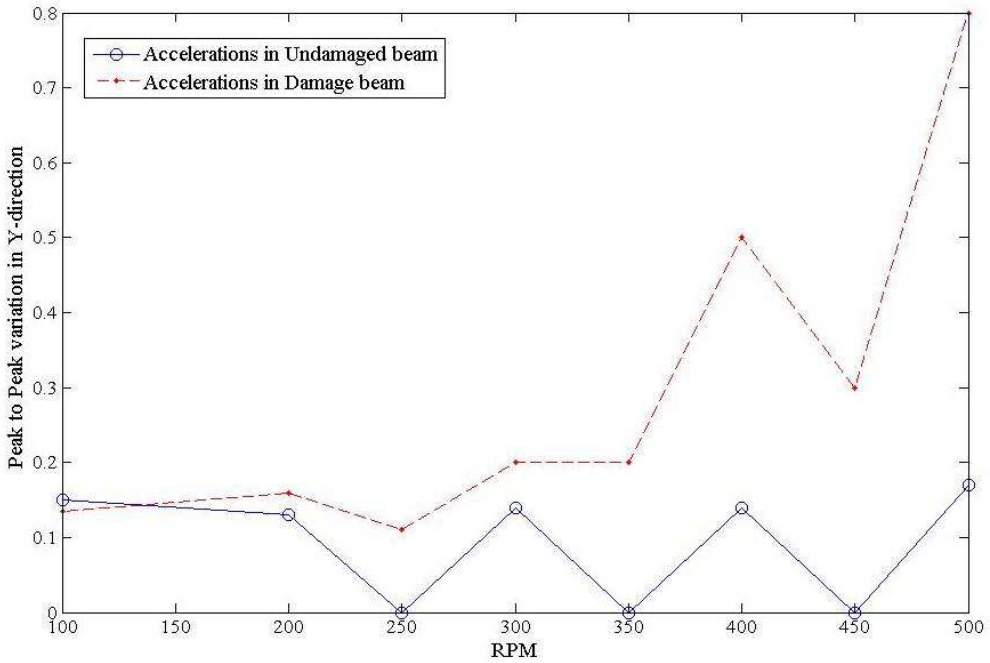


Figure 5.8 Graph of RPM Vs accelerations in undamaged and damaged beam for Y-direction

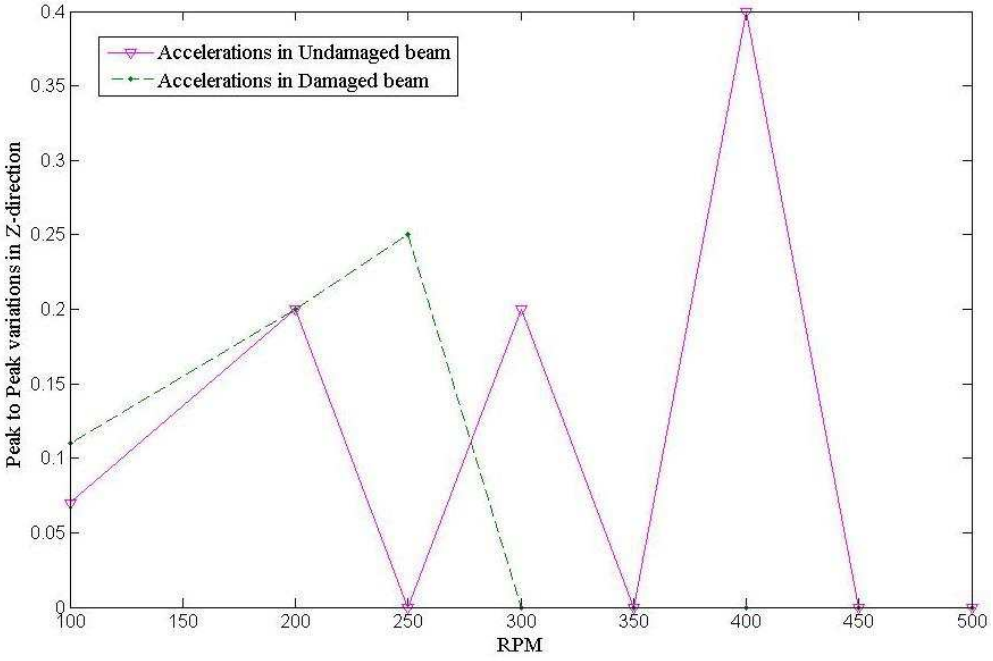


Figure 5.9 Graph of RPM Vs accelerations in undamaged and damaged blade for Z-direction

From the above graphs it is observed that peak to peak variation is maximum for damaged blade as compared to peak variation in undamaged blade for both Y and Z direction. The plane line indicates the accelerations for undamaged blade and dotted

line indicates the accelerations in damaged blade for different rpm. From this above graphs it has observed that the system (rotating system) will disturbed after damaging of blade because for damaged blade accelerations peaks are maximum as compared to undamaged blade in both Y and Z direction. There is no any acceleration in X-direction because the blade is rigid in this direction.

5.6 Summary:

In this chapter behavior of undamaged and damaged blade has analyzed for different rpm. Initially, experimentation has carried out on undamaged and damaged blade for different rpm to analyze its behavior at different locations. The experimental results are represented in graphical from to check the behavior of blade before damaging and after damaging at different locations. Then accelerations of rotating composite blade are analyzed using GY-521 and Arduion setup. The accelerations are calculated in terms of g value for both undamaged and damaged blade and finally results are represented in graphical form.

Chapter 6

Conclusion

Composite materials are widely used in the aircraft industries because of their superior fatigue characteristics and larger stiffness-to-weight ratios as compared with their metal counterparts. A composite material can be defined as a combination of two or more materials. In this thesis the static and dynamic analysis of composite blade has carried which is made up of unidirectional carbon fibers. Initially, static analysis is carried out on blade for the different parameters like deflection, stress and strain. Then dynamic analysis is carrying out on rotating beam to study its behaviour in undamaged and damaged condition for different rpm.

6.1 Conclusion:

Following conclusions are drawn from above study and work presented in this thesis:

- The experimentation has carried out on composite blade in static condition to find the deflection at its free end for different loads. It has been carrying out using Hall Effect Sensor which non contact device for deflection measurement. The deflection of blade at free end stress-strain values are increases continuously by increasing point load at its free end. This particular study was carrying out to find the uncertainties present in material by using deflection parameter and it is analyzed that there is no uncertainty present in material or in composite blades.

- In case of accelerations of rotating blade, the maximum accelerations are produced in damaged blade as compared undamaged blade. Due to this damaged blade the rotating system is disturbed at some particular rpm which is analyzed by the comparison between undamaged and damaged results.

6.2 Future work:

Future work can be focus on,

- There is wide scope to study the Natural Frequency of rotating composite blade for different RPM.
- The Fatigue Testing Analysis is also required to carry out on the rotating composite blade.

- Exploring use of PZT for acquiring signals for Structural Health Monitoring System.

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Appendix

Publication on Current Work:

1) Avinash K. Parkhe, Ranjit B. Kapurkar, Dr. Prashant M. Pawar, "Analytical and Numerical Analysis of Ovel Shaped Composite Beam", Paper in International COMSOL Conference, Oct-2015.

2) A. K. Parkhe, R. B. Kapurkar, Dr. P. M. Pawar, "Analytical and Numerical Analysis of Ovel Shaped Composite Beam", Poster in International COMSOL Conference, Oct-2015.

3) Avinash K. Parkhe, Pradip D. Haridas, R. B. Kapurkar, Dr. Prashant M. Pawar, "Experimental Study on Natural Frequency of Composite Box Beam for Multiple Cracks", International Journal of Research in Aeronautical and Mechanical Engineering (IJRAME), Vol-3, Issue-12, pp. 20-25, Dec-2015.

Static & Dynamic Research of Composite Blade using Condition Monitoring Method

Akshay A. Hake, Nagesh S. Ronge, Vijay A. Bhingare, Avinash K. Parkhe, Pradnya K. Bhuse, Sanjay N.

Abstract: ***The use of composite materials has been increased in different industries like civil, mechanical, aerospace engineering due to their better properties. The rotating blade plays an important role in engineering structures such as turbine blades, airplane propellers, and helicopter blades. This deals with static analysis of composite blade to estimate the material uncertainty by measuring the deflection. The composite blade is fixed like a cantilever beam. To measure this deflection the Hall Effect Sensor is developed which is non contact device works on magnetic field. If magnet is come in front of sensor it creates magnetic field between them and that change in voltage or field is calibrated in terms of deflection of blade. The same process is carried for all the blades to check their uncertainty present in it. Also, it is deals with the dynamic analysis of blade to check their behavior in the axis under rotating condition for different RPM. The acceleration is considered as performance parameter to check the behavior of blade. Also, the setup is developed for accelerations measurement GY-521 Accelerometer. The accelerometer has kept at free end of blade and accelerations are taken in three directions for each rpm and it is represented in a graphical form. The analysis is carryout for both damaged and undamaged blade. The both studies are carried out using condition monitoring approach to observe their behavior of blade in static & dynamic condition before used in any application.***

Keywords: Uncertainty, Hall Effect, Static, Dynamic, GY-521, Arduino, Accelerations.

I. INTRODUCTION

This deals with static analysis of composite blade to estimate the material uncertainty. The deflection is measured to check the uncertainties present in material. The composite blade is fixed like a cantilever beam. To this deflection the Hall Effect Sensor is developed which is non contact device works on magnetic field. If magnet is come in front of sensor it create magnetic field between them and that change in voltage or field is calibrated in terms of deflection of blade. The same process is carried for all the blades to check their uncertainty present in it. Also, it is deals with the dynamic analysis of blade to check their behavior in the axis under rotating condition for different RPM. The acceleration is considered as performance parameter to check the behavior of blade. Also, for accelerations measurement, the setup is developed using GY-521 Accelerometer and Arduino. The accelerometer has kept at free end of blade and rotates it for different rpm. During rotating condition accelerations are taken in three directions for each and results are represented in a graphical. This study is carried out for both damaged and undamaged using the same parameter. [1, 2, 3]

The researches have been conducted on composite blades. Ronge et al. presented experimental setup for damage identification of rotating blade for both damaged and undamaged using health monitoring approach. Kachareet. al represented the measurement of acceleration using dynamic setup. Kachareet. al presented theory of health monitoring of blade and parameters related to same. The proposed approach is further extended to study large deflection behavior of an initially curved cantilever beam subjected to distributed and combined load. These results are successfully validated with existing results for straight beams and some new results are furnished for initially curved cantilever beams. Mohammad Dado et al. studied the very large deflection behavior of prismatic and non-prismatic cantilever beams subjected to various types of loadings. The formulation is based on representing the angle of rotation of the beam by a polynomial on the position variable along the deflected beam axis. Beléndez, T. et al. presented the classical problem of deflection of a cantilever beam of linear elastic material, under the action of a uniformly distributed load along its length (its own weight) and an external vertical concentrated load at the free end, is experimentally and numerically analyzed. We present the differential equation governing the behavior of this system and show that this equation, although straightforward in appearance, is in fact rather difficult to solve due to the presence of a nonlinear term.

The both static and dynamic studies are carried out using condition monitoring approach to observe the behavior of blade before their use in any application.

II. INTRODUCTION COMPOSITE BLADE

The composite blade of uniform cross-section having dimension 800x60x22 mm. This is an eight layer sandwich composite blade.

Revised Version Manuscript Received on 10 September, 2019.

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Figure 1Composite blade

Material Properties:

Table1 Material Properties of Composite blade

Young's Modulus	Poisson's Ratio	Mod. of Rigidity	Density
135 Gpa (Ex Dir.) 10 Gpa (Ey Dir.) 10 Gpa (Ez Dir.)	0.26	5 Gpa	1600 kg/m3

III. STATIC ANALYSIS OF COMPOSITE BLADE

3.1 Hall Effect Sensor & Arduion (Uno):

The Hall Effect is an ideal sensing technology. The Hall element is constructed from a thin sheet of conductive material with output connections perpendicular to the direction of current flow. When subjected to a magnetic field, it responds with an output voltage proportional to the magnetic field strength. The voltage output is very small (μV) and requires additional electronics to achieve useful voltage levels. When the Hall element is combined with the associated electronics, it forms a Hall Effect sensor. The reasons for using a particular technology or sensor vary according to the application. Cost, performance and availability are always considerations.

Arduion is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (referred to as microcontroller) and a piece of software that runs on your computer, used to write and upload computer code to the physical board. We use the Arduino Uno for our study which is one of the more popular boards in the Arduino family and the configuration of it as shown in figure below.

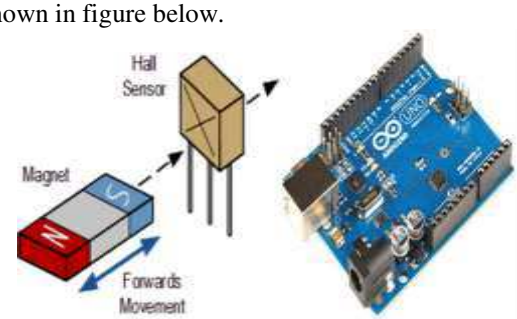


Figure 2 Hall Effect Sensor. Figure 3 Arduino Uno

3.2. Experimental Analysis:

Theexperimentation has carried on composite blade for by varying load at free end to find the deflection using Hall Effect sensor. The designed Hall Effect sensor will generate maximum voltage up to 220 volt, if distance between sensor and magnet is up to 6 mm. Initially, we put 1 to 2 mm distance between sensor and magnet then it shows some voltage will assumed as zero. When 10 N load is applied at free end of the bladethe voltage difference is generated between initial and final reading. The change in voltage difference is calibrated in terms of deflection of blade. The same process is carried out for other loads (20N to 80N) and its voltage differences are calculated using in graphical form which are generated during experimentation.

The experimental setup for the above proposed work and blade in loading and unloading conditionis shown by following figures.

Figure4Experimental setups using Hall Effect Sensor

Figure 5Composite blade in unloading and loading condition

During experimentation it has analyzed that for 10 N load 16 v voltage generated and by using this voltage we calculate the deflection of bladefor this particular load. The same process has carried on four blade. The sample calculations of first bladefor 10 N and 20 N loads are given below.

1) **Sample calculation for 10 N:**

$$\frac{6\ mm}{220\ V} = \frac{\delta}{16\ V}$$

Therefore, $\delta = 0.43$ mm

2) **Sample calculation for 20 N:**

$$\frac{6\ mm}{220\ V} \quad \frac{\delta}{25\ V}$$

Therefore, $\delta = 0.68$ mm

The voltage difference in initial and final reading for different loads is shown by following graphs. The following graphs are generated during the experimentation of first blade. The same voltage differences are calculated for remaining three blades by generating the same graphs to find its deflection for different loads.

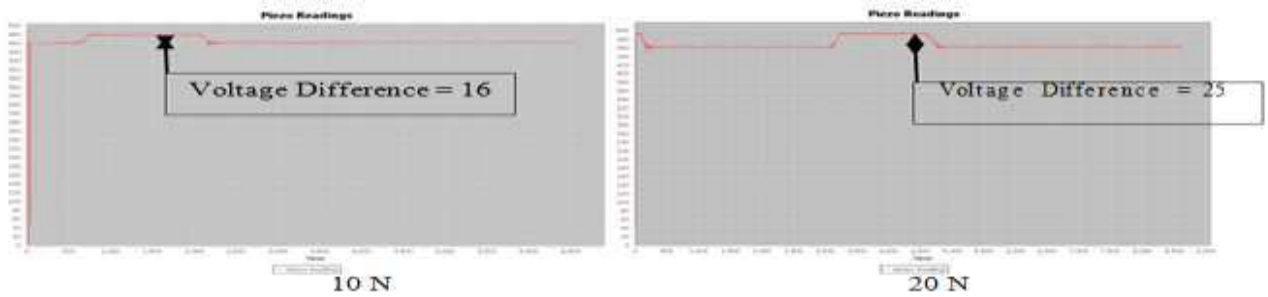


Figure 6Voltage difference in initial and final reading

Table 2 Deflection of composite blade

Sr. No.	Load (N)	Experimental Deflection (mm) Blade 1	Blade 2	Blade 3	Blade 4
1.	10	0.43	0.40	0.43	0.38
2.	20	0.68	0.68	0.62	0.73
3.	30	0.95	1.00	0.95	0.98
4.	40	1.36	1.30	1.39	1.36
5.	50	1.63	1.66	1.69	1.58
6.	60	1.77	1.77	1.71	1.69
7.	70	2.18	2.20	2.15	2.23
8.	80	2.72	2.78	2.78	2.67

Above table represents voltage difference of four composite blade along with its free end deflection for different loads.The experimental results for deflection of four blades for different loads are also shown by following graph.

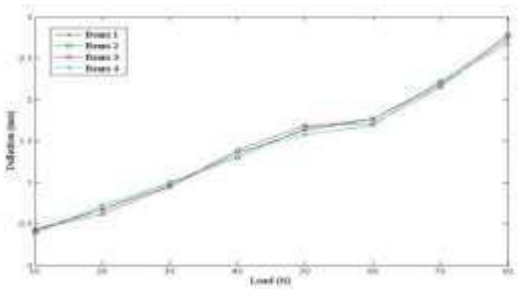


Figure 7 Load Vs Deflection

IV. DYNAMIC ANALYSIS OF COMPOSITE BLADE & RESULTS

4.1 EXPERIMENTAL SETUP FOR ACCELERATION MEASUREMENT:

The experimental setup for acceleration measurement has shown below. The accelerometer is mounted at free end of blade with arduino connection shown in figure below.

Figure 8 Experimental setup using GY-521 Accelerometer

The blade is mounted on rotating disk and rotating it for different rpm and using that proposed setup. Here we required to find the accelerations of the rotating beam in terms of g value because the direct reading of sensor is not considered as accelerations, we want to make some conversions or calculations to obtain necessary results only. The values obtained from the GY-521 accelerometer or raw values are used to find the ax, ay, az in terms of g value.. The scaling factor depends on the acceleration limit. Table 1 shows the scaling factors for acceleration limit as per standards available.

Table 3Accelerometer Scaling factors

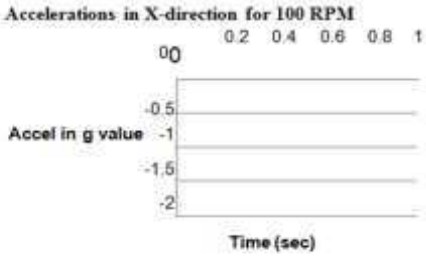
Acceleration Limit	Sensitivity or Scaling factor
2g	16384
3g	8192
4g	4096
5g	2048

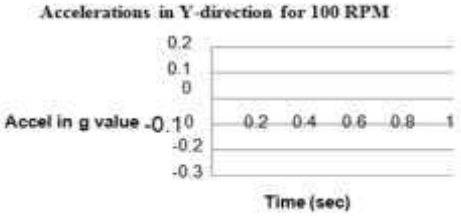
Converting the raw data:

$$\text{Required value } \forall (ax, ay, az) = \frac{\text{raw value}}{\text{Sensivity } \forall \text{ Scaling factor}} \quad (\text{i. g value})$$

4.2 ACCELERATIONS IN UNDAMAGED ROTATING COMPOSITE BLADE FOR DIFFERENT RPM:

In the first phase the study is carried out for undamaged blade by measuring the acceleration in the direction using the proposed setup. During the rotating condition the movement of blade is taking place in three directions and their results are represented in graphical form which is shown by following figures.





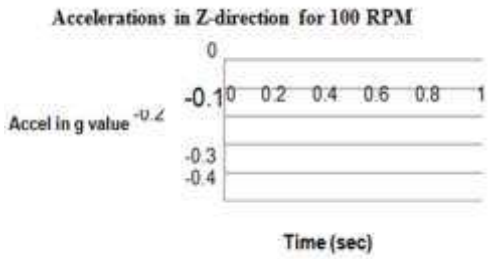


Figure 9Accelerations in undamaged blade (100 rpm)

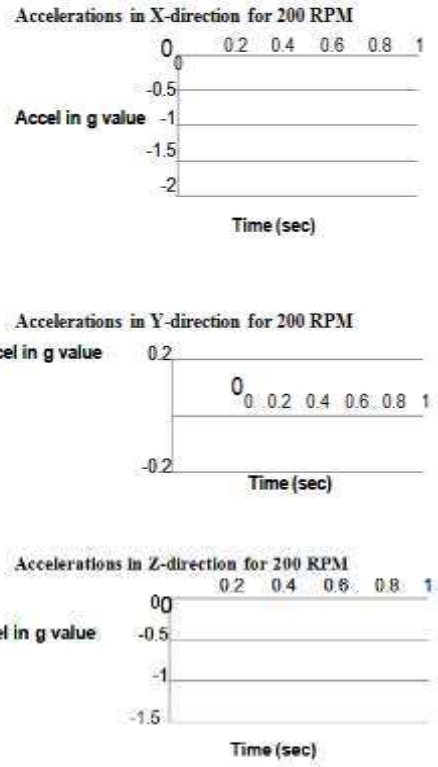


Figure 10 Accelerations in undamaged blade(200 rpm)

Figure 9 and 10 shows the accelerations (in g value) in a rotating composite box blade for different rpm. The X-direction represents axial direction, Y direction represents the horizontal rotating direction of blade and Z represents the vertical movement of the blade in rotating condition.

4.3 ACCELERATIONS IN DAMAGED ROTATING COMPOSITE BLADE FOR DIFFERENT RPM:

In the 2ndphase similar study is carried out for damaged blade using same process and setup and their results are again represented in following graphical form for different rpm.

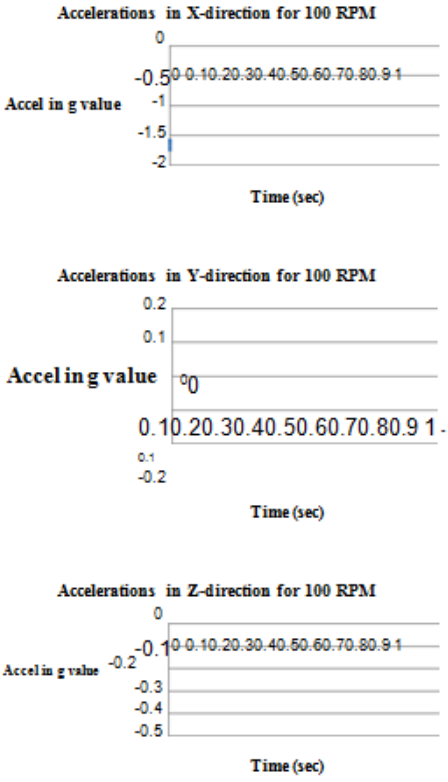


Figure 11Accelerations in damaged blade (100 rpm)

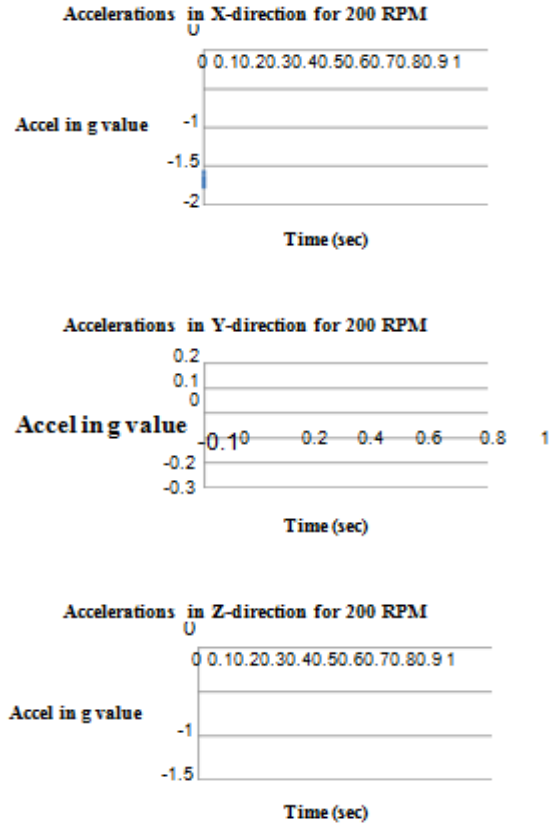


Figure 12 Accelerations in damaged blade (200 rpm)

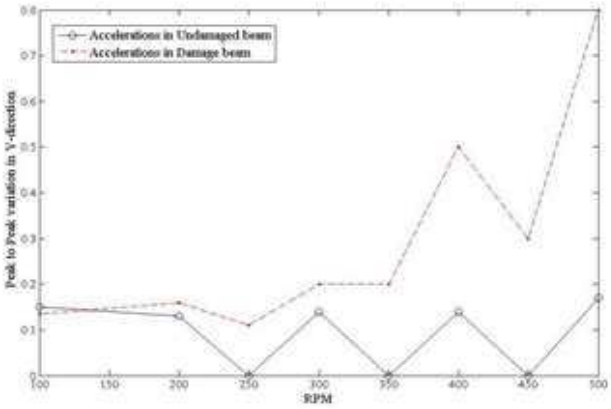


Figure 13 RPM vs accelerations in Y-direction of blade

V. CONCLUSION

During the manufacturing of composite material or blades the uncertainties has formed due to some defects or errors manufacturing process and it has studied by the different parameters like deflection, stress, strain, natural frequency etc. The experimentation has carried on composite blade for deflection measurement and this is of for all four blades by the same process and it is carried out to analyze the uncertainty present in material or blade. Also Static and Dynamic analysis was carried out on blade for acceleration measurement. From the above study on composite blade following conclusions are drawn:

The use of dial gauge indicator for deflection measurement will create problems during measurement due its contact with composite blade.

To avoid this situation non contact device is designed and developed for deflection measurement named as Hall Effect Sensor.

As deflection results of all four blades are compared with each other then there is no more difference between them.All the results are near to each other to their respective load is also shown in graphical form.

The acceleration results for damaged and undamaged blade are compared to check the behavior in rotating condition. Using the above graphical results it is observed that the accelerations are increased for damaged blade as their stiffness are get loosed and due to structure of blade get damaged. From the above results and graph the maximum deformation is taking place in Y direction for the rotating blade.

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SVERI's
College of Engineering, Pandharpur

Mechanical Engineering Department

Industrial Visit Record

A.Y.: 2019-2020

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
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Department of Mechanical Engineering

Industrial Visit Record

Academic Year 2019-2020

Sr. No.	Date from	Date To	Class	Company Name	For Subject	No. of Students	No. of Faculty
1.	30/09/2019	01/10/2019	BE	Shree Saigan Indusatries, Aurangabad	AE	95	06
2.	30/09/2019	01/10/2019	BE	Saptagiri industries, Aurangabad	AE	95	06
3.	30/09/2019	01/10/2019	BE	Core Tech Auangabad Pvt. Ltd, Aurangabad	AE	95	06
4.	30/09/2019	01/10/2019	BE	Empire Mall(Prozone) Pvt. Ltd, Aurangabad	RAC	95	06
5.	27/09/2019	28/09/2019	TE	Paithan Hydro Power Station, Paithan. Aurangabad	FMFP	130	09
6.	27/09/2019	28/09/2019	TE	Indo German Tool Room, Aurangabad	FMFP	130	09
7.	19/09/2019	20/09/2019	S.Y.B. TECH.	Kedar Foundry Pvt. Ltd., Palus MIDC, Palus	MP	131	08
8.	19/09/2019	20/09/2019	S.Y.B. TECH.	Sadamate Forging Pvt. Ltd., Palus MIDC, Palus	MP	131	08
9.	19/09/2019	20/09/2019	S.Y.B. TECH.	Rocket Engineering Ltd., Kolhapur	ICE	131	08
10.	04/03/2020	05/03/2020	S.Y.B. TECH.	S.G. Gears Tembhurni	MTP	140	08
11.	04/03/2020	05/03/2020	S.Y.B. TECH.	Samrudhra Maritime Institute Lonavala	FM	140	08
12.	04/03/2020	05/03/2020	S.Y.B. TECH.	Atomic Power Station Tarapur	PP & EE	140	08

HEAD,
Dept. of Mechanical Engg
C.O.E., Pandharpur.

To,

Date- 20/12/2019

The Principal,

SVERI's College of Engineering,

Pandharpur.

Subject- Report about Industrial Visit B.E. (Mech-A & B).

Respected sir,

As per the curriculum laid by Solapur University, Solapur for B.E. Mechanical Engineering Part-I, Refrigeration & Air Conditioning and Automobile Engineering subject include industrial visit. In this regard 95 students along with 06 faculty members visited following industries on 30/09/2019 & 01/10/2019-

1. Shree Saigan Indusatries, Aurangabad
2. Saptagiri industries, Aurangabad
3. Core Tech Aurangabad Pvt. Ltd, Aurangabad
4. Empire Mall(Prozone) Pvt. Ltd, Aurangabad

From this industrial visit students got practical knowledge about Central Air Conditioning unit & Production of Automobile parts and they are satisfied with the visit.

This is for your kind information & needful action.

(Prof. S. M. Kale)
CC- BE (A)

(Prof. D. T. Kashid)
CC- BE (B)

Forwarded for approval.
SAS
05/01/2020

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2019-20 SEM: I
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 26/09/2019

We undersigned students of B.E. Mech. (A) div. are hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to Aurangabad on 30th September and 1st October 2019. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.

We are signing the undertaking on 26/09/2019 in presence of Prof. D. T. Kashid, Prof. S. M. Kale, Prof. S. B. Bhosale, Prof. A. A. Mote & Prof. S. M. Khomane.

Roll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
BA01	/ Namde Pooja Ankush		BA40	Vhanmane Vikram Dadaso	
BA02	/ Sarvagod Manali Vikrant		BA41	Warkhedkar Karan Prasanna	
BA03	/Deshmukh Jyoti Balasaheb		BA42	/Deshmukh Aishwarya	
BA04	/Kale Pallavi Rajkumar		BA43	/ Kame Mansi Moreshwar — A —	
BA05	/Lamgunde Pooja Somnath		BA44	/ Makar Supriya Chagan	
BA06	/Abhangrao Komal Balbhim		BA45	/Kolekar Supriya Ravindra	
BA07	Bhagwat Rushikesh Manoj		BA46	/Patil Shruti Anil	
BA08	Bhosale Onkar Shashikant		BA47	Bhanvase Amar Maruti	
BA09	Deshmukh Shrinath Jayavant	— A —	BA48	Chavan Aniket Balasaheb	
BA10	Devkar Samadhan Tanaji		BA49	Chavan Pravin Vikram	
BA11	Devmare Avinash Arjun	— A —	BA50	Chavan Sumit Sanjay	
BA12	Dune Kiran Mahipati	— A —	BA51	Chidrewar Onkar Pramod — A —	
BA13	Gaikwad Siddheshwar Subhash		BA52	Dhat Sakharam Ekanath	
BA14	Gaikwad Suraj Subhash		BA53	Dixit Shubham Ashok	
BA15	Ghodake Mahesh Bharat		BA54	Gade Omkar Govind	
BA16	Ghongade Vishal Bapurao		BA55	Gaikwad Pruthvijit Vasudev	
BA17	Godase Pavan Vilas		BA56	Gaikwad Sagar Navnath	
BA18	Gosavi Sachin Ramchandra		BA57	Ghule Mahesh Bandu — A —	
BA19	Kale Shubham Shankar — A —		BA58	Hake Akshay Arun	
BA20	Kate Pankaj Lalachand		BA59	Ingle Sachin Suresh — A —	
BA21	Kawale Chaitanya Mukund	— A —	BA60	Jadhav Arohan Anandrao	
BA22	Khadtare Rahul Suresh	— A —	BA61	Katale Ganesh Karan — A —	
BA23	Masal Shriram Chandrakant	— A —	BA62	Kulkarni Kedar Mahesh	
BA24	Patil Onkar Dadaso		BA63	Lohar Aakash Narayan	
BA25	Patil Shivprasad Namadeo		BA64	Naiknaware Mayur Baburao	
BA26	Rakate Akash Bharat		BA65	Pachakwade Laxman Popat — A —	
BA27	Ronge Nagesh Sudhakar		BA66	Pardeshi Amit Bandu	
BA28	Shaikh Shikalgar Mujammil Ishak	— A —	BA67	Patil Pushkar Mahesh	
BA29	Shalu Vishal Sudhakar	— A —	BA68	Phalake Suhas Shrimant	
BA30	Sid Ajinkya Sarjerao		BA69	Pore Onkar Gulabrao	
BA31	Torane Sachin Waman	— A —	BA70	Ranadive Savata Sadhu	
BA32	Torane Sunil Mohan	— A —	BA71	Sakhare Rohit Pandurang	
BA33	Wadgave Indrajit Somnath	I.S.wadgave	BA72	Sayyad Sameer Mansub	
BA34	Waghmare Vishal Balasaheb		BA73	Shete Shivam	
BA35	Waghmode Onkar Suryakant — A —		BA74	Sonwalkar Ashutosh Hanumant	
BA36	Kadam Vishal Janarath		BA75	Swami Pranav Vivekanand	
BA37	Landage Balaji Vitthal	— A —	BA76	Tate Sudarshan Sushenrao	
BA38	Mahapure Suraj Bapu	— A —	BA77	Wagh Govind Rajaram	
BA39	Popale Ganesh Navnath	Ganesh	BA78	/Pujari Aruna	

(Prof. S. M. Kale)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2019-20 SEM: I
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 26/09/2019

We undersigned students of B.E. Mech. (B) div. are hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to Aurangabad on 30th September and 1st October 2019. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.

We are signing the undertaking on 26/09/2019 in presence of Prof. D. T. Kashid, Prof. S. M. Kale, Prof. S. B. Bhosale, Prof. A. A. Mote & Prof. S. M. Khomane.

Roll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
BB01	Vastre Ganesh Shankar		BB36	Ghodake Swapnil Prakash	
BB02	Bhosale Hemant Dilip		BB37	Gunjal Ravindra Vilas	
BB03	Debojeet Bhattacharjee	A	BB38	Jadhav Ajit Shankar	P
BB04	Deshpande Abhiram Sunil		BB39	Babar Kiran Vasudev	A
BB05	Deshpande Mihir Milind		BB40	Keskar Krushnadev Arjun	
BB06	Ghodake Dattatraya Lahu		BB41	Khaladkar Vyankatesh Yuvraj	
BB07	Waydande Vivek Vijay		BB42	Kolekar Shubham Nirgun	A
BB08	Ippanpalli Pranav Hiralal	A	BB44	Kshirsagar Sushant	
BB09	Jadhav Shubham Jayshankar		BB47	Mali Mayur Shivaling	A
BB10	Jadhav Vijay Prakash		BB48	Atkale Shubham Ramchandra	
BB11	Karande Akshay Ravaso		BB49	Mote Rama Appa	
BB12	Khade Sagar Bhimashankar		BB50	Netake Pratap Nagnath	
BB13	Khot Sagar Balu	A	BB51	Netake Suraj Chandrakant	
BB14	Kotyal Shridhar Sidram		BB52	Panchal Nagesh Balaji	
BB15	Mhetre Gurudev Nagesh		BB53	Pansare Kamlesh Rajendra	
BB16	Pandit Sachin Rajendra		BB54	Patil Vikas Dasharath	
BB17	Shaikh Amir Makbul	A	BB55	Pore Rohan Haridas	A
BB18	Tamboli Sultan Motilal		BB56	Sachin Hanmant Waghmare	
BB19	Vansale Prashant Bharat		BB57	Sawant Bhushan P.	
BB20	Sonage Ravikiran Siddharam		BB58	Shinde Sudarshan Balasaheb	
BB21	Aiwale Prathamesh Babu		BB59	Jadhav Rishabh Dnyaneshwar	
BB22	Gosavi Vaibhav Digambar		BB60	Kadlaskar Sourabh Sanjay	A
BB23	Raut Charansinha Umeshchandra	P	BB61	Ghodake Akshay Narayan	A
BB24	Shende Suraj Kundalik	A	BB62	Gaikwad Viswas Savata	A
BB25	Tele Nitin Shankar				
BB26	Vyavahare Yogesh Maruti				
BB27	Rathod Sumit				
BB28	Chavan Adarsh Valu				
BB29	Chavan Aniket Dnyaneshwar				
BB30	Gate Hanumant Dadasaheb				
BB31	Bhingare Vijay Arjun				
BB32	Chavan Nikhil Vijay				
BB33	Deshmukh Ruturaj Abasaheb				
BB34	Gaikwad Pritam Madhukar				
BB35	Gawade Aniket Haridas	P			

(Prof. D. T. Kashid)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

Department of Mechanical Engineering
Schedule of Industrial Visit
B. E. Mechanical
Date: 30th September and 1st October 2019

Sr. No.	Date	Activity	Time
1.	30/09/2019	Departure from Pandharpur	12.00 a.m.
		Arrival at Shirdi Temple & Breakfast	08.00 am
		Departure from Shirdi	10.00 am
		Arrival at Jijai Industries, Waluj MIDC, Aurangabad	12.00 noon
		Departure from Jijai Industries, Waluj MIDC, Aurangabad	4.00 pm
		Night Halt at Aurangabad and Dinner	08.00 pm
2.	01/10/2019	Departure towards Prozone Mall, Aurangabad	10.00am
		Visit to Prozone Mall, Aurangabad	11.00am
		Lunch break	2.00 pm
		Departure from Aurangabad	3.00 pm
		Arrival at Pandharpur	11.00 pm

(Prof. S. M. Kale)
CC- BE (A)

(Prof. D. T. Kashid)
CC- BE (B)

HOD

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
Tel.: 02186-216063, 9503103757, E-mail : coe@sveri.ac.in, Website: www.sveri.ac.in
(Approved by A.I.C.T.E., New Delhi and affiliated to Solapur University, Solapur)
NBA Accredited all Eligible UG Programmes and , NAAC, Accredited Institute,
Accredited by the Institute of Engineers (India), Kolkata and TCS, Pune ISO 9001-2015 Certified Institute

Ref: - COEPR /MECH/2019-20 /99(A)

Date: - 23/09/2019

To,
The Manager,
Shree Saigan Industries Pvt. Ltd.
B-28, Waluj MIDC, Aurangabad

Subject: - Seeking permission to visit your reputed Industry.

Respected Sir,

Hope this letter finds you in good health and pleasant mood.

It gives me immense pleasure to put before you few words about our institute. Shri Vithal Education and Research Institute (SVERI), a Charitable Trust formed by devoted technocrats, established its first project, College of Engineering, Pandharpur in 1998 with approval from AICTE, New Delhi and Government of Maharashtra. All eligible UG courses of our college are accredited by NBA. The Engineering College is accredited by NAAC, TCS, The Institution of Engineers (India), Kolkata and is also ISO 9001:2015 Certified. To continue with the developmental process, the trust has started College of Pharmacy and College of Pharmacy (Poly.) from academic year 2006-07 and also College of Engineering (Poly.) from the academic year 2008-09. The college administration is striving hard to provide the best facilities to the students along with the quality education. Every year our students are grabbing 10-12 University ranks. Campus placement rate of our college is also very high.

As per the Final Year syllabus laid by Punyashlok Ahilyadevi Holkar, Solapur University Solapur, we need to organize an Industrial Visit. Our students are interested to visit the reputed industry, which is under your supervision. Kindly grant permission **for 8 Faculty members** along with the **120 students** to visit your place on **30th September & 1st October 2019.**

We will remain grateful to you if give chance for industrial visit.

Thanking you.
Yours faithfully,

SAS

(Dr. S. A. Sonawane)
Head, Mech. Engineering Dept.
SVERI's College of Engineering, Pandharpur

COLLEGE OF ENGINEERING PANDHARPUR

Shree Saigan Industries
B-28, M.I.D.C. Waluj,
Aurangabad.

30/9/19

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
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Accredited by the Institute of Engineers (India), Kolkata and TCS, Pune ISO 9001-2015 Certified Institute

Ref: - COEPR /MECH/2019-20 /99 CBJ

Date: - 23/09/2019

To,
The Manager,
Saptgiri Industries Pvt. Ltd,
B-14, Waluj MIDC, Aurangabad

Subject: - Seeking permission to visit your reputed Industry.

Respected Sir,

Hope this letter finds you in good health and pleasant mood.

It gives me immense pleasure to put before you few words about our institute. Shri Vithal Education and Research Institute (SVERI), a Charitable Trust formed by devoted technocrats, established its first project, College of Engineering, Pandharpur in 1998 with approval from AICTE, New Delhi and Government of Maharashtra. All eligible UG courses of our college are accredited by NBA. The Engineering College is accredited by NAAC, TCS, The Institution of Engineers (India), Kolkata and is also ISO 9001:2015 Certified. To continue with the developmental process, the trust has started College of Pharmacy and College of Pharmacy (Poly.) from academic year 2006-07 and also College of Engineering (Poly.) from the academic year 2008-09. The college administration is striving hard to provide the best facilities to the students along with the quality education. Every year our students are grabbing 10-12 University ranks. Campus placement rate of our college is also very high.

As per the Final Year syllabus laid by Punyashlok Ahilyadevi Holkar, Solapur University Solapur, we need to organize an Industrial Visit. Our students are interested to visit the reputed industry, which is under your supervision. Kindly grant permission **for 8 Faculty members** along with the **120 students** to visit your place on **30th September & 1st October 2019.**

We will remain grateful to you if give chance for industrial visit.

Thanking you.
Yours faithfully,

visited on 30/09/19

SAS

(Dr. S. A. Sonawane)
Head, Mech. Engineering Dept.
SVERI's College of Engineering, Pandharpur

COLLEGE OF ENGINEERING PANDHARPUR

SAPTAGIRI INDUSTRIES Authorised Signatory

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
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Accredited by the Institute of Engineers (India), Kolkata and TCS, Pune ISO 9001-2015 Certified Institute

Ref: - COEPR /MECH/2019-20 / 99 **Date: - 23/09/2019**

To,
The Manager,
Prozone Mall,
API Rd, MIDC Industrial Area,
Chilkalthana, Aurangabad, Maharashtra 431210

Subject: - Seeking permission to visit your reputed Central Air-Conditioning System at Prozone Mall.

Respected Sir,

Hope this letter finds you in good health and pleasant mood.

It gives me immense pleasure to put before you few words about our institute. Shri Vithal Education and Research Institute (SVERI), a Charitable Trust formed by devoted technocrats, established its first project, College of Engineering, Pandharpur in 1998 with approval from AICTE, New Delhi and Government of Maharashtra. All eligible UG courses of our college are accredited by NBA. The Engineering College is accredited by NAAC, TCS, The Institution of Engineers (India), Kolkata and is also ISO 9001:2015 Certified. To continue with the developmental process, the trust has started College of Pharmacy and College of Pharmacy (Poly.) from academic year 2006-07 and also College of Engineering (Poly.) from the academic year 2008-09. The college administration is striving hard to provide the best facilities to the students along with the quality education. Every year our students are grabbing 10-12 University ranks. Campus placement rate of our college is also very high.

As per the Final Year syllabus for the **Refrigeration & Air-Conditioning subject,** we need to organize an Industrial Visit. Our students are interested to visit the reputed Central Air-Conditioning System, which is under your supervision. Kindly grant permission **for 8 Faculty members** along with the **120 students** to visit your place on **30th September & 1st October 2019.**

We will remain grateful to you if give chance for industrial visit.

Thanking you.
Yours faithfully,

SAS

(Dr. S. A. Sonawane)
Head, Mech. Engineering Dept.

COLLEGE OF ENGINEERING * PANDHARPUR *

Please plan out the visit on 1st Oct - between 12:30 to 2:30 P.M.

EMPIRE MALL PVT LTD. * AURANGABAD *

Pawan Pawar

SVERI

core tech

Mr. Digambar Kashid <dtkashid@coe.sveri.ac.in>

About Permission for industry Visit to your industry

3 messages

Mr. Digambar Kashid <dtkashid@coe.sveri.ac.in>
To: coretechaurangabad@gmail.com, jijaiindustries@gmail.com
Thu, Sep 26, 2019 at 10:50 AM

Respected Sir,
Greetings of the day!!!
As per our telephonic discussion of Prof.S. Y. Salunkhe with Mr. Arjun Gaikwad Saheb , We request you to grant the permission for visit to your Industry at Waluj MIDC, Aurangabad on 30th September 2019. Herewith I am attaching the copy permission letter.
We will be very much thankful to you & your industry for giving us opportunity to visit your plant.
So kindly revert me about the same for the confirmation.

Regards,
Mr. D. T. Kashid
Assistant Professor,
Mechanical Engg. Dept.
SVERI's COE, Pandharpur
Mob. No. 9168655335

permission letter to aURANGABAD Industry.pdf
230K

Arjun Gaikwad <jijaiindustries@gmail.com>
To: "Mr. Digambar Kashid" <dtkashid@coe.sveri.ac.in>
Cc: coretechaurangabad@gmail.com
Thu, Sep 26, 2019 at 1:06 PM

I confirm the same.

We are requesting you pl.time of visiting company in 25 student per Bach per 30 1/3 hours
Well come to my company
[Quoted text hidden]

Mr. Digambar Kashid <dtkashid@coe.sveri.ac.in>
To: Arjun Gaikwad <jijaiindustries@gmail.com>
Thu, Sep 26, 2019 at 1:08 PM

Thanks a lot sir.
[Quoted text hidden]

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
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Accredited by the Institute of Engineers (India), Kolkata and TCS, Pune ISO 9001-2015 Certified Institute

Ref: - COEPR /MECH/2019-20 /99(A)

Date: - 26/09/2019

To,
Mr. Arjun Gaikwad,
Jijai Industries.
Plot No.- C 252/2 B/ P 23,
MIDC Waluj, Aurangabad, Maharashtra 431136

Subject: - Seeking permission to visit your reputed Industry.

Respected Sir,

Hope this letter finds you in good health and pleasant mood.

It gives me immense pleasure to put before you few words about our institute. Shri Vithal Education and Research Institute (SVERI), a Charitable Trust formed by devoted technocrats, established its first project, College of Engineering, Pandharpur in 1998 with approval from AICTE, New Delhi and Government of Maharashtra. All eligible UG courses of our college are accredited by NBA. The Engineering College is accredited by NAAC, TCS, The Institution of Engineers (India), Kolkata and is also ISO 9001:2015 Certified. To continue with the developmental process, the trust has started College of Pharmacy and College of Pharmacy (Poly.) from academic year 2006-07 and also College of Engineering (Poly.) from the academic year 2008-09. The college administration is striving hard to provide the best facilities to the students along with the quality education. Every year our students are grabbing 10-12 University ranks. Campus placement rate of our college is also very high.

As per the Final Year curriculum laid down by Punyashlok Ahilyadevi Holkar, Solapur University Solapur, we need to organize an Industrial Visit. Our students are interested to visit the reputed industry, which is under your supervision. Kindly grant permission **for 8 Faculty members** along with the **120 students** to visit your place on **30th September 2019.**

We will remain grateful to you if give chance for industrial visit.

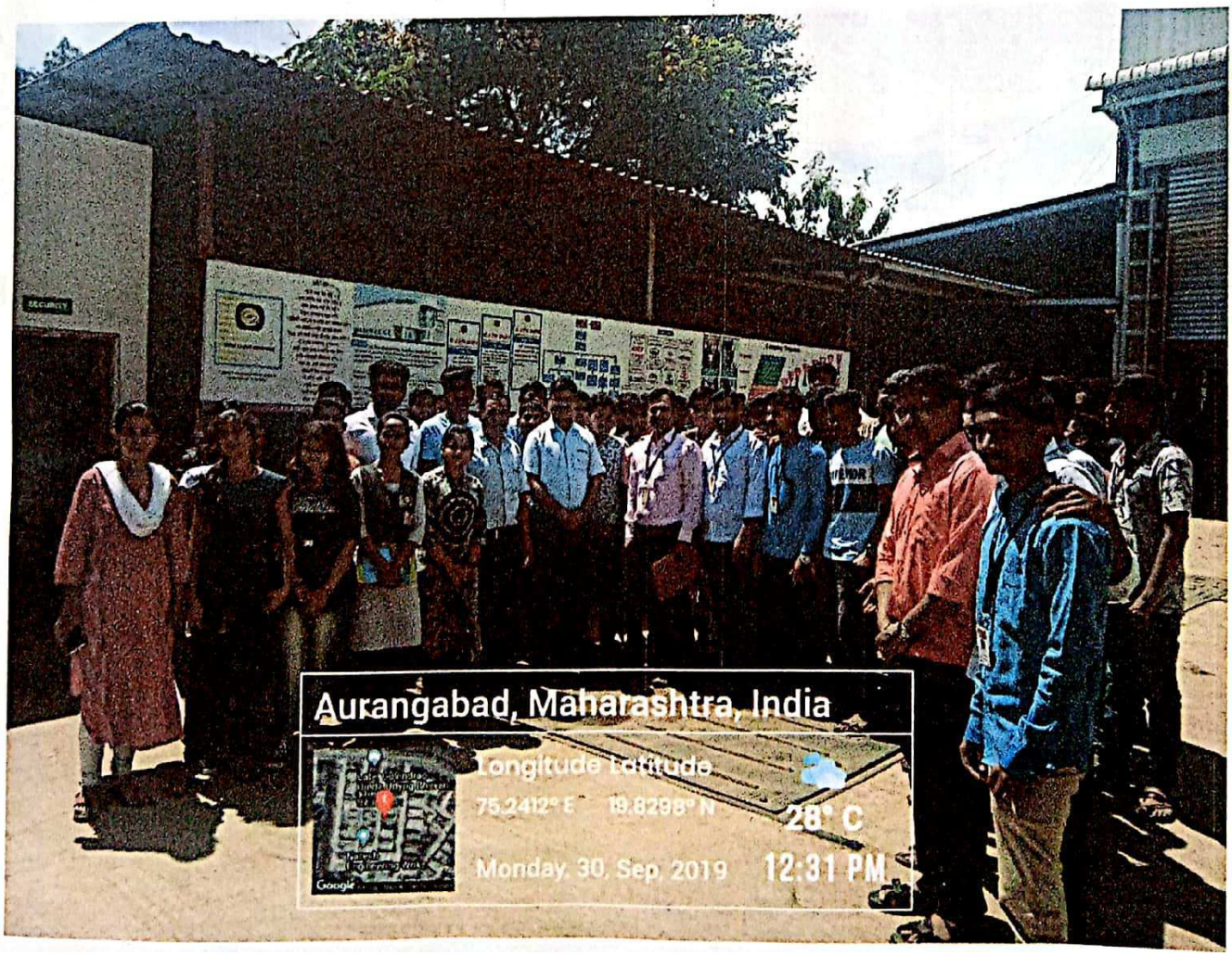
Thanking you.
Yours faithfully,

Core Tech Aurangabad Pvt. Ltd. WALUJ

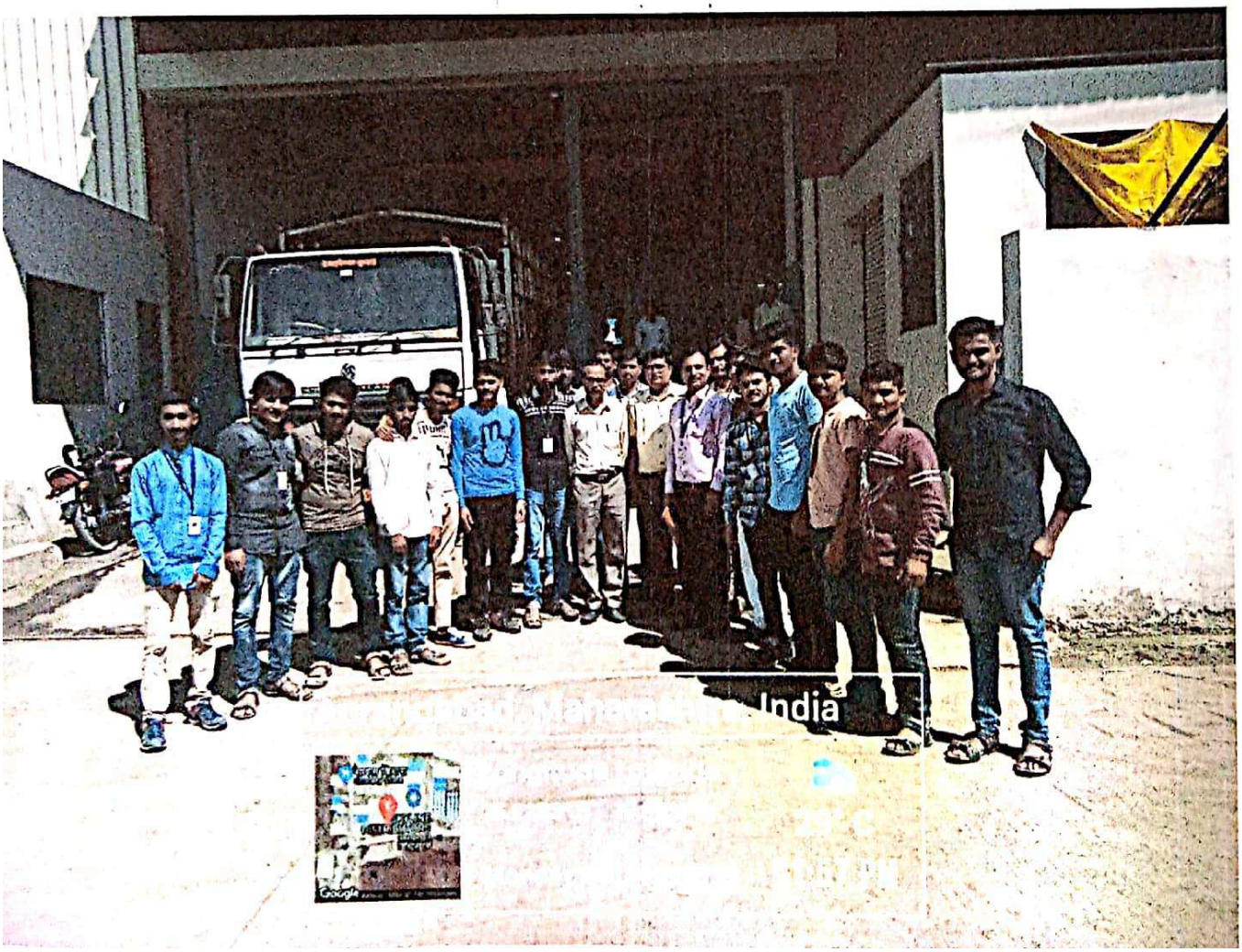
(Dr. S. A. Sonawane)
Head, Mech. Engineering Dept.
SVERI's College of Engineering, Pandharpur

PANDHARPUR

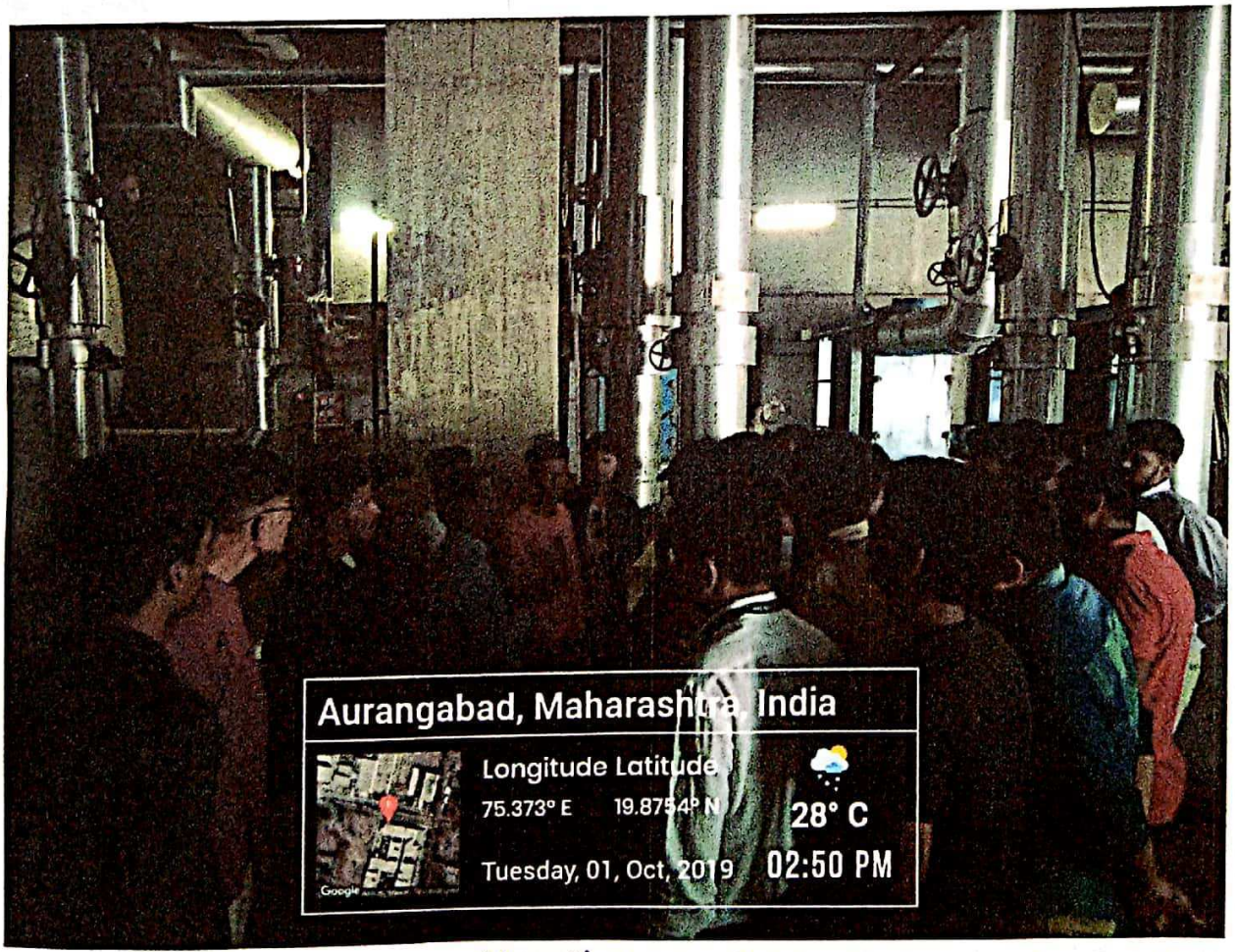
Shree Saigan Industries, Waluj



Saptgiri Industries Pvt. Ltd, Waluj



CoreTech Aurangabad Pvt. Ltd, Waluj, Aurangabad



Prozone Mall Air conditioning System, Aurangabad

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20 SEM: I
CLASS: B. E. (MECH) DIV: A
ROLL CALL LIST

(53)

Industrial Visit Attendance Date- 30/09/19

Roll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
BA01	/ Namde Pooja Ankush	P	BA42	/Deshmukh Aishwarya	P
BA02	/ Sarvagod Manali Vikrant	P	BA43	/ Kame Mansi Moreshwar	A
BA03	/Deshmukh Jyoti Balasaheb	P	BA44	/ Makar Supriya Chagan	P
BA04	/Kale Pallavi Rajkumar	A	BA45	/Kolekar Supriya Ravindra	P
BA05	/Lamgunde Pooja Somnath	P	BA46	/Patil Shruti Anil	P
BA06	/Abhangrao Komal Balbhim	P	BA47	Bhanvase Amar Maruti	P
BA07	Bhagwat Rushikesh Manoj	P	BA48	Chavan Aniket Balasaheb	P
BA08	Bhosale Onkar Shashikant	—	BA49	Chavan Pravin Vikram	P
BA09	Deshmukh Shrinath Jayavant	—	BA50	Chavan Sumit Sanjay	P
BA10	Devkar Samadhan Tanaji	P	BA51	Chidrewar Onkar Pramod	A
BA11	Devmare Avinash Arjun	—	BA52	Dhat Sakharam Ekanath	P
BA12	Dune Kiran Mahipati	—	BA53	Dixit Shubham Ashok	P
BA13	Gaikwad Siddheshwar Subhash	P	BA54	Gade Omkar Govind	P
BA14	Gaikwad Suraj Subhash	P	BA55	Gaikwad Pruthvijit Vasudev	P
BA15	Ghodake Mahesh Bharat	A	BA56	Gaikwad Sagar Navnath	P
BA16	Ghongade Vishal Bapurao	P	BA57	Ghule Mahesh Bandu	A
BA17	Godase Pavan Vilas	P	BA58	Hake Akshay Arun	P
BA18	Gosavi Sachin Ramchandra	P	BA59	Ingle Sachin Suresh	
BA19	Kale Shubham Shankar	A	BA60	Jadhav Arohan Anandrao	P
BA20	Kate Pankaj Lalachand	P	BA61	Katale Ganesh Karan	A
BA21	Kawale Chaitanya Mukund	A	BA62	Kulkarni Koda Mahesh	P
BA22	Khadtare Rahul Suresh	A	BA63	Lohar Aakash Narayan	P
BA23	Masal Shriram Chandrakant	A	BA64	Naiknaware Mayur Baburao	P
BA24	Patil Onkar Dadaso	P	BA65	Pachakwade Laxman Popat	A
BA25	Patil Shivprasad Namadeo	P	BA66	Pardeshi Amit Bandu	P
BA26	Rakate Akash Bharat	P	BA67	Patil Pushkar Mahesh	P
BA27	Ronge Nagesh Sudhakar	P	BA68	Phalake Suhas Shrimant	P
BA28	Shaikh Shikalgar Mujammil	A	BA69	Pore Onkar Gulabrao	P
BA29	Shalu Vishal Sudhakar	A	BA70	Ranadive Savata Sadhu	A
BA30	Sid Ajinkya Sarjerao	P	BA71	Sakhare Rohit Pandurang	P
BA31	Torane Sachin Waman	A	BA72	Sayyad Sameer Mansub	P
BA32	Torane Sunil Mohan	A	BA73	Shete Shivam	P
BA33	Wadgave Indrajit Somnath	P	BA74	Sonwalkar Ashutosh Hanumant	P
BA34	Waghmare Vishal Balasaheb	P	BA75	Swami Pranav Vivekanand	P
BA35	Waghmode Onkar Suryakant	A	BA76	Tate Sudarshan Sushenrao	A
BA36	Kadam Vishal Janarath	P	BA77	Wagh Govind Rajaram	P
BA37	Landage Balaji Vitthal	A	BA78	/Pujari Aruna	P
BA38	Mahapure Suraj Bapu	A	**Batch**	**Roll No.**	
BA39	Popale Ganesh Navnath	P	**BA1**	**BA01 –BA 20**	20
BA40	Vhanmane Vikram Dadaso	P	**BA2**	**BA21 –BA 41**	21
BA41	Warkhedkar Karan Prasanna	P	**BA3**	**BA42 –BA 59**	18
			BA4	**BA60 –BA 77**	18

(Prof. S. M. Kale)
Class- Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20 SEM: I
CLASS: B. E. (MECH) DIV: B
Industrial Visit Attendance **Date-** 30/09/2019

(42)

Roll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
BB01	Vastre Ganesh Shankar	P	BB36	Ghodake Swapnil Prakash	P
BB02	Bhosale Hemant Dilip	P	BB37	Gunjal Ravindra Vilas	P
BB03	Debojeet Bhattacharjee	A	BB38	Jadhav Ajit Shankar	P
BB04	Deshpande Abhiram	P	BB39	Babar Kiran Vasudev	A
BB05	Deshpande Mihir Milind	P	BB40	Keskar Krushnadev Arjun	P
BB06	Ghodake Dattatraya Lahu	P	BB41	Khaladkar Vyankatesh Yuvraj	P
BB07	Waydande Vivek Vijay	P	BB42	Kolekar Shubham Nirgun	A
BB08	Ippanpalli Pranav Hiralal	A			
BB09	Jadhav Shubham Jayshankar	P	BB44	Kshirsagar Sushant	P
BB10	Jadhav Vijay Prakash	P			
BB11	Karande Akshay Ravaso	P			
BB12	Khade Sagar Bhimashankar	P	BB47	Mali Mayur Shivaling	P
BB13	Khot Sagar Balu	A	BB48	Atkale Shubham Ramchandra	A
BB14	Kotyal Shridhar Sidram	P	BB49	Mote Rama Appa	P
BB15	Mhetre Gurudev Nagesh	P	BB50	Netake Pratap Nagnath	P
BB16	Pandit Sachin Rajendra (YD)	P	BB51	Netake Suraj Chandrakant	P
BB17	Shaikh Amir Makbul	A	BB52	Panchal Nagesh Balaji	P
BB18	Tamboli Sultan Motilal	P	BB53	Pansare Kamlesh Rajendra	P
BB19	Vansale Prashant Bharat	P	BB54	Patil Vikas Dasharath	A
BB20	Sonage Ravikiran Siddharam	P	BB55	Pore Rohan Haridas	A
BB21	Aiwale Prathamesh Babu	P	BB56	Sachin Hanmant Waghmare	P
BB22	Gosavi Vaibhav Digambar	P	BB57	Sawant Bhushan P.	A
BB23	Raut Charansinha	P	BB58	Shinde Sudarshan Balasaheb	A
BB24	Shende Suraj Kundalik	A	BB59	Jadhav Rishabh Dnyaneshwar	P
BB25	Tele Nitin Shankar	P	BB60	Kadlaskar Sourabh Sanjay	A
BB26	Vyavahare Yogesh Maruti	P	BB61	Ghodake Akshay	A
BB27	Rathod Sumit	P	BB62	Gaikwad Viswas Savata	A
BB28	Chavan Adarsh Valu	P			
BB29	Chavan Aniket Dnyaneshwar	P			
BB30	Gate Hanumant Dadasaheb	P	**Batch**	**Roll No.**	**Batch strength**
BB31	Bhingare Vijay Arjun	P	**BB1**	**BB 01 –BB 19**	19 Nos
BB32	Chavan Nikhil Vijay	A	**BB2**	**BB 20 –BB 40**	21 Nos
BB33	Deshmukh Ruturaj Abasaheb	P	**BB3**	**BB 41 –BB 62**	20 Nos
BB34	Gaikwad Pritam Madhukar	P			
BB35	Gawade Aniket Haridas	P			

(Prof. D. T. Kashid)
Class Coordinator

(Dr. S. A. Sonawane)
HOD, Mech. Engg. Dept.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

B.E. (Mechanical Engineering) Semester-I

ME414 (C): Professional Elective-V
Automobile Engineering

Teaching Scheme
Lectures– 3Hours/week, 3 Credits
Practical – 2Hour/week, 1 Credit

Examination Scheme
ESE–70 Marks
ISE –30Marks
ICA-25 Marks
OE-25 Marks

Course Introduction:

There is all round development in the field of design and manufacture of automobile. This has resulted in vast improvement in their efficiency, comfort and safety. There is consequential tremendous increase in production and use of automobiles worldwide. This has opened the job opportunities for Mechanical engineers in Automobile sector.

Course Prerequisites:

4. Knowledge of elementary mathematics,
5. Basic knowledge of various core subjects like Theory of Machines, Manufacturing Process , Design engineering, Fluid Mechanics and Electrical Engineering, Engineering materials

Course Objectives: During this course, a student is expected to

1. Study basic principles of actual automobile systems
2. Study important systems in an automobile
3. Study recent and modern trends in automobile sector
4. To make the student conversant with automobile safety, electrical system
5. To make students aware about the entrepreneurial opportunities in automobile engineering field.

Course Outcomes: At the end of this course, student will be able to

1. Demonstrate & explain various systems in an automobile
2. Describe importance and features of different elements like axle, differential, brakes, steering, suspension, wheel balancing etc.
3. Explain principle of operation, construction and applications of various sensors used in modern automobile and understand electric vehicles, hybrid electric vehicles and solar

Group II (Minimum four experiments from following)

1. Trial on Refrigeration primer / bench
2. Trial on Air conditioning tutor
3. Trial on mini ice plant
4. Trial on Vapour Absorption system
5. Trial on Heat Pump
6. Trial on Vortex tube

Group III

1. Visit to Refrigeration plant or Central Air Conditioning plant
2.
3. Performance evaluation of any one trial of Group-II by using MATLAB/C Programming

- **Text Books:**
  1. 'Refrigeration & Air Conditioning' by C. P. Arora
  2. 'Refrigeration & Air Conditioning' by Arora &Domkundwar
  3. 'Refrigeration and Air-conditioning' by S. N. Sapali
- **Reference Books:**
  1. 'Principles of Refrigeration 'by Roy J Dossat
  2. 'Air Conditioning Applications & design' by W.P.Jones
  3. 'Refrigeration &Air Conditioning 'by Stocker

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

B.E. (Mechanical Engineering) Semester-1
ME412 Refrigeration and Air Conditioning

Teaching Scheme	**Examination Scheme**
Lectures – 3 Hours/week, 3 Credits	**ESE**– 70 Marks
Practical –	**ISE** - 30 Marks
	ICA- 25 Marks
	POE- 25 Marks

Course Introduction:
This course deals with study of various refrigeration processes and refrigeration cycles such as Air refrigeration cycle, Vapour Compression cycle, Vapour absorption cycle. It also covers properties of refrigerants and various alternative refrigerants. In second part study of psychometric processes and its analysis for producing required air conditions are dealt. Further it deals with human comfort requirements and study of air distribution systems.

Course Prerequisite:
Student should have knowledge of basic concepts of thermodynamics and laws of heat transfer along with equations to calculate heat flow rate by various modes of heat transfer.

Course Objectives: During this course, student is expected to

1. Familiarize with the terminology associated with refrigeration systems and air conditioning systems.
2. To understand basic refrigeration processes.
3. To understand basics of psychrometry and practice of applied psychrometric.
4. To acquire the skills required to design and analyse refrigeration and air conditioning components and systems.

Course Outcomes: At the end of this course, student will be able to

1. Explain Basic Refrigeration Processes
2. Analyze and Calculate Performance of Refrigeration Systems
3. Select proper Refrigerant for specific application
4. Define and Calculate Psychometric properties of air using chart and tables
5. Decide and Analyze Psychometric process for obtaining required air conditions
6. Explain Comfort chart and factors affecting human comfort.
7. Design Air distribution System

- **Content Delivery Methods:** 1. Chalk and Board
  2. Demonstrations
  3. PPT and Videos
- **Term Work:**
  Minimum six experiments from Group A and two experiment from Group B are to be performed

- **Group A.**
  1. Study and demonstration of four wheeler chassis layout.
  2. Study and Demonstration of working of automobile clutches.
  3. Study and demonstration of synchromesh gearbox.
  4. Study and demonstration of final drive and differential.
  5. Study and demonstration of working Hydraulic braking system.
  6. Study and demonstration of steering gear boxes.
  7. Study and demonstration of suspension systems used in four-wheeler.
  8. Study and demonstration of battery and electrical starting system
  9. Study and demonstration of (a) Electric horn. (b) Electric fuel Gauge. (c) Flasher unit. (d) Wiper circuit
- **Group B.**
  1. Demonstration of wheel balancing and wheel alignment.
  2. Visit to servicing station for study of vehicle maintenance, repairs and report.
  3. A case study presentation and report covering recent trends in automobiles.

Text Books:

1. Kripal Singh - Automobile Engineering – Standard publisher.
2. Automobile Mechanics -.N. K. Giri
3. Automobile Electrical Equipment -P. S. Kohali

Reference Books:

1. K. Newton and W. Seeds, T.K. Garrett,Motor Vehicle, Elsevier publications
2. Hans Hermann Braess, Ulrich Seiffen, handbook of Automotive Engineering, SAE Publications
3. William H. Crouse. Automotive Mechanics - Tata McGraw Hill Publishing House
4. Joseph Heitner, Automotive Mechanics -C.B.S Publishers And Distributors
5. SAE Manuals and Standard
8. Narang G. B. S - Automobile Engineering - S. Chand and Company Ltd.

Industrial Visit Report

To,

Date:- 30/10/2019

The Principal

SVERI'S COEP

Pandharpur.

Subject:- Report of Industrial Visit

Respected Sir,

As per the curriculum laid by Punyashlok Ahilyadevi Holkar Solapur University, Solapur for TE (Mechanical Engineering Part-I), Fluid Machinery and Fluid Power subject has included industrial visit. In this regard,130 student along with 9 faculty members visited Hydro Power Station Paithan, Tal. Paithan Dist. Aurangabad, on 27th and 28th Sept. 2019. During Visit we had seen various parts of turbine, Hydro power station. From this industrial visit student got practical knowledge about actual hydro power generation and they got satisfied with the visit

This is for your kind information and needful action.

Thanking you

(Prof. V. R. Chavan)
FMFP Subject Teacher
TE (Mech) Div:- A and B

(Prof. K.S.Pukale)
FMFP Practical Teacher
TE (Mech) Div:- A

Industrial Visit Report

To,

The Principal

SVERI'S COEP

Pandharpur

Date:- 30/10/2019

Subject:- Report of Industrial Visit

Respected Sir,

As per the curriculum laid by Punyashlok Ahilyadevi Holkar Solapur University, Solapur for TE (Mechanical Engineering Part-I), Fluid Machinery and Fluid Power subject has included industrial visit. In this regard,130 student along with 9 faculty members visited Indo German Tool Room, Aurangabad, on 27th and 28th Sept. 2019. During Visit we had seen various measuring instruments like limit gauges- plug gauges, snap gauges and co-ordinate measuring machine. From this industrial visit student got practical knowledge about actual hydro power generation and they got satisfied with the visit

This is for your kind information and needful action.

Thanking you

(Prof. S.N.More)
MMM Subject Teacher
TE (Mech) Div:- A

(Prof. K.B. Jundale)
MMM Subject Teacher
TE (Mech) Div:- B

Date: 22/09/2019

To

The Principal /Dean Students,

SVERI's College of Engineering,

Pandharpur.

Subject: Permission for industrial visit of T. E. (Mechanical)

Respected Sir,

As per the curriculum laid down Punyashlok Ahilyadevi Holkar Solapur University Solapur for T. E. (Mechanical) (Part-I), the subject of 'Fluid Machinery and Fluid Power' includes industrial visits. In the processing of same, we have sent letters related to Jayakwadi Hydro Power Station Paithan Dist. Aurangabad , for asking permission to visit their organizations. In response, permission has been granted between 27th to 28th Sept.2019.

In view of this, we request you to grant us the permission to arrange visit of T. E. Mechanical on 26th Sept. 2019 to 28th Sept. 2019.

Thanking you.

Yours Sincerely,

(Prof. S. N. More)
CC- TE (A)

(Prof. K. B. Jundale)
CC- TE (B)

(Prof. V. R. Chavan)
Subject Teacher- FMFP TE (A) & (B)

Enclosures:

1. Copy of syllabus
2. Permission letters from industries
3. Schedule of visit
4. List of staff accompanying the visit

Forwarded to Dean Students
23/09/19

- Granted for Ind. visit as per schedule
- Night traveling be avoided.

23/9

FMFP

- **Content Delivery Methods:** Board, Chalk and talk

Term-Work

Compulsory:

1. A drawing sheet on standard symbols of hydraulic & pneumatic components.

List of Experiments

A) Fluid Machinery-

Minimum 3 experiments from the following

1. Trial on a Pelton wheel.
2. Trial on a Francis/ Kaplan turbine.
3. Trial on a centrifugal pump.
4. Trial on gear pump

B) Fluid Power

Minimum 3 assignments from the following

5. Study of Pressure Control Valves & circuits using pressure control valves
6. Study of flow control valves & circuits using flow control valves
7. Study of direction control valves & check valves circuits.
8. Study of hydraulic power unit &accessories.
9. Demonstration of Minimum of Three hydraulic circuits such as :Basic hydraulic, Regenerative, Speed control (Meter in, meter out & bleed off), Sequencing, Synchronization, traverse & feed, Circuit for riveting machine, automatic reciprocating, fail safe circuit, counter balance circuit, actuator locking, circuit for hydraulic press, unloading circuit, motor breaking circuit.
11. Demonstration on Pneumatic Trainer of Minimum of Three Pneumatic circuits (based on syllabus of UNIT 10above).

C) Industrial visit to one of the following

- Hydro-electric power station
- Pumping station
- Service station of Earth Moving equipment's.

Note: Students should write visit report based on the observations made during the visit.

- **Text Books**

1. "A text book of Fluid Mechanics & Hydraulic Machines", Dr.R.K. Bansal, Laxmi Publications Ltd.
2. Thermal Engineering R.K.Rajput
3. "Oil Hydraulics- Principle & Maintenance", Majumadar, Tata McGrawHill
4. "Pneumatics- Principle & Maintenance", Majumadar, Tata McGrawHill

- **Reference Books**

1. Theory of Hydraulic Machinary", V.P. Vasandani, Khanna Publishers, Delhi.
2. "Hydraulic Machines", Dr. J. Lal, Metropolitan Book Co. Pvt. Ltd., Delhi.
3. Vickers Manual on Industrial Hydraulics
4. Festo's Manual on Pneumatic Principle, applications
5. "ABC's of Hydraulic Circuits", H L Stewart, (Taraporwala Press)
6. "ABC's of Pneumatic Circuits", H L Stewart, (Taraporwala Press)
7. Hydraulics and Pneumatics'H.L.Stewart –, Industrial Press

MMM

- **Objectives:**
  1. To acquire knowledge of principle, construction and use of various instruments used for measurement of force, torque and strain.
- **Outcomes:** After completing this unit, student will
  1. Explain the working of various force, torque and strain measuring instruments.
  2. Setup the instruments and accessories thereof for accurate measurement.
- **Unit Content:**

Force measurement- Balance, Proving Ring, Hydraulic, Pneumatic Load Cells, Torque measurement - Hydraulic, Eddy Current. Classification of strain gauges, Principle of electrical strain gauge, Gauge factor, Introduction to half bridge and full bridge network circuits.

- **Content Delivery Methods:** Board, Chalk and talk

- **TERMWORK**

A) Metrology Laboratory:

Any five of the following experiments (Experiment No. 1 is compulsory).

1. Uses of various length measuring instruments .Vernier instruments, Micrometer instruments, Dial instruments and Auxiliary instruments for carrying out measurements.
2. Calibration of Vernier caliper / Micrometer using slip gauges.
3. Use of at least one type of each class of comparator such as mechanical, optical, pneumatic, etc.
4. Measurement of angle using Bevel protractor and sine bar / sine centre. Use of Clinometer and Angle gauges.
5. Measurement of Gear tooth thickness using gear tooth vernier caliper/ plate type micrometer
6. Measurement of diameters of screw threads using screw thread micrometer and floating carriage micrometer.
7. Demonstration of advanced measuring equipment such as Co-ordinate Measuring Machine Multigauging Machines, Automatic inspection systems. (May be done through Industrial Visits / Virtual Laboratories).

B) Mechanical Measurements Laboratory

Any five out of the following experiments:

1. Temperature Measurement using thermo couples, RTD, Thermistor.
2. Testing of mechanical pressure gauge using Dead Weight pressure tester.
3. Vacuum measurement using U tube manometer & Mechanical Vacuum Gauge.
4. Angular speed measurement using mechanical tachometer, stroboscope, photo electric pickup, inductive pickup.
5. Flow measurement using Rotameter.
6. Measurement of bending strain or load using strain gauges.
7. Use of proving ring, load cells.
8. Measurement of torque.

* Industrial Visit (Recommended for introduction to modern measuring instruments / Calibration Lab)

Vikram Chavan <vrchavan@coe.sveri.ac.i

ling Permission for visit to your Hydro Power Station

es

Chavan <vrchavan@coe.sveri.ac.in>
anhydro@gmail.com

Mon, Sep 9, 2019 at 9:22 F

ected Sir / Madam,

Hope this letter finds you in good health and pleasant mood.

It gives me immense pleasure to put before you few words about our institute. Shri Vithal Education and search Institute (SVERI), a Charitable Trust formed by devoted technocrats, established its first project, College of gineering, Pandharpur in 1998 with approval from AICTE, New Delhi and Government of Maharashtra. All four G courses of our college are accredited by NBA. The Engineering College is accredited by NAAC, TCS, The stitution of Engineers (India), Kolkata and is also ISO 9001:2015 Certified. To continue with the developmental rocess, the trust has started College of Pharmacy and College of Pharmacy (Poly.) from academic year 2006-07 and ege of Engineering (Poly.) from the academic year 2008-09. The college administration is striving hard to provide the best facilities to the students along with the quality education. Every year our students are grabbing 10-12 University ranks. Campus placement rate of our college is also very high.

As per the Third Year syllabus for the subject, Fluid Machinery and Fluid Power, we need to organize an Industrial Visit. Our students are interested to visit the Hydro-Electric Power Station at Paithan, which is under your supervision. we are interested to visit hydro-electric power station **in between 23rd September 2019 to 30th September 2019 as per date convenient to your team.** Kindly grant permission **for 8 Faculty members** along with the **136 students** to visit your place.

We will remain grateful to you if give chance for industrial visit.

Thanking you.

Regards :-
Mr. V.R. Chavan
Assistant professor
Mechanical Engineering Department
SVERI's College of Engineering, Pandharpur
Contact :- +91-9890455735

---

ikram Chavan <vrchavan@coe.sveri.ac.in>
o: paithanhydro@gmail.com

Fri, Sep 13, 2019 at 6:40 F

Respected Sir/Madam
Can you please provide your contact no. As 02431224699 is not reachable.

Thanking you.

Regards
Vikram Chavan
Asst. Prof. Mech. Engg. Dept.
SVERI's CoE, Pandharpur.
[Quoted text hidden]

ı Chavan <vrchavan@coe.sveri.ac.in>

eference to above subject the permission for the technical visit of the students
your college, permission shall be granted subject to following procedure/conditions.
te of visit **27.09.2019 & 28.09.2019** at **12:00 hrs**. (Reporting at **12:00** hrs sharply).
u are instructed to pay fees of the amount (No. of students x Rs. 100/- plus GST @18% on total amount) i.e. Rs.
ɔer student. This fees should be paid to the following account No. of SBi branch at Jintur, Dist Parbhani .
ɔunt No. of Executive Engineer, MSPGCL, HPS, Yeldari.
:ount No.62003512845 & IFSC code SBIN 0020019 through NEFT mode.
ɔu are instructed to intimate the payment made so to the Addl. Executive Engineer, HPS, Paithan by mailing the receipt the very same day. Also write the details of institute, no. of students, etc.
ne receipt of same is to be brought during the visit.
All the students should be strictly come in uniform with I-cards.
. Students should deposit their bags/luggage/mobile at our security gate at their responsibility.& will go through ıur security checking/scrutiny.
5. Photography at Power station is strictly prohibited.
7. Faculty member/s should control the students & ensure that students should not touch to any controls & auxiliaries of Power Station as there is LIVE ELECTRIC SUPPLY.
8. The safety of all students is the only responsibility of the faculty members & they should Submit in writing on Rs. 100/- bond paper while coming to the visit.

If any of the above condition is not fulfilled before coming to visit, your permission for the visit stands cancelled.Note that only 60 students per day are permitted

[Quoted text hidden]

--

Addl. Executive Engineer,
Paithan Hydro Power Station,
02431 224699

ʻik.ram Chavan <vrchavan@coe.sveri.ac.in> Wed, Sep 18, 2019 at 2:57 F
ɔ: ckvhare@coe.sveri.ac.in

[Quoted text hidden]

VERI

Vikram Chavan <vrchavan@coe.sveri.ac.i

Regarding Industrial Visit Permission

age

Irakant Vhare <ckvhare@coe.sveri.ac.in>
:havan@coe.sveri.ac.in

Thu, Sep 19, 2019 at 2:55 F

------- Forwarded message ---------
om:**ARNAB BHATTACHARJEE** <arnabigtr@gmail.com>
ate: Thu, 19 Sep, 2019, 12:32 PM
ubject: Re: Regarding Industrial Visit Permission
o: Chandrakant Vhare <ckvhare@coe.sveri.ac.in>
Cc: JAYESH D BAGUL <smtrg@igtr-aur.org>, Awsekar Gs <awsekar.gs@igtr-aur.org>, gopal belurkar <belurkargopal@gmail.com>, GOPAL BELURKAR <cadcam@igtr-aur.org>, ANIKET DESHMUKH <abdeshmukhigtr@gmail.com>

Dear Sir,

We hereby permit for the Industrial visit on 27th and 28th September 2019 as per your request. Upto 70 students on a day visit can be arranged .

ur information, we can conduct seminar during your visit on chargeable basis (Rs. 150/ per students only which include Lunch also, nowever, Faculties will not be charged for the Seminar) which is **optional choice** only and if the students are interested,so that, your students can get aware about the actual Industrial applications of Tool and Die Technology with the help of CAD-CAM-CAE Softwares into our Tool Room and **Seminar Certification** will be given to all those who will attend the seminar and visit.

In that case only, if students are interested for Seminar and Certification, all the visiting trainees / faculties will have to fill up the form individually & attach -

- One passport size photograph
- Marks memo photocopy of any one semester of the ongoing courses of Diploma / Degree
- One photocopy of college ID
- Copy of AADHAR card
- copy of Caste certificate if applicable

Thanks and Regards,
Arnab Bhattacharjee
Engineer (Trg.)
MSME TECHNOLOGY CENTRE,
Indo German Tool Room , Aurangabad
Co[illegible]t :- 9860579828

On Wed, Sep 18, 2019 at 3:03 PM Chandrakant Vhare <ckvhare@coe.sveri.ac.in> wrote:

Respected Sir,

Hope this letter finds you in good health and pleasant mood.

It gives me immense pleasure to put before you few words about our institute. Shri Vithal Education and Research Institute (SVERI), a Charitable Trust formed by devoted technocrats, established its first project, College of Engineering, Pandharpur in 1998 with approval from AICTE, New Delhi and Government of Maharashtra. All four UG courses of our college are accredited by NBA. The Engineering College is accredited by NAAC, TCS, The Institution of Engineers (India), Kolkata and is also ISO 9001:2015 Certified. To continue with the developmental process, the trust has started College of Pharmacy and College of Pharmacy (Poly.) from academic year 2006-07 and also College of Engineering (Poly.) from the academic year 2008-09. The college administration is striving hard to provide the best facilities to the students along with the quality education. Every year our students are grabbing 10-12 University ranks. Campus placement rate of our college is also very high.

ze an Industrial Visit. Our students are interested to visit IGTR on 27th and 28th **September.** Kindly grant ssion **for 8 Faculty members** along with the**136 students** to visit your place.

We will remain grateful to you if give chance for industrial visit.

Thanking you.

Department of Mechanical Engineering
Schedule of Industrial Visit
T. E. Mechanical
Date: 26th Sept. 2019 to 28th Sept. 2019.

Sr. No.	Date	Activity	Time
1.	26/09/2019	Departure from Pandharpur.	12.00 a.m.
		Arrived at Shirdi Temple & Breakfast	08.00 am
		Shirdi To Shanishingnapur and lunch	04.00 pm
		Night Halt at Deogad(Nevasa) and Dinner	08.00 pm
2.	27/09/2019		
		Departure towards IGTR and Hydro Power Station Paithan. 1) TE- A Students Hydro Power Station Paithan. 2) TE- B Students IGTR Aurangabad	9.0 am
		Visit of TE- A Students Hydro Power Station Paithan.	11.00 am
		Visit of TE- B Students IGTR Aurangabad	11.00 am
		Lunch (TE- A & TE- B)	1.30 pm
		Travelling towards Aurangabad TE- A Students.	3.00 pm
		Night Halt in Aurangabad .	9.00 pm
3.	28/09/2019	Visit of TE- B Students Hydro Power Station Paithan.	11.00 am
		Visit of TE- A Students IGTR Aurangabad .	11.00 am
		Lunch (TE- A & TE- B)	1.30 pm
		Started Journey towards Pandharpur. 1) TE- B Students From Paithan. 2) TE –A Students From Aurangabad.	3.00 pm
		Reached in Pandharpur	11.00 pm

(Prof. S. N. More)
CC- TE (A)

(Prof. K. B. Jundale)
CC- TE (B)

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2018-19 SEM: I
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 22/09/2019

We undersigned students of TE Mech. (A) div. are hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to Aurangabad on 26th to 28th September 2019. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.

We are signing the undertaking on 22/09/2019 in presence of Prof. S N. More, Prof. K. S. Pukale, Prof. V.R. Chavan Prof. S. Y. Salunkhe, /Prof. A.S Pathan.

Roll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
TA 01	/BhumkarManasi Dinesh		TA 39	Kale Rohan Suresh	
TA 02	/ChavanSonaliUmesh		TA 40	Kale ShubhamMalashidha	
TA 03	/GhogaleMansi Sanjay		TA 41	Kale VaibhavPandurang	
TA 04	/Attar MuskanMukthar		TA 42	KambirePankajPopat	
TA 05	/MhetreShubhadaShantanu		TA 43	KhadakePrajwal Sunil	
TA 06	/Gavali Anjali Pandurang		TA 44	KhapaleSiddheshwar g.	
TA 07	/Gore GauriRamchandra		TA 45	KhyadeAmitRajendra	
TA 08	/KothawaleShivani Sanjay		TA 46	KodagVasudevDattatray	
TA 09	/NikatePornimaMilind		TA 47	KoliCharandasAppaso	
TA 10	AtreShrirangRajendra		TA 48	KulkarniChaitanyaLaxmikant	
TA 11	AutadeDashrathMadhukar		TA 49	Mane Mahesh Gunvant	
TA 12	BagwanMudaserMahebob		TA 50	NagrasPranilPrakash	
TA 13	Bandai Prathamesh M.		TA 51	PanditYogeshDhananjay	
TA 14	BhiseAkashNamdev		TA 52	PangudwalePurveshPrakash	
TA 15	ChavanSurajBaban		TA 53	Patil Ganesh Basavaraj	
TA 16	DandwateRushikesh Prasad		TA 54	PatilAshutosh Sunil	
TA 17	DeshmaneRushikesh Sanjay		TA 55	PawarAniketSantosh	
TA 18	DevkateSachinKisan		TA 56	PawarDayanandYogesh	
TA 19	DevkateYogeshwarArvind		TA 57	PawarPruthviraj Deepak	
TA 20	DhumalVikasVitthal		TA 58	Rode VaibhavBalasaheb	
TA 21	GahirwarPawansingKiransing		TA 59	SapkalNishklankZumbar	
TA 22	GaikwadSurajTanaji		TA 60	SathePradipShivaji	
TA 23	GaikwadSwapnilRajendra		TA 61	SayyadAzamAkram	
TA 24	GanduleRohanRajaram		TA 62	ShaikhJunedRamjan	
TA 25	GanjaleAshishNamdev		TA 63	Shaikh VijasJaylani	
TA 26	GavaliParitPavanAnkush		TA 64	ShejalSamadhanNagnath	
TA 27	GhadageVaibhavPrabhakar		TA 65	Shinde Rajkumar Nana	
TA 28	GhadgeOnkarDhananjay		TA 66	Shinde SaurabhMahadev	
TA 29	Gore OmkarRajkumar		TA 67	Sirsat Anna Yuvraj	
TA 30	Gosavi Dada Prakash		TA 68	Sonar Sunil Ravindra	
TA 31	GundOmkarShahaji		TA 69	TadmareSwapnilSanjaykumar	
TA 32	HonkandeRohan Ramesh		TA 70	VibhuteRushikeshNandkumar	
TA 33	Jadhav AjinkyaArjun		TA 71	WasnikHarshalPrakash	
TA 34	Jadhav RushikeshKalyan		TA 72	**GhugeHrushikeshRavindra**	
TA 35	MangruleVedant D.		TA 73	**GavaliShubhamAmol**	
TA 36	Jundale Rahul Rajkumar		TA 75	**Jadhav Vivek sajjan**	
TA 37	Kadam ShubhamJaimilind		TA 76	**SatheShubhamBhalchandra**	
TA 38	KakadeShubhamMadhukar				

(Prof.S. N. More)
Class Coordinator

(Dr. S.A.Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2019-20 SEM: I
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 22/09/2019

We undersigned students of T.E. Mech. (B) div. are hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to Aurangabad on 26th to 28th September 2019. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.

We are signing the undertaking on 22/09/2019 in presence of Prof. K. S. Pukale, Prof. V.R. Chavan, Prof. C.K. Vhare, Prof. K.B.Jundale, /Prof. A.S Pathan.

Roll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
TB 01	/Ashture Chandraprabha Balaji		TB 37	Pandhare Rohan Anil	
TB 02	/Bhosale Pranoti Ramchandra		TB 38	Parkam Pavan Shashikant	
TB 03	/Deomare Nikita Narayan		TB 39	Tanage Prashant Sambhaji	
TB 04	/Kambale Pooja Dilip		TB 40	Pavase Mayur Santosh	
TB 05	/Nistane Shweta Shadashiv		TB 41	Pophale Pratap Ashok	
TB 06	Waghmode Pradyumna Dinesh		TB 42	Raut Shubham Anil	
TB 07	Kolekar Vijay Mahadeo		TB 43	Raut Yogesh Dattatray	
TB 08	Adalinge Rohit Chandrakant		TB 44	Salgar Laxman Balaso	
TB 09	Nagane Amol Mahadeo		TB 45	Salgar Ram Balaso	
TB 10	Chavan Dinesh Uttam		TB 46	Tamboli Arbaj Jabbar	
TB 11	Dandage Vaibhav Nagnath		TB 47	Sansare Sanket Manojkumar	
TB 12	Takale Akshay Angad		TB 48	Shinde Mahesh Vilas	
TB 13	Dhage Shantanu Prakash		TB 49	Shelake Girish Dnyaneshwar	
TB 14	Vhankalas Avinash Bhaskar		TB 50	Shaikh Nihal Naushad	
TB 15	Ingale Pratik Vasantrao		TB 51	Thakare Bhushankumar D.	
TB 16	Sathe Akshay Sunil		TB 52	Shinde Abhijeet Ashok	
TB 17	Jadhav Vaibhav Satish		TB 53	Shinde Abhishek Amar	
TB 18	Tuljapurkar Gaurav Jayant		TB 54	Tate Rutvik Bramhadev	
TB 19	Valsange Akash Somanath		TB 55	Waghmare Dipak Subhash	
TB 20	Kshirsagar Abhishek Prakash		TB 56	Shrigadi Swamisamarth V.	
TB 21	Kumbhar Ganesh Naganath		TB 57	Telang Sanket Satish	
TB 22	Kumbhar Pratikesh Pramod		TB 58	Bansode Shubham Dattatray	
TB 23	Lad Varad Anil		TB 59	Bhosale Saurabh Namadev	
TB 24	Kale Raviraj Yuvaraj		TB 60	Bhadane Rahul Madhukar	
TB 25	Langote Shubham Sambhaji		TB 61	Chidrewar Gavesh Pandurang	
TB 26	Magi Prasad Dattatray				
TB 27	Mandwale Pratiksinh S.				
TB 28	Jadhav Ruturaj Satish				
TB 29	Masal Samadhan Dadaso				
TB 30	Mulani Aftab Iqbal				
TB 31	Mulani Shahid Mahammad				
TB 32	Mulani Vasim Jahangir				
TB 33	Muthawat Kedar Sanjay				
TB 34	Thite Prem Ganesh				
TB 35	Nayaku Akshay Laxman				
TB 36	Nimgire Piyush Dadasaheb				

(Prof. K.B. Jundale)
Class Coordinator

(Dr. S.A. Sonawane)
Head, Mech. Engg. Dept.

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
Tel.: (02186) 216063, 9503103757, **Toll Free No.**: 1800-3000-4131 **e-mail.**: coe@sveri.ac.in
Website.: www.sveri.ac.in (Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
NBA Accredited all eligible UG Programmes, **NAAC** Accreditated Institute, ISO 9001:2015 Certified Institute.
Accredited by The Institution of Engineers (India), Kolkata and TCS, Pune.

Ref.:- COEPR/Mech/2019-20/203 Date:- 25/09/2019

To,
Arnab Bhattacharjee
Engineer (Trg.)
MSME TECHNOLOGY CENTRE,
Indo German Tool Room, Aurangabad
Maharashtra, Pin: 431 107

Sub: - About Industrial Visit

Respected Sir,

Hope this letter finds you in good health and pleasant mood.

It gives me immense pleasure to put before you few words about our institute. Shri Vithal Education and Research Institute (SVERI), a Charitable Trust formed by devoted technocrats, established its first project, College of Engineering, Pandharpur in 1998 with approval from AICTE, New Delhi and Government of Maharashtra. All four UG courses of our college are accredited by NBA. The Engineering College is accredited by NAAC, TCS, The Institution of Engineers (India), Kolkata and is also ISO 9001:2015 Certified. To continue with the developmental process, the trust has started College of Pharmacy and College of Pharmacy (Poly.) from academic year 2006-07 and also College of Engineering (Poly.) from the academic year 2008-09. The college administration is striving hard to provide the best facilities to the students along with the quality education. Every year our students are grabbing 10-12 University ranks. Campus placement rate of our college is also very high.

As per the Third Year syllabus for the subject, Metrology And Mechanical Measurements, we need to organize an Industrial Visit. Our students are interested to visit the Indo German Tool Room, at Aurangabad which is under your supervision. Kindly grant permission **for 8 Faculty members** along with the **120 students** to visit your place on **27th September** and **28th September 2019.**

We will remain grateful to you if give chance for industrial visit.

Thanking you,

Yours faithfully,
S A S
(Dr. S. A. Sonavane)
HOD(MECH.Engg.Dept.)
HEAD,
Dept. of Mechanical Engg.
C.O.E. Pandharpur.

Visited
(A. Bhattacharjee)
INDO GERMAN TOOL ROOM
AURANGABAD.

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, District: Solapur (Maharashtra)
Tel.: (02186) 216063, 9503103757, Toll Free No.: 1800-3000-4131 e-mail.: coe@sveri.ac.in
Website.: www.sveri.ac.in (Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
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Accredited by The Institution of Engineers (India), Kolkata and TCS, Pune.

Ref.:- COEPR/Mech/2019-20/202 Date:- 25/09/2019

To,
The Deputy Executive Engineer,
MSPGCL Paithan Hydropower Station,
Paithan, Aurangabad,
Maharashtra, Pin: 431 107

Sub: - About Industrial Visit

Respected Sir,

Hope this letter finds you in good health and pleasant mood.

It gives me immense pleasure to put before you few words about our institute. Shri Vithal Education and Research Institute (SVERI), a Charitable Trust formed by devoted technocrats, established its first project, College of Engineering, Pandharpur in 1998 with approval from AICTE, New Delhi and Government of Maharashtra. All four UG courses of our college are accredited by NBA. The Engineering College is accredited by NAAC, TCS, The Institution of Engineers (India), Kolkata and is also ISO 9001:2015 Certified. To continue with the developmental process, the trust has started College of Pharmacy and College of Pharmacy (Poly.) from academic year 2006-07 and also College of Engineering (Poly.) from the academic year 2008-09. The college administration is striving hard to provide the best facilities to the students along with the quality education. Every year our students are grabbing 10-12 University ranks. Campus placement rate of our college is also very high.

As per the Third Year syllabus for the subject, Fluid Machinery and Fluid Power, we need to organize an Industrial Visit. Our students are interested to visit the Hydro-Electric Power Station at Paithan, which is under your supervision. Kindly grant permission **for 8 Faculty members** along with the **120 students** to visit your place on **27th September** and **28th September 2019.**

We will remain grateful to you if give chance for industrial visit.

Thanking you,

Yours faithfully,

SAS
(Dr. S. A. Sonavane)
Head. Mech. Engg. Dept.

HEAD,
Dept. of Mechanical Engg.
C.O.E. Pandharpur.

Total 126 Students visited on 27 & 28.09.19. at Paithan HPS.

A.E. / Paithan HPS

Assistant Engineer
MSPGCL, Paithan HPS

SVERI's COLLEGE OF ENGINEERING PANDHARPUR

DEPARTMENT OF MECHANICAL ENGINEERING

A.Y. 2019-20 SEM: II CLASS: T. E. (MECH) DIV: A W.e.f. 26/12/2019

Industrial Visit at Indo German Tool Room Aurangabad

Date:-27/09/2019

Sr.No	Roll No.	Name of Student	Sign	Sr.No	Roll No.	Name of Student	Sign
1	TA 01	/BhumkarManasi Dinesh		42	TA 44	KhapaleSiddheshwar g.	
2	TA 02	/ChavanSonaliUmesh		43	TA 45	KhyadeAmitRajendra	
3	TA 03	/GhogaleMansi Sanjay		44	TA 46	KodagVasudevDattatray	
4	TA 04	/Attar MuskanMukthar		45	TA 47	KoliCharandasAppaso	
5	TA 05	/MhetreShubhadaShantanu		46	TA 48	KulkarniChaitanyaLaxmikant	
6	TA 06	/Gavali Anjali Pandurang		47	TA 49	Mane Mahesh Gunvant	
7	TA 07	/Gore GauriRamchandra		48	TA 50	NagrasPranilPrakash	
8	TA 08	/KothawaleShivani Sanjay		49	TA 51	PanditYogeshDhananjay	
9	TA 09	/NikatePornimaMilind		50	TA 52	PangudwalePurveshPrakash	
10	TA 10	AtreShrirangRajendra		51	TA 53	Patil Ganesh Basavaraj	
11	TA 11	AutadeDashrathMadhukar		52	TA 55	PawarAniketSantosh	
12	TA 12	BagwanMudaserMahebob		53	TA 56	PawarDayanandYogesh	
13	TA 13	Bandai Prathamesh M.		54	TA 57	PawarPruthviraj Deepak	
14	TA 14	BhiseAkashNamdev		55	TA 58	Rode VaibhavBalasaheb	
15	TA 15	ChavanSurajBaban		56	TA 60	SathePradipShivaji	
16	TA 16	DandwateRushikesh Prasad		57	TA61	SayyadAzamAkram	
17	TA 17	DeshmaneRushikesh Sanjay		58	TA 62	ShaikhJunedRamjan	
18	TA 18	DevkateSachinKisan		59	TA63	Sheikh VijasJaylani	
19	TA 19	DevkateYogeshwarArvind		60	TA 64	ShejalSamadhanNagnath	
20	TA 20	DhumalVikasVitthal		61	TA 65	Shinde Rajkumar Nana	
21	TA 21	GahirwarPawansingKiransing		62	TA 66	Shinde SaurabhMahadev	
22	TA 22	GaikwadSurajTanaji		63	TA 67	Sirsat Anna Yuvraj	
23	TA 23	GaikwadSwapnilRajendra		64	TA 68	Sonar Sunil Ravindra	
24	TA 24	GanduleRohanRajaram		65	TA 69	TadmareSwapnilSanjaykumar	
25	TA 25	GanjaleAshishNamdev		66	TA 70	VibhuteRushikeshNandkumar	
26	TA 26	GavaliParitPavanAnkush		67	TA 71	WasnikHarshalPrakash	
27	TA 27	GhadageVaibhavPrabhakar		68	TA 73	GavaliShubhamAmol	
28	TA 28	GhadgeOnkarDhananjay		69	TA 75	Jadhav Vivek sajjan	
29	TA 29	Gore OmkarRajkumar		70	TA 76	SatheShubhamBhalchandra	
30	TA 30	Gosavi Dada Prakash					
31	TA 31	GundOmkarShahaji					
32	TA 32	HonkandeRohan Ramesh					
33	TA 33	Jadhav AjinkyaArjun					
34	TA 34	Jadhav RushikeshKalyan					
35	TA 35	MangruleVedant D.					
36	TA 36	Jundale Rahul Rajkumar					
37	TA 37	Kadam ShubhamJaimilind					
38	TA 38	KakadeShubhamMadhukar					
39	TA 41	Kale VaibhavPandurang					
40	TA 42	KambirePankajPopat					
41	TA 43	KhadakePrajwal Sunil					

Sign Of C.C
(Prof.S.N.More)

Sign Of H.O.D
(Dr.S.A.Sonawane)

SVERI's COLLEGE OF ENGINEERING, PANDHARPUR

DEPARTMENT OF MECHANICAL ENGINEERING

A.Y. 2019-20 SEM: II CLASS: T. E. (MECH) DIV: A W.e.f. 26/12/2019

Industrial Visit at Jayakwadi Hydro Power Station Paithan Dist. Aurangabad

Date:-28/09/2019

Sr.No	Roll No.	Name of Student	Sign	Sr.No	Roll No.	Name of Student	Sign
1	TA 01	/BhumkarManasi Dinesh		42	TA 44	KhapaleSiddheshwar g.	
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5	TA 05	/MhetreShubhadaShantanu		46	TA 48	KulkarniChaitanyaLaxmikant	
6	TA 06	/Gavali Anjali Pandurang		47	TA 49	Mane Mahesh Gunvant	
7	TA 07	/Gore GauriRamchandra		48	TA 50	NagrasPranilPrakash	
8	TA 08	/KothawaleShivani Sanjay		49	TA 51	PanditYogeshDhananjay	
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20	TA 20	DhumalVikasVitthal		61	TA 65	Shinde Rajkumar Nana	
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39	TA 41	Kale VaibhavPandurang					
40	TA 42	KambirePankajPopat					
41	TA 43	KhadakePrajwal Sunil					

Sign Of C.C
(Prof.S.N.More)

Sign Of H.O.D
(Dr.S.A.Sonawane)

SVERI's COLLEGE OF ENGINEERING PANDHARPUR

DEPARTMENT OF MECHANICAL ENGINEERING

A.Y. 2019-20 SEM: II CLASS: T. E. (MECH) DIV: B W.e.f. 26/12/2019

Industrial Visit at Indo German Tool Room Aurangabad

Date:-27/09/2019

No	Roll No.	Name of Student	Sign	Sr.No	Roll No.	Name of Student	Sign
1	TB 01	/Ashture Chandraprabha Balaji		33	TB 40	Pavase Mayur Santosh	
2	TB 02	/Bhosale Pranoti Ramchandra		34	TB 41	Pophale Pratap Ashok	
3	TB 03	/Deomare Nikita Narayan		35	TB 42	Raut Shubham Anil	
4	TB 04	/Kambale Pooja Dilip		36	TB 43	Raut Yogesh Dattatray	
5	TB 05	/Nistane Shweta Shadashiv		37	TB 46	Tamboli Arbaj Jabbar	
6	TB 06	Waghmode Pradyumna Dinesh		38	TB 47	Sansare Sanket Manojkumar	
7	TB 07	Kolekar Vijay Mahadeo		39	TB 48	Shinde Mahesh Vilas	
8	TB 08	Adalinge Rohit Chandrakant		40	TB 49	Shelake Girish Dnyaneshwar	
9	TB 09	Nagane Amol Mahadeo		41	TB 50	Shaikh Nihal Naushad	
10	TB 10	Chavan Dinesh Uttam		42	TB 51	Thakare Bhushankumar D.	
11	TB 12	Takale Akshay Angad		43	TB 53	Shinde Abhishek Amar	
12	TB 13	Dhage Shantanu Prakash		44	TB 54	Tate Rutvik Bramhadev	
13	TB 14	Vhankalas Avinash Bhaskar		45	TB 56	Shrigadi Swamisamarth V.	
14	TB 16	Sathe Akshay Sunil					
15	TB 17	Jadhav Vaibhav Satish		46	TB 58	Bansode Shubham Dattatray	
16	TB 18	Tuljapurkar Gaurav Jayant		47	TB 59	Bhosale Saurabh Namadev	
17	TB 19	Valsange Akash Somanath		48	TB39	Tamage Prashant	
18	TB 21	Kumbhar Ganesh Naganath					
19	TB 23	Lad Varad Anil					
20	TB 24	Kale Raviraj Yuvaraj					
21	TB 25	Langote Shubham Sambhaji					
22	TB 26	Magi Prasad Dattatray					
23	TB 28	Jadhav Ruturaj Satish					
24	TB 30	Mulani Aftab Iqbal					
25	TB 31	Mulani Shahid Mahammad					
26	TB 32	Mulani Vasim Jahangir					
27	TB 33	Muthawat Kedar Sanjay					
28	TB 34	Thite Prem Ganesh					
29	TB 35	Nayaku Akshay Laxman					
30	TB 36	Nimgire Piyush Dadasaheb					
31	TB 37	Pandhare Rohan Anil					
32	TB 38	Parkam Pavan Shashikant					

Sign Of C.C
(Prof.K.B.Jundale)

Sign Of H.O.D
(Dr.S.A.Sonawane)

SVERI's COLLEGE OF ENGINEERING PANDHARPUR

DEPARTMENT OF MECHANICAL ENGINEERING

A.Y. 2019-20 SEM: II CLASS: T. E. (MECH) DIV: B W.e.f. 26/12/2019

Industrial Visit at Jayakwadi Hydro Power Station Paithan Dist. Aurangabad

Date:-28/09/2019

No	Roll No.	Name of Student	Sign	Sr.No	Roll No.	Name of Student	Sign
1	TB 01	/Ashture Chandraprabha Balaji		33	TB 40	Pavase Mayur Santosh	
2	TB 02	/Bhosale Pranoti Ramchandra		34	TB 41	Pophale Pratap Ashok	
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7	TB 07	Kolekar Vijay Mahadeo		39	TB 48	Shinde Mahesh Vilas	
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10	TB 10	Chavan Dinesh Uttam		42	TB 51	Thakare Bhushankumar D.	
11	TB 12	Takale Akshay Angad		43	TB 53	Shinde Abhishek Amar	
12	TB 13	Dhage Shantanu Prakash		44	TB 54	Tate Rutvik Bramhadev	
13	TB 14	Vhankalas Avinash Bhaskar		45	TB 56	Shrigadi Swamisamarth V.	
14	TB 16	Sathe Akshay Sunil		-	-	-	
15	TB 17	Jadhav Vaibhav Satish		46	TB 58	Bansode Shubham Dattatray	
16	TB 18	Tuljapurkar Gaurav Jayant		47	TB 59	Bhosale Saurabh Namadev	
17	TB 19	Valsange Akash Somanath		48	TB39	Tamage Prashant	
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30	TB 36	Nimgire Piyush Dadasaheb					
31	TB 37	Pandhare Rohan Anil					
32	TB 38	Parkam Pavan Shashikant					

Sign Of C.C
(Prof.K.B.Jundale)

Sign Of H.O.D
(Dr.S.A.Sonawane)

Industrial Visit Report

Date: 28/09/2019

To,

The Principal,

College of Engineering,

Pandharpur.

Subject: Report of industrial visit

Respected sir,

As per the curriculum laid by Solapur university, Solapur for S.Y.B.Tech Mechanical Engineering Part-I, Manufacturing Process Subject include industrial visit in this regard 131 students along with 08 faculty member visited,

1) Kedar Foundry Pvt.Ltd.Palus MIDC, Palus
2) Sadamate Forging Pvt.Ltd Palus MIDC, Palus

On 19th Sept. 2019. During visit, we had seen various foundry processes and its significance also we have seen different forging operations. From this industrial visit student got practical exposure to foundry and forging operations and they got satisfied with the visit.

This is for your kind information and needful action.

Thanking you

(Prof. B.D.Gaikwad)

MP Subject Teacher

S.Y.B.Tech (Mech) Div. A and B

(/Prof.P.K.Patil)

MP Subject Teacher

S.Y.B.Tech (Mech) Div. C

Industrial Visit Report

Date: 28/09/2019

To,

The Principal,

College of Engineering,

Pandharpur.

Subject: Report of industrial visit

Respected sir,

As per the curriculum laid by Solapur university, Solapur for S.Y.B.Tech Mechanical Engineering Part-I, Internal combustion Engines Subject include industrial visit in this regard 131 students along with 08 faculty member visited Rocket Engineering Ltd. Kolhapur on 20th Sept. 2019. During visit we had seen assembly of diesel Engines. Also we had seen performance measurement procedure of diesel engine. From this industrial visit student got practical knowledge about assembly of diesel engines they got satisfied with the visit.

This is for your kind information and needful action.

Thanking you

28/9/19

(Prof.S.S.Jadhav)

ICE Subject Teacher

S.Y.B.Tech (Mech) Div. A and B

(/Prof.V.G.Kalebag)

ICE Subject Teacher

S.Y.B.Tech (Mech) Div. C

Date: 11/09/2019

To

Dean Students,

College of Engineering,

Pandharpur.

Subject: Permission for industrial visit of S.Y. B. Tech (Mechanical Div- A, B & C)

Respected Sir,

As per the curriculum laid down by Solapur University, Solapur for S.Y. B. Tech (Mechanical (Part-I), the subjects of 'Manufacturing Processes and Internal Combustion Engines' include industrial visits. In the processing of same, we had sent letters to related Rocket Engineering, Kolhapur, Sadamate Industries, Plot No. 66, Paius Dist- Sangali and Kedar Foundry, Palus asking permission to visit their organizations. In response, permissions were granted by same.

We request you to grant us the permission to arrange visit of S.Y. B. Tech Mechanical Div- A, B & C on 19th & 20th of September 2019.

Thanking you.

Yours Sincerely,

(Prof. B. D. Gaikwad)	(/Miss. P. K. Patil)	(Mr. S. S. Jadhav)
Subject Teacher-MP	Subject Teacher-MP	Subject Teacher-ICE
(/Miss. V. G. Kalebag)	(Mr. S.J. Shinde)	(Mr. C. C. Jadhav)
Subject Teacher-ICE	CC- S. Y. B. Tech- A	CC- S. Y. B. Tech- B

Respected Sir,
As per syllabus of S.Y. BTech Mech. Engg., students has to visit foundry & engine manufacturing industry for the subjects manufacturing process & I.C. Engine respectively. You are requested to please approve the same. The detailed schedule is attached herewith.
14/09/19

Enclosures:

1) Copy of syllabus
2) Permission from industries
3) Schedule of visit
4) List of staff accompanying the visit

Recommended for visit as per schedule
Attached herewith

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
S.Y.B. Tech.(Mechanical Engineering) Semester-III

ME213 MANUFACTURING PROCESSES

TeachingScheme

Theory:3Hrs/week
Practical:2Hrs/week

ExaminationScheme
ESE: 70 Marks
ISE – 30Marks
ICA: 25Marks

- **CourseIntroduction:**

This course covers all primary manufacturing processes like casting, forging, rolling, extrusion and Drawing along with Fabrication. These processes are basics of Mechanical Engineering Programme. The basics of this processes along with their applications and equipment and machinery required for the processes is covered in brief. This course also introduces Manufacturing Techniques for plastic products. Recent trends in various processes are also discussed inbrief.

- **Course Perquisite:** Fundamentals of Mechanics, force, power and mechanical properties of materials, thermal properties of materials is required to be known to the candidate undergoing to thecourse.

- **CourseObjective:**

1. Tointroducetothestudentsthecastingtechniqueanditssignificanceinmanufacturing.
2. Tointroducetothestudentswithvariousplasticdeformationprocessesandtheirapplication.
3. To introduce to the students the various fabrication techniques and their significance in Industry.
4. To introduce to the students with various plastic manufacturingprocesses.
5. To introduce to the students with recent trends in thisprocesses.

- **Course Outcomes:** At the end of this course, the students will be ableto

1. Select appropriate manufacturing process for a givencomponent.
2. Understand performance of eachprocess.
3. Prepare manufacturing plan for the givencomponent.

SECTION I

UNIT-1 Casting Processes

No. of lectures-06

- Definition of casting, Basic steps in casting processes, Advantages,limitationsand applications of casting process, General introduction to patterns, Types of patterns, materials used, Allowances, Core, core boxes and types of cores and core boxes,molding materials and its properties, Gating system, types of risers, Function of riser, , method to improve efficiency ofrisers.Riser design simple numerical problems.

UNIT-2 Molding processes

No. oflectures-09

- Green sand molding (hand and machine molding), Shell molding, Investment casting, centrifiigal casting, , gravity and pressure die castingprocesses.
- Induction furnace construction and working in brief of melting furnaces such as Cupola, Arc furnaces, induction furnaces, Crucible, oil and gas fired furnaces.

UNIT-3 Fettling, Cleaning and Inspection ofCastings

No. oflectures-05

- Need for fettling, stages in fettling, equipments used infettling and cleaning of castings, Common important defects in castings. Inspection procedure, Computer applications in foundry processes, foundry,Mechanization.

SECTION II

UNIT-5 Conventional Forming Processes: **No. oflectures-07**

- Introduction to forming process, Classification of forming processes, forging, types of forging, simple numerical problem on upset forging. Extrusion,Types – direct extrusion, indirect extrusion, impact extrusion, hydrostatic extrusion, Wire drawing process,Methods of tubedrawing, hot rolling, cold rolling of sheets, classification of Rolling mills, theory of rolling, simple numerical problems on rolling.

UNIT-6Advanced Forming Processes: **No. oflectures-05**

- Introduction to advanced forming process, High energy rate forming process- explosive, electro-hydraulic, magnetic pulse forming. Forming with hydrostatic pressure- hydro-mechanical and hydro forming process.

UNIT–6 Introduction toJoiningprocesses **No. oflectures-08**

- Welding processes, classification of welding process, arc welding, welding rod selection, TIG welding & MIG welding, submerged arc welding, gas welding, resistance welding, Brazing andsoldering.

- **Internal Continuous Assessment(ICA):**
  1. Design of pattern and core for a simple component.
  2. Testing of silica sand for grain fineness and claycontent.
  3. Testing of green sand for green compression strength, permeability.
  4. Study of moldfor moisturecontent and core hardness tester.
  5. Study of manufacturing sequence of upset forging with example.
  6. Study of VI characteristic of welding process.
  7. Visit to Foundryunit.
  8. Visit to forgingshop.

- **TextBooks:**
  1. Heine, Lopar, Rosenthal, Principles of MetalCasting.
  2. N.D. Titov, FoundryPractice.
  3. P.L. Jain, Principles of FoundryTechnology.
  4. P.N.Rao, Manufacturing Technology: Foundry, Forming andWelding.
  5. Production Technology by P.C.Sharma

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
S.Y.B. Tech. (Mechanical Engineering) Semester-III
ME215 – B: Professional Elective -I
Internal Combustion Engine

Teaching Scheme
Theory: 3 Hrs/week
Practical: 2 Hrs/week

Examination Scheme
ESE: 70 Marks
ISE: 30 Marks
ICA: 25 Marks

Course Objectives:
During this course, student is expected
1. Distinguish the different types of engine constructions and their thermodynamic principles.
2. Differentiate the constructional details of various fuel systems used in different types of I. C. Engines and calculate major dimensions of carburetor and fuel injection system.
3. Apply the basic knowledge to infer the different methods for enhancing the performance of I. C. engines
4. Correlate the difference in SI and CI engine combustion processes with the design of combustion chambers used in these engines
5. Evaluate the performance parameters of I. C. engines to justify their use in different applications.
6. Categorize different alternative fuels suitable for different engine applications and compare the pollutants formed in these engines and their control methods

Course Outcomes:
At the end of this course, student will be able to
1. Recognize and understand the reasons for differences in the construction of different types of internal combustion engines.
2. Understand the reasons for differences among operating characteristics of different engine types and designs
3. Select the appropriate engine for a given application.
4. Conduct performance tests on engines and Compare experimental results with Theoretical predictions.
5. Compare experimental results with theoretical predictions and make proper justifications.

Section I

Unit 1 - Introduction to I. C. Engine No of lectures – 05
Introduction, Classification of I.C. Engines, Engine Cycles-Otto and Diesel Cycle, Valve timing diagram for high and low speed engines, Port timing diagram for two strokes S.I. Engines.

Unit 2–Fuel System for S. I. Engines No of lectures – 06
Engine fuel requirements, Mixture requirements, Simple carburetor, and Additional systems in modern carburettor, compensating devices, Calculation of air fuel ratio (exact and approximate methods), Calculation of main dimensions of air and fuel supply (Numerical calculations of main dimensions of carburetor), Electronic Petrol injection system (MPFI).

Unit 3–Fuel System for C. I. Engines No of lectures – 05
Requirements of fuel injection system for C.I. Engines, Types of injection systems-Individual pump, Common rail and Distributor systems, Unit injector, Types of fuel nozzles- single hole, multihole, pintle and pintaux, CRDI.

Unit 4–Supercharging No of lectures – 04
Purpose of supercharging, Turbo charging, Thermodynamic cycle of supercharged and turbocharged Engines, Advantages and disadvantages, Limits of supercharging for S.I. and C.I. Engines.

Section II

Unit 5–Combustion in SI Engine No of lectures – 05
Stages of combustion in S.I. Engines, Ignition lag, Flame propagation, Factors affecting flame speed, Abnormal combustion, Octane number, HUCR, Requirements of combustion chambers of S.I. Engines and its types.

Unit 6–combustion in C.I. Engines No of lectures – 05
Stages of combustion in C.I. Engines, Delay period, Abnormal Combustion-Diesel knock, Requirements of combustion chambers for C.I. Engines and its types. Comparison of abnormal combustion in S I and C I Engines. Cetane number.

Unit 7 –Engine performance No of lectures – 05
Performance parameters, Measurement of performance parameters like torque, power, and Volumetric Efficiency, Mechanical Efficiency, bsfc, Brake and Indicated Thermal efficiencies. Heat Balance Sheet. (Numerical on engine Performance and Heat Balance Sheet).

Unit 8–Alternative Fuels and Engine Emission No of lectures – 05
Various alternative fuels and their suitability for I. C. Engines.S.I. Engine emissions (HC, CO, NOx),.C.I. Engines Emissions (CO, NOx, Smog, Particulate), Bharat Norms

TERM WORK

Term work (minimum 3 from group A and B, and all from Group C)
Group A (Study Group)
i. Constructional details of I.C. engines
ii. Study of Engine Cooling and Lubrication system
iii. Study of Ignition systems and Starting systems
iv. Study of fuel system for S.I. and C. I. engines
Group B (Trial Group)
i. Constant Speed Test (Influence of load on performance)
ii. Morse Test
iii. Heat balance sheet
iv. Test on computer controlled I.C. Engine/ Variable Compression Ratio Engine
v. Measurement of exhaust emissions of SI / CI engines
Group C
i. Assignment on recent trends in IC Engine.
ii. Visit to an engine manufacturing company / repairing unit.

Department of Mechanical Engineering

Schedule of Industrial Visit

S. Y. B. Tech Mechanical- Div- A, B & C

Date: 19th & 20th September 2019

Sr. No.	Activity	Date	Time
1	Departure from Pandharpur	19/09/2019	5:00 am
2	Arrival at Palus Dist- Sangli		10:00 am
3	Breakfast & Tea at Palus Dist- Sangli		10:00 to 11:30 am
4	Visit to Kedar Foundry & Sadamate Industries, Plot No. 66		11:30 am to 3 pm
5	Departure from Palus to Gandharv, Kolhapur		04: 00 pm
6	Departure from Gandharv, Kolhapur	20/09/2019	09:30 am
7	Arrival at Rocket Engineering, Kolhapur		10:30 am
8	Visit to Rocket Engineering, Kolhapur		11:00 am to 01:30 pm
9	Lunch at Kolhapur		01:30 pm to 3 pm
10	Departure from Kolhapur to Pandharpur		3 pm

(Prof. B. D. Gaikwad)
Subject Teacher-MP

(/Miss. P. K. Patil)
Subject Teacher-MP

(Mr. S. S. Jadhav)
Subject Teacher-ICE

(/Miss. V. G. Kalebag)
Subject Teacher-ICE

(Mr. S. J. Shinde)
CC- S. Y. B. Tech- A

(Mr. C. C. Jadhav)
CC- S. Y. B. Tech- B

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2019-20 SEM: I
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 11//09/2019

We undersigned students of S. Y. B. Tech. Mechanical (A) div. hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to Palus and Kolhapur on 19th & 20th September 2019. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.

We are signing the undertaking on 11/09/19 in presence of Prof. B. D. Gaikwad, Prof. S. J. Shinde, Prof. A. K. Parkhe, Prof. C. C. Jadhav, /Prof. P. K. Patil, Prof. R. D. Solage, Prof. S. S. Jadhav

Roll No.	Name of Student	Sign.	Roll No. No.	Name of Student	Sign.
SA 01	/Achugatla Komal		SA 26	Gaikwad Vaibhav Nanasaheb	
SA 02	/Gajakosh Shradhha Dattatray		SA 27	Gaikwad Vaibhav Ramdas	
SA 03	/Joshi Gayatri Vinayak		SA 28	Ghadage Prakash Bhimrao	
SA04	/Lakheri Vaishnavi Mahesh		SA 29	Shelar Yuvraj Vinod	
SA 05	/Mirjkar Saleha Salim		SA 30	Satapute Rahul Rajaram	
SA 06	/Parchandrao Madhuri		SA 31	Godse Rutik Ramesh	
SA 07	/Parvat Namrata Raju		SA 32	Patil Rushikesh Vidyadhar	
SA 08	/Sathe Deepjyoti Dattatray		SA 33	Hambirrao Kiran Vinayak	
SA 09	/Tarapurkar Rutuja Suresh		SA 34	Jagadale Milind Shashikant	
SA 10	Admane Dhananjay Rajendra		SA 35	Parchandrao Chandragupt V.	
SA 11	Sul Amol Dhondiba		SA 36	Jatkar Prathamesh Manohar	
SA 12	Bansode Dnyaneshwar		SA 37	Joshi Atharv Santosh	
SA 13	Jadhav Atish Balaso		SA 38	Kadasare Saurabh Bandu	
SA 14	Burungale Bharat Dnyandev		SA 39	Kale Ayush Nitin	
SA 15	Chavan Samarth Suresh		SA 40	Khandagale Rohit Ananda	
SA 16	Chavan Saurabh Chandrakant		SA 41	Kirgat Prathmesh Ramesh	
SA 17	Chavan Shreeyash Rajaram		SA 42	Kshirsagar Sachin Ashok	
SA 18	Chavan Yogesh Prakash		SA 43	Pansare Akshay Balasaheb	
SA 19	Chavare Sumeet Suhas		SA 44	Misal Mangesh Mahavir	
SA 20	Chitari Ghanasham		SA 45	More Suraj Dattatray	
SA 21	Dandage Omkar Babaso		SA 46	Motewar Aditya Vyankatesh	
SA 22	Deokar Onkar Rajendra		SA 47	Mundhe Nikhil Dilip	
SA 23	Deshmukh Pruthviraj		SA48	Narute Bhushan Narayan	
SA 24	Todkar Ganesh Shankar		SA49	Waghmare Sachin Dattatray	
SA 25	Gadekar Yash Yuvraj		SA50	Disale Pranay	

11/9/19

(Prof. S. J. Shinde)

Class Co-ordinator-SE A

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2019-20 SEM: I
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 11/09/2019

We undersigned students of S. Y. B. Tech. Mechanical (B) div. hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to Palus and Kolhapur on 19th & 20th September 2019. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.

We are signing the undertaking on 11/09/19 in presence of Prof. B. D. Gaikwad, Prof. S. J. Shinde, Prof. A. K. Parkhe, Prof. C. C. Jadhav, /Prof. P. K. Patil, Prof. R. D. Solage, Prof. S. S. Jadhav

Roll No.	Name of Student	Sign.	Roll No.	Name of Student	Sign.
SB 01	/Deshpande Samruddhi		SB 28	Metkari Om Damodar	
SB 02	/EkatpurePreranaShrirang		SB 29	Mulani Aman Allauddin	
SB 03	/LaleArati Gajanan		SB 30	NagtilakHarshal Rajendra	
SB 04	/Mane Snehal Digambar		SB 31	NanawareJaydev Dipak	
SB 05	/More Vaishali Dilip		SB 32	Nikam Saurabh Sanjay	
SB 06	/SonawaneDhanashree Bharat		SB 33	Parmar Ridham Girish	
SB 07	Vidhate Rohit Dattatraya		SB 34	Patil Madan Kalyan	
SB 08	Wadekar Saurabh Ganesh		SB 35	Patil Santosh Hanamant	
SB 09	BankarAdeshGorakh		SB 36	Patil Yogesh Kumar	
SB 10	Bansode Aniket Annaso		SB 37	Pawar Omkar Santosh	
SB 11	Bapat Vinayak Vishnu		SB 38	Pawar Shubham Uttam	
SB 12	Bhosale Hritik Ramesh		SB 39	Rai Hrishav Raj	
SB 13	Bhosale Vaibhav Rajendra		SB 40	Rohit DattatryChatage	
SB 14	Deshmukh Pratik Pravin		SB 41	Yasar Yusuf Khatik	
SB 15	Dhotre Sourabh Sanjay		SB 42	SarakKashilingKalidas	
SB 16	Dixit Manthan Milind		SB 43	Saravale Aniket Rajkumar	
SB 17	Gaikwad Abhinay Rajendra		SB 44	Shaikh Aftab Bashir	
SB 18	Gavali Suraj Rajendra		SB 45	Shaikh Salim Husen	
SB 19	Waghmode Chetan		SB 46	Shinde Dipak Pandurang	
SB 20	WaghmodeDhondiram		SB 47	Shinde Nanasaheb S.	
SB 21	Kadam Nilesh Sanjay		SB 48	Shinde Vishwajit Ashok	
SB 22	Khote Abhijeet Sunil		SB 49	ShitoleDnyaneshawr Ganpat	
SB 23	Kulkarni Atharv Makarand		SB50	Ubale Harshvardhan Sudhir	
SB 24	Londhe Vaibhav Anil		SB51	Taur Mohit Nagesh	
SB 25	MadaneAvinashAjinath		SB52	KengarSachinUttam	
SB 26	Mali Amol Vijay		SB 53	Langote Krishna S.	
SB 27	Mashalkar Omkar Basavraj				

(Prof.C. C Jadhav)
Class Co-ordinator-SE B

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2019-20 SEM: I
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 11//09/2019

We undersigned students of S. Y. B. Tech. Mechanical (C) div. hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to Palus and Kolhapur on 19th & 20th September 2019. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.

We are signing the undertaking on 11/09/19 in presence of Prof. B. D. Gaikwad, Prof. S. J. Shinde, Prof. A. K. Parkhe, Prof. C. C. Jadhav, /Prof. P. K. Patil, Prof. R. D. Solage, Prof. S. S. Jadhav

Roll No.	Name of Student	Sign.	Roll No.	Name of Student	Sign.
SC 01	Sarwade Karuna Sunil	AB	SC 21	Mulani Irfan Rashid	
SC 02	Surve Prajakta Dharmraj	AB	SC 22	Musale Prajwal Dattatraya	
SC 03	Ajgar Akash Prasad		SC 23	Nagargoje Rambhajee Ramchandra	
SC 04	Autade Yogesh Samrut		SC 24	Padage Pritam Balaji	
SC 05	Bagul Sandip Bhagwan	AB	SC 25	Paras Mahavir Mule	
SC 06	Bhandare Pranav Milind		SC 26	Pawar Shailesh Mahadev	
SC 07	Dhabade Avinash Basavraj		SC 27	Phalake Onkar Haridas	AB
SC 08	Dhere Rupesh Ambrushi	AB	SC 28	Ronge Vivek Dashrath	
SC 09	Eakamalli Nitin Tatya		SC 29	Sadul Sunil Ambadas	
SC 10	Gaikwad Saurabh Shahaji		SC 30	Shaikh Md Aazam Ejaz Ahmed	
SC 11	Gangthade Vishal Ankush		SC 31	Shikalgar Sohel Humayun	
SC 12	Jadhav Sushant Bhausaheb		SC 32	Somadale Pravin Dilip	
SC 13	Jagtap Omkar Chandrakant		SC 33	Thorat Shashikant Dadarao	
SC 14	Koli Akash Revappa		SC 34	Vairagkar Kanhaiya Sudarshan	AB
SC 15	Lavate Dashrath Pandurang		SC 35	Wadekar Chaitanya Dattatray	AB
SC 16	Londhe Avinash Sandipan		SC 36	Waykar Vallabh Trimbak	
SC 17	Mane Akash Sambhaji		SC 37	Patil Onkar Sanjay	
SC 18	Mane-Deshmukh Samarth				
SC 19	Mohammad Sajid Khan				
SC 20	Mujawar Nihal Yusuf				

(Prof. P. K. Patil)
Class Co-ordinator-SE C

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal - Pandharpur- 413 304,
Dist. Solapur (Maharashtra) Ph.(02186)- 282223, 9503103892
(Approved by A.I.C.T.E., New Delhi and affiliated to Solapur University, Solapur)
ISO 9001-2000 Certified Institute & Accredited by Institute of Engineers, India,
E-mail : coe@sveri.ac.in Website: www.sveri.ac.in

Ref. No.:- COEPR/MECH/19-20/ 173 Date: -29/08/2019

To,
Production Manager,
Shree Kedar Metal Foundries,
Gate no.49, Near Instrial Istate,
Palus ,
Sangali.

Sub: - About Industrial Visit

Dear Sir,

Hope this letter finds you in good health and pleasant mood.

First of all, we wish to put before you few words regarding our College. Ours is an ISO 9001 certified Engineering College located in Pandharpur, the "South Kashi" of India and "Spiritual capital" of Maharashtra. "Shri Vitthal Education & Research Institute", Pandharpur, the trust established by group of qualified and experienced Technocrats, runs the College. We offer the following four-year degree courses in Engineering viz. Mechanical Engg., Civil Engg., Electronics & Tele communication Engg. Computer Science & Engg. and Information Technology.

As per our S.Y. B. Tech (Mechanical Engg.) syllabus for Manufacturing processes subject, we want to organize industrial visit to your well reputed organization for getting knowledge about Manufacturing Processes. Our Second year Mechanical students nearly about 143 students are willing to visit your estimated organization. So you are requested to allow us with 143 students of S.Y. B. Tech Mechanical to visit your esteemed organization on 19th Sept. 2019.

We will remain grateful to you if give chance for industrial visit.

Thanking you.

Yours faithfully,

Permitted for visit

SAS
(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

HEAD,
Dept. of Mechanical Engg.
C.O.E. Pandharpur.

19/09/19

Shree Kedar Metal 16 310 Foundries

9890161065
Ganesh . Nalawade
7798115555

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal - Pandharpur- 413 304,
Dist. Solapur (Maharashtra) Ph.(02186)- 282223, 9503103892
(Approved by A.I.C.T.E., New Delhi and affiliated to Solapur University, Solapur)
ISO 9001-2000 Certified Institute & Accredited by Institute of Engineers, India,
E-mail : coe@sveri.ac.in Website: www.sveri.ac.in

Ref. No.:- COEPR/MECH/19-20/ 172

Date: -29/08/2019

To,
Production Manager,
Sadamate Industries,
Plot no.66, Instrial Istate,
Palus ,
Sangali.

Sub: - About Industrial Visit

Dear Sir,

Hope this letter finds you in good health and pleasant mood.

First of all, we wish to put before you few words regarding our College. Ours is an ISO 9001 certified Engineering College located in Pandharpur, the "South Kashi" of India and "Spiritual capital" of Maharashtra. "Shri Vitthal Education & Research Institute", Pandharpur. the trust established by group of qualified and experienced Technocrats. runs the College. We offer the following four-year degree courses in Engineering viz. Mechanical Engg., Civil Engg., Electronics & Tele communication Engg. Computer Science & Engg. and Information Technology.

As per our S.Y. B. Tech (Mechanical Engg.) syllabus for Manufacturing processes subject, we want to organize industrial visit to your well reputed organization for getting knowledge about Manufacturing Processes. Our Second year Mechanical students nearly about 143 students are willing to visit your estimated organization. So you are requested to allow us with 143 students of S.Y. B. Tech Mechanical to visit your esteemed organization on 15th Sept. 2019.

We will remain grateful to you if give chance for industrial visit.

Thanking you.

Yours faithfully,

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

HEAD,
Dept. of Mechanical Engg.
C.O.E. Pandharpur.

SADAMATE INDUSTRIS
Plot No. 66, Industrial Estate, PALUS-416 310
TAL.PALUS,DIST.SANGLI

9890161065

SVERI

Avinash Parkhe <akparkhe@coe.sveri.ac.in>

ɔout Industrial Visit to Rocket Engineering, Kolhapur on 20/09/2019.

nessages

vinash Parkhe <akparkhe@coe.sveri.ac.in> Wed, Sep 4, 2019 at 2:55 PM
ɔ: info@rocket-comet.com

Dear Sir,

First of all, we wish to put forth few words regarding our College. Ours is NBA accredited and an ISO 9001:2008 certified Engineering College located in Pandharpur, the "South Kashi" of India and "Spiritual capital" of Maharashtra. "Shri Vitthal Education & Research Institute", Pandharpur, the trust established by group of qualified and experienced Technocrats.

As per our **S.Y. B.Tech (Mechanical Engg.)** syllabus for Internal Combustion Engine subject, we want to organize industrial visit to your well reputed industry for getting knowledge about Petrol/Diesel Engine. Our Second year Mechanical students are nearly about 120, who are willing to visit to your estimated organization. So you are requested to permit us to visit your esteemed organization for our **S.Y. B.Tech** Mechanical students along with few Staff members, on **20/09/2019.**

--
Thank You.

Regards,
--
Mr. Avinash K. Parkhe
Assistant Professor
Mechanical Engg. Department
SVERI's College of Engineering, Pandharpur
Tal - Pandharpur- 413 304, Dist - Solapur (Maharashtra)
Cell - 9503632622, 8275447792

Thu, Sep 5, 2019 at 4:11 PM

info <info@rocket-comet.com>
To: Avinash Parkhe <akparkhe@coe.sveri.ac.in>

Dear Sir

Please refer to your mail as under regarding visit of your students to our factory.

As proposed by you, your students can visit our factory on 20/09/2019 at 10.00 AM. After reaching our factory, you may contact Shri Sanjay T.Patil (HR Officer) Mobile No. 9673331103.

Regards

S.T.Patil

Rocket Engineering Corporation Pvt.Ltd., kolhapur.

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
Tel.: 02186-216063, 9503103757, E-mail : coe@sveri.ac.in, Website: www.sveri.ac.in
(Approved by A.I.C.T.E., New Delhi and affiliated to Solapur University, Solapur)
NBA Accredited all Eligible UG Programmes and , NAAC, Accredited Institute,
Accredited by the Institute of Engineers (India), Kolkata and TCS, Pune ISO 9001-2015 Certified Institute

Ref. No.:- COEPR/MECH/19-20/

Date: 20/09/2019

To,

Rocket Engineering,

Corporation Pvt.Ltd.,

kolhapur.

Sub: -About Industrial Visit

Dear Sir,

Hope this letter finds you in good health and pleasant mood.

First of all, we wish to put forth few words regarding our College. Ours is NBA accredited and an ISO 9001:2015 certified Engineering College located in Pandharpur, the "South Kashi" of India and "Spiritual capital" of Maharashtra. "Shri Vitthal Education & Research Institute", Pandharpur, the trust established by group of qualified and experienced Technocrats.

As per our **S.Y. B.Tech (Mechanical Engg.)** syllabus for Internal Combustion Engine subject, we want to organize industrial visit to your well reputed industry for getting knowledge about Petrol/Diesel Engine. Our Second year Mechanical students are nearly about 120, who are willing to visit to your estimated organization. So you are requested to permit us to visit your esteemed organization for our **S.Y. B.Tech** Mechanical students along with few Staff members, on **20/09/2019.**

Yours faithfully,

(Dr. S. A. Sonawane)
Head, Mech Engg. Dept.

Dt: 20-9-19
Visited 130 Nos. student &
07 Nos. teacher staf
→ found ok

ROCKET ENGG. CORPN. P. LTD.

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
Tel.: 02186-216064, 9503103737, E-mail : coe@sveri.ac.in, Website: www.sveri.ac.in
(Approved by A.I.C.T.E., New Delhi and affiliated to Solapur University, Solapur)
NBA Accredited all Eligible UG Programmes and , NAAC, Accredited Institute,
Accredited by the Institute of Engineers (India), Kolkata and IQS, Pune ISO 9001:2015 Certified Institute

Ref. No.:- COEPR/MECH/19-20/

Date: 19/09/2019

To,
Sadamate Forging, Pvt.Ltd.,
Palus, Dist - Sangali

Sub: -About Industrial Visit

Dear Sir,

Hope this letter finds you in good health and pleasant mood.

First of all, we wish to put forth few words regarding our College. Ours is NBA accredited and an ISO 9001:2015 certified Engineering College located in Pandharpur, the "South Kashi" of India and "Spiritual capital" of Maharashtra. "Shri Vitthal Education & Research Institute", Pandharpur, the trust established by group of qualified and experienced Technocrats.

As per our **S.Y. B.Tech (Mechanical Engg.)** syllabus for Internal Combustion Engine subject, we want to organize industrial visit to your well reputed industry for getting knowledge about Petrol/Diesel Engine. Our Second year Mechanical students are nearly about 120, who are willing to visit to your estimated organization. So you are requested to permit us to visit your esteemed organization for our **S.Y. B.Tech** Mechanical students along with few Staff members, on **19/09/2019.**

Yours faithfully,

SAS

(Dr. S. A. Sonawane)
Head, Mech Engg. Dept.

132 Students + 3 staff members visited on 19/9/2019.

Sadamate Industries Palus

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Tal.- Pandharpur- 413 304,Dist.- Solapur (Maharashtra)
Tel.: 02186-216063, 9503103757, E-mail : coe@sveri.ac.in, Website: www.sveri.ac.in
(Approved by A.I.C.T.E., New Delhi and affiliated to Solapur University, Solapur)
NBA Accredited all Eligible UG Programmes and , **NAAC**, Accredited Institute,
Accredited by the Institute of Engineers (India), Kolkata and TCS, Pune ISO 9001-2015 Certified Institute

Ref. No.:- COEPR/MECH/19-20/

Date: 19/09/2019

To,

Kedar Foundary, Pvt.Ltd.,

Palus, Dist - Sangali

Sub: -About Industrial Visit

Dear Sir,

Hope this letter finds you in good health and pleasant mood.

First of all, we wish to put forth few words regarding our College. Ours is NBA accredited and an ISO 9001:2015 certified Engineering College located in Pandharpur, the "South Kashi" of India and "Spiritual capital" of Maharashtra. "Shri Vitthal Education & Research Institute", Pandharpur, the trust established by group of qualified and experienced Technocrats.

As per our **S.Y. B.Tech (Mechanical Engg.)** syllabus for Internal Combustion Engine subject, we want to organize industrial visit to your well reputed industry for getting knowledge about Petrol/Diesel Engine. Our Second year Mechanical students are nearly about 120, who are willing to visit to your estimated organization. So you are requested to permit us to visit your esteemed organization for our **S.Y. B.Tech** Mechanical students along with few Staff members, on **19/09/2019.**

Yours faithfully,

SAS

(Dr. S. A. Sonawane)
Head, Mech Engg. Dept.

132 student visited along with 08 faculty members. visited to our company. Dated - 19/09/19

SHREE KEDAR METAL FOUNDRIES, PALUS

Shree Kedar Metal Foundries PALUS

DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20
CLASS: S. Y. B. Tech. (MECH) DIV: A
Attendance for Industrial Visit to Rocket Engine, Shiroli MIDC, Kolhapur
Date:- 20/09/2019

ll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
A 01	/Achugatla Komal Revansidheshwar		SA 26	Gaikwad Vaibhav Nanasaheb	
A 02	/Gajakosh Shradhha Dattatray		SA 27	Gaikwad Vaibhav Ramdas	
A 03	/Joshi Gayatri Vinayak		SA 28	Ghadage Prakash Bhimrao	
A 04	/Lakheri Vaishnavi Mahesh		SA 29	Shelar Yuvraj Vinod	
A 05	/Mirjkar Saleha Salim		SA 30	Satapute Rahul Rajaram	
SA06	/Parchandrao Madhuri Vinayak		SA 31	Godse Rutik Ramesh	
SA 07	/Parvat Namrata Raju		SA 32	Patil Rushikesh Vidyadhar	
08	/Sathe Deepjyoti Dattatray		SA 33	Hambirrao Kiran Vinayak	
SA 09	/Tarapurkar Rutuja Suresh		SA 34	Jagadale Milind Shashikant	
SA 10	Admane Dhananjay Rajendra		SA 35	Parchandrao Chandragupt V.	
SA 11	Sul Amol Dhondiba		SA 36	Jatkar Prathamesh Manohar	
SA 12	Bansode Dnyaneshwar Rohidas		SA 37	Joshi Atharv Santosh	
SA 13	Jadhav Atish Balaso		SA 38	Kadasare Saurabh Bandu	
SA 14	Burungale Bharat Dnyandev		SA 39	Kale Ayush Nitin	
SA 15	Chavan Samarth Suresh		SA 40	Khandagale Rohit Ananda	
SA 16	Chavan Saurabh Chandrakant		SA 41	Kirgat Prathmesh Ramesh	
SA 17	Chavan Shreeyash Rajaram		SA 42	Kshirsagar Sachin Ashok	
18	Chavan Yogesh Prakash		SA 43	Pansare Akshay Balasaheb	
SA 19	Chavare Sumeet Suhas		SA 44	Misal Mangesh Mahavir	
SA 20	Chitari Ghanasham Shashikant		SA 45	More Suraj Dattatray	
SA 21	Dandage Omkar Babaso		SA 46	Motewar Aditya Vyankatesh	
SA 22	Deokar Onkar Rajendra		SA 47	Mundhe Nikhil Dilip	
SA 23	Deshmukh Pruthviraj Somnath		SA48	Narute Bhushan Narayan	
SA 24	Todkar Ganesh Shankar		SA49	Waghmare Sachin Dattatray	
SA 25	Gadekar Yash Yuvraj		SA50	Disale Pranay	

(Prof. S. J. Shinde)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20
CLASS: S. Y. B. Tech. (MECH) DIV: A
Attendance for Industrial Visit to Kedar Foundry, Palus Date:- 19/09/2019

Roll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
A 01	/Achugatla Komal Revansidheshwar		SA 26	Gaikwad Vaibhav Nanasaheb	
A 02	/Gajakosh Shradhha Dattatray		SA 27	Gaikwad Vaibhav Ramdas	
A 03	/Joshi Gayatri Vinayak		SA 28	Ghadage Prakash Bhimrao	
A 04	/Lakheri Vaishnavi Mahesh		SA 29	Shelar Yuvraj Vinod	
A 05	/Mirjkar Saleha Salim		SA 30	Satapute Rahul Rajaram	
SA06	/Parchandrao Madhuri Vinayak		SA 31	Godse Rutik Ramesh	
SA 07	/Parvat Namrata Raju		SA 32	Patil Rushikesh Vidyadhar	
08	/Sathe Deepjyoti Dattatray		SA 33	Hambirrao Kiran Vinayak	
SA 09	/Tarapurkar Rutuja Suresh		SA 34	Jagadale Milind Shashikant	
SA 10	Admane Dhananjay Rajendra		SA 35	Parchandrao Chandragupt V.	
SA 11	Sul Amol Dhondiba		SA 36	Jatkar Prathamesh Manohar	
SA 12	Bansode Dnyaneshwar Rohidas		SA 37	Joshi Atharv Santosh	
SA 13	Jadhav Atish Balaso		SA 38	Kadasare Saurabh Bandu	
SA 14	Burungale Bharat Dnyandev		SA 39	Kale Ayush Nitin	
SA 15	Chavan Samarth Suresh		SA 40	Khandagale Rohit Ananda	
SA 16	Chavan Saurabh Chandrakant		SA 41	Kirgat Prathmesh Ramesh	
SA 17	Chavan Shreeyash Rajaram		SA 42	Kshirsagar Sachin Ashok	
18	Chavan Yogesh Prakash		SA 43	Pansare Akshay Balasaheb	
SA 19	Chavare Sumeet Suhas		SA 44	Misal Mangesh Mahavir	
SA 20	Chitari Ghanasham Shashikant		SA 45	More Suraj Dattatray	
SA 21	Dandage Omkar Babaso		SA 46	Motewar Aditya Vyankatesh	
SA 22	Deokar Onkar Rajendra		SA 47	Mundhe Nikhil Dilip	
SA 23	Deshmukh Pruthviraj Somnath		SA48	Narute Bhushan Narayan	
SA 24	Todkar Ganesh Shankar		SA49	Waghmare Sachin Dattatray	
SA 25	Gadekar Yash Yuvraj		SA50	Disale Pranay	

(Prof. S. J. Shinde)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

DEPARTMENT OF MECHANICAL ENGINEERING

A.Y. 2019-20

CLASS: S. Y. B. Tech. (MECH) DIV: A

Attendance for Industrial Visit to Sadamate Forging, Palus Date:- 19/09/2019

l No.	Name of Student	Sign	Roll No.	Name of Student	Sign
A 01	/Achugatla Komal Revansidheshwar		SA 26	Gaikwad Vaibhav Nanasaheb	
A 02	/Gajakosh Shradhha Dattatray		SA 27	Gaikwad Vaibhav Ramdas	
A 03	/Joshi Gayatri Vinayak		SA 28	Ghadage Prakash Bhimrao	
A 04	/Lakheri Vaishnavi Mahesh		SA 29	Shelar Yuvraj Vinod	
A 05	/Mirjkar Saleha Salim		SA 30	Satapute Rahul Rajaram	
A06	/Parchandrao Madhuri Vinayak		SA 31	Godse Rutik Ramesh	
SA 07	/Parvat Namrata Raju		SA 32	Patil Rushikesh Vidyadhar	
SA 08	/Sathe Deepjyoti Dattatray		SA 33	Hambirrao Kiran Vinayak	
. 09	/Tarapurkar Rutuja Suresh		SA 34	Jagadale Milind Shashikant	
SA 10	Admane Dhananjay Rajendra		SA 35	Parchandrao Chandragupt V.	
SA 11	Sul Amol Dhondiba		SA 36	Jatkar Prathamesh Manohar	
SA 12	Bansode Dnyaneshwar Rohidas		SA 37	Joshi Atharv Santosh	
SA 13	Jadhav Atish Balaso		SA 38	Kadasare Saurabh Bandu	
SA 14	Burungale Bharat Dnyandev		SA 39	Kale Ayush Nitin	
SA 15	Chavan Samarth Suresh		SA 40	Khandagale Rohit Ananda	
SA 16	Chavan Saurabh Chandrakant		SA 41	Kirgat Prathmesh Ramesh	
SA 17	Chavan Shreeyash Rajaram		SA 42	Kshirsagar Sachin Ashok	
SA 18	Chavan Yogesh Prakash		SA 43	Pansare Akshay Balasaheb	
'9	Chavare Sumeet Suhas		SA 44	Misal Mangesh Mahavir	
SA 20	Chitari Ghanasham Shashikant		SA 45	More Suraj Dattatray	
SA 21	Dandage Omkar Babaso		SA 46	Motewar Aditya Vyankatesh	
SA 22	Deokar Onkar Rajendra		SA 47	Mundhe Nikhil Dilip	
SA 23	Deshmukh Pruthviraj Somnath		SA48	Narute Bhushan Narayan	
SA 24	Todkar Ganesh Shankar		SA49	Waghmare Sachin Dattatray	
SA 25	Gadekar Yash Yuvraj		SA50	Disale Pranay	

(Prof. S. J. Shinde)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

DEPARTMENT OF MECHANICAL ENGINEERING

A.Y. 2019-20

CLASS: S. Y. B. Tech. (MECH) DIV: B

Attendance for Industrial Visit to Sadamate Forging, Palus Date:- 19/09/2019

Roll No.	Name of Student	Sign.	Roll No.	Name of Student	Sign.
SB 01	/Deshpande Samruddhi Rajendra		SB 29	Mulani Aman Allauddin	
SB 02	/EkatpurePreranaShrirang		SB 30	NagtilakHarshal Rajendra	
SB 03	/LaleArati Gajanan		SB 31	NanawareJaydev Dipak	
SB 04	/Mane Snehal Digambar		SB 33	Parmar Ridham Girish	
SB 05	/More Vaishali Dilip		SB 34	Patil Madan Kalyan	
SB 06	/SonawaneDhanashree Bharat		SB 35	Patil Santosh Hanamant	
SB 07	Vidhate Rohit Dattatraya		SB 36	Patil Yogesh Kumar	
SB 08	Wadekar Saurabh Ganesh		SB 37	Pawar Omkar Santosh	
SB 10	Bansode Aniket Annaso		SB 38	Pawar Shubham Uttam	
SB 11	Bapat Vinayak Vishnu		SB 39	Rai Hrishav Raj	
SB 12	Bhosale Hritik Ramesh		SB 40	Rohit DattatryChatage	
SB 13	Bhosale Vaibhav Rajendra		SB 41	Yasar Yusuf Khatik	
SB 14	Deshmukh Pratik Pravin		SB 42	SarakKashilingKalidas	
SB 15	Dhotre Sourabh Sanjay		SB 43	Saravale Aniket Rajkumar	
SB 16	Dixit Manthan Milind		SB 44	Shaikh Aftab Bashir	
SB 17	Gaikwad Abhinay Rajendra		SB 45	Shaikh Salim Husen	
SB 18	Gavali Suraj Rajendra		SB 46	Shinde Dipak Pandurang	
SB 19	Waghmode Chetan		SB 47	Shinde NanasahebSiddheshwar	
SB 20	WaghmodeDhondiram Madhu		SB 48	Shinde Vishwajit Ashok	
SB 21	Kadam Nilesh Sanjay		SB 49	ShitoleDnyaneshawr Ganpat	
SB 22	Khote Abhijeet Sunil		SB50	Ubale Harshvardhan Sudhir	
SB 23	Kulkarni Atharv Makarand		SB51	Taur Mohit Nagesh	
SB 24	Londhe Vaibhav Anil		SB52	KengarSachinUttam	
SB 25	MadaneAvinashAjinath		SB 53	Langote Krishna S.	
SB 26	Mali Amol Vijay				
SB 27	Mashalkar Omkar Basavraj				
SB 28	Metkari Om Damodar				

(Prof. C. C. Jadhav)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI'S COLLEGE OF E...
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20
CLASS: S. Y. B. Tech. (MECH) DIV: B
Attendance for Industrial Visit to Kedar Foundry, Palus Date:- 19/09/2019

oll No.	Name of Student	Sign.
SB 01	/Deshpande Samruddhi Rajendra	
SB 02	/EkatpurePreranaShrirang	
SB 03	/LaleArati Gajanan	
SB 04	/Mane Snehal Digambar	
SB 05	/More Vaishali Dilip	
SB 06	/SonawaneDhanashree Bharat	
SB 07	Vidhate Rohit Dattatraya	
SB 08	Wadekar Saurabh Ganesh	
SB 10	Bansode Aniket Annaso	
SB 11	Bapat Vinayak Vishnu	
SB 12	Bhosale Hritik Ramesh	
SB 13	Bhosale Vaibhav Rajendra	
SB 14	Deshmukh Pratik Pravin	
SB 15	Dhotre Sourabh Sanjay	
SB 16	Dixit Manthan Milind	
SB 17	Gaikwad Abhinay Rajendra	
SB 18	Gavali Suraj Rajendra	
SB 19	Waghmode Chetan	
SB 20	WaghmodeDhondiram Madhu	
SB 21	Kadam Nilesh Sanjay	
SB 22	Khote Abhijeet Sunil	
SB 23	Kulkarni Atharv Makarand	
SB 24	Londhe Vaibhav Anil	
SB 25	MadaneAvinashAjinath	
SB 26	Mali Amol Vijay	
SB 27	Mashalkar Omkar Basavraj	
SB 28	Metkari Om Damodar	

Roll No.	Name of Student	Sign.
SB 29	Mulani Aman Allauddin	
SB 30	NagtilakHarshal Rajendra	
SB 31	NanawareJaydev Dipak	
SB 33	Parmar Ridham Girish	
SB 34	Patil Madan Kalyan	
SB 35	Patil Santosh Hanamant	
SB 36	Patil Yogesh Kumar	
SB 37	Pawar Omkar Santosh	
SB 38	Pawar Shubham Uttam	
SB 39	Rai Hrishav Raj	
SB 40	Rohit DattatryChatage	
SB 41	Yasar Yusuf Khatik	
SB 42	SarakKashilingKalidas	
SB 43	Saravale Aniket Rajkumar	
SB 44	Shaikh Aftab Bashir	
SB 45	Shaikh Salim Husen	
SB 46	Shinde Dipak Pandurang	
SB 47	Shinde NanasahebSiddheshwar	
SB 48	Shinde Vishwajit Ashok	
SB 49	ShitoleDnyaneshawr Ganpat	
SB50	Ubale Harshvardhan Sudhir	
SB51	Taur Mohit Nagesh	
SB52	KengarSachinUttam	
SB 53	Langote Krishna S.	

(Prof. C. C. Jadhav)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20
CLASS: S. Y. B. Tech. (MECH) DIV: B
Attendance for Industrial Visit to Rocket Engine, Shiroli MIDC, Kolhapur
Date:- 20/09/2019

Roll No.	Name of Student	Sign.	Roll No.	Name of Student	Sign.
SB 01	/Deshpande Samruddhi Rajendra		SB 29	Mulani Aman Allauddin	
SB 02	/EkatpurePreranaShrirang		SB 30	NagtilakHarshal Rajendra	
SB 03	/LaleArati Gajanan		SB 31	NanawareJaydev Dipak	
SB 04	/Mane Snehal Digambar		SB 33	Parmar Ridham Girish	
SB 05	/More Vaishali Dilip		SB 34	Patil Madan Kalyan	
SB 06	/SonawaneDhanashree Bharat		SB 35	Patil Santosh Hanamant	
SB 07	Vidhate Rohit Dattatraya		SB 36	Patil Yogesh Kumar	
SB 08	Wadekar Saurabh Ganesh		SB 37	Pawar Omkar Santosh	
SB 10	Bansode Aniket Annaso		SB 38	Pawar Shubham Uttam	
SB 11	Bapat Vinayak Vishnu		SB 39	Rai Hrishav Raj	
SB 12	Bhosale Hritik Ramesh		SB 40	Rohit DattatryChatage	
SB 13	Bhosale Vaibhav Rajendra		SB 41	Yasar Yusuf Khatik	
SB 14	Deshmukh Pratik Pravin		SB 42	SarakKashilingKalidas	
SB 15	Dhotre Sourabh Sanjay		SB 43	Saravale Aniket Rajkumar	
SB 16	Dixit Manthan Milind		SB 44	Shaikh Aftab Bashir	
SB 17	Gaikwad Abhinay Rajendra		SB 45	Shaikh Salim Husen	
SB 18	Gavali Suraj Rajendra		SB 46	Shinde Dipak Pandurang	
SB 19	Waghmode Chetan		SB 47	Shinde NanasahebSiddheshwar	
SB 20	WaghmodeDhondiram Madhu		SB 48	Shinde Vishwajit Ashok	
SB 21	Kadam Nilesh Sanjay		SB 49	ShitoleDnyaneshawr Ganpat	
SB 22	Khote Abhijeet Sunil		SB50	Ubale Harshvardhan Sudhir	
SB 23	Kulkarni Atharv Makarand		SB51	Taur Mohit Nagesh	
SB 24	Londhe Vaibhav Anil		SB52	KengarSachinUttam	
SB 25	MadaneAvinashAjinath		SB 53	Langote Krishna S.	
SB 26	Mali Amol Vijay				
SB 27	Mashalkar Omkar Basavraj				
SB 28	Metkari Om Damodar				

(Prof. C. C. Jadhav)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20
CLASS: S. Y. B. Tech. (MECH) DIV: C
Attendance for Industrial Visit to Sadamate Forging, Palus **Date:- 19/09/2019**

	Name of Student	Sign	Roll No.	Name of Student	Sign
3	AJGAR AKASH PRASAD		SC 28	RONGE VIVEK DASHRATH	
04	AUTADE YOGESH SAMRUT		SC 29	SADUL SUNIL AMBADAS	
06	BHANDARE PRANAV MILIND		SC 30	SHAIKH MD AAZAM EJAZ AHMED	
07	DHABADE AVINASH BASAVRAJ		SC 31	SHIKALGAR SOHEL HUMAYUN	
09	EAKAMALLI NITIN TATYA		SC 32	SOMADALE PRAVIN DILIP	
10	GAIKWAD SAURABH SHAHAJI		SC 33	THORAT SHASHIKANT DADARAO	
11	GANGTHADE VISHAL ANKUSH		SC 36	WAYKAR VALLABH TRIMBAK	
C 12	JADHAV SUSHANT BHAUSAHEB		SC 37	PATIL OMKAR SANJAY	
C 13	JAGTAP OMKAR CHANDRAKANT				
C 14	KOLI AKASH REVAPPA				
SC 15	LAVATE DASHRATH PANDURANG				
SC 16	LONDHE AVINASH SANDIPAN				
SC 17	MANE AKASH SAMBHAJI				
SC 18	MANE-DESHMUKH SAMARTH BABRUVAHAN				
SC 19	MOHAMMAD SAJID KHAN				
SC 20	MUJAWAR NIHAL YUSUF				
SC 21	MULANI IRFAN RASHID				
SC 22	MUSALE PRAJWAL DATTATRAYA				
SC 23	NAGARGOJE RAMBHAJEE RAMCHANDRA				
SC 24	PADAGE PRITAM BALAJI				
SC 25	PARAS MAHAVIR MULE				
SC 26	PAWAR SHAILESH MAHADEV				

(Prof. P. K. Patil)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20

CLASS: S. Y. B. Tech. (MECH) DIV: A

Attendance for Industrial Visit to Rocket Engine, Shiroli MIDC, Kolhapur

Date:- 20/09/2019

Roll No.	Name of Student	Sign	Roll No.	Name of Student	Sign
SC 03	AJGAR AKASH PRASAD		SC 28	RONGE VIVEK DASHRATH	
SC 04	AUTADE YOGESH SAMRUT		SC 29	SADUL SUNIL AMBADAS	
SC 06	BHANDARE PRANAV MILIND		SC 30	SHAIKH MD AAZAM EJAZ AHMED	
SC 07	DHABADE AVINASH BASAVRAJ		SC 31	SHIKALGAR SOHEL HUMAYUN	
SC 09	EAKAMALLI NITIN TATYA		SC 32	SOMADALE PRAVIN DILIP	
SC 10	GAIKWAD SAURABH SHAHAJI		SC 33	THORAT SHASHIKANT DADARAO	
SC 11	GANGTHADE VISHAL ANKUSH		SC 36	WAYKAR VALLABH TRIMBAK	
SC 12	JADHAV SUSHANT BHAUSAHEB		SC 37	PATIL OMKAR SANJAY	
SC 13	JAGTAP OMKAR CHANDRAKANT				
SC 14	KOLI AKASH REVAPPA				
SC 15	LAVATE DASHRATH PANDURANG				
SC 16	LONDHE AVINASH SANDIPAN				
SC 17	MANE AKASH SAMBHAJI				
SC 18	MANE-DESHMUKH SAMARTH BABRUVAHAN				
SC 19	MOHAMMAD SAJID KHAN				
SC 20	MUJAWAR NIHAL YUSUF				
SC 21	MULANI IRFAN RASHID				
SC 22	MUSALE PRAJWAL DATTATRAYA				
SC 23	NAGARGOJE RAMBHAJEE RAMCHANDRA				
SC 24	PADAGE PRITAM BALAJI				
SC 25	PARAS MAHAVIR MULE				
SC 26	PAWAR SHAILESH MAHADEV				

(Prof. P. K. Patil)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

DEPARTMENT OF MECHANICAL ENGINEERING

A.Y. 2019-20

CLASS: S. Y. B. Tech. (MECH) DIV: A

Attendance for Industrial Visit to Kedar Foundry, Palus Date:- 19/09/2019

	Name of Student	Sign	Roll No.	Name of Student	Sign
03	AJGAR AKASH PRASAD		SC 28	RONGE VIVEK DASHRATH	
04	AUTADE YOGESH SAMRUT		SC 29	SADUL SUNIL AMBADAS	
06	BHANDARE PRANAV MILIND		SC 30	SHAIKH MD AAZAM EJAZ AHMED	
07	DHABADE AVINASH BASAVRAJ		SC 31	SHIKALGAR SOHEL HUMAYUN	
09	EAKAMALLI NITIN TATYA		SC 32	SOMADALE PRAVIN DILIP	
10	GAIKWAD SAURABH SHAHAJI		SC 33	THORAT SHASHIKANT DADARAO	
11	GANGTHADE VISHAL ANKUSH		SC 36	WAYKAR VALLABH TRIMBAK	
12	JADHAV SUSHANT BHAUSAHEB		SC 37	PATIL OMKAR SANJAY	
13	JAGTAP OMKAR CHANDRAKANT				
14	KOLI AKASH REVAPPA				
15	LAVATE DASHRATH PANDURANG				
16	LONDHE AVINASH SANDIPAN				
17	MANE AKASH SAMBHAJI				
C 18	MANE-DESHMUKH SAMARTH BABRUVAHAN				
C 19	MOHAMMAD SAJID KHAN				
C 20	MUJAWAR NIHAL YUSUF				
C 21	MULANI IRFAN RASHID				
[illegible] 2	MUSALE PRAJWAL DATTATRAYA				
SC 23	NAGARGOJE RAMBHAJEE RAMCHANDRA				
SC 24	PADAGE PRITAM BALAJI				
SC 25	PARAS MAHAVIR MULE				
SC 26	PAWAR SHAILESH MAHADEV				

(Prof. P. K. Patil)
Class Coordinator

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

Industrial Visit Report

Date:- 10/03/2020

To,

The Principal

SVERI'S COEP

Pandharpur

Subject:- Report of Industrial Visit

Respected Sir,

As per the curriculum laid by Punyashlok Ahilyadevi Holkar Solapur University, Solapur for S.Y B. Tech (Mechanical Engineering Part-II), Manufacturing Technology subject has included industrial visit. In this regard,125 student along with 8 faculty members visited S.G. Gear Tembhurni, on 3rd and 5th March. 2020. During Visit we had seen various types of gears, manufacturing of gears. From this industrial visit student got practical knowledge about actual gear manufacturing and they got satisfied with the visit

This is for your kind information and needful action.

Thanking you.

(Prof. K.S. Pukale)

MT Subject Teacher

S.Y. B. Tech (Mech) Div:- A and B

123 Students alongwith 8 faculty members visited to Industry

Industrial Visit Report

Date:- 10/03/2020

To,

The Principal

SVERI'S COEP

Pandharpur

Subject:- Report of Industrial Visit

Respected Sir,

As per the curriculum laid by Punyashlok Ahilyadevi Holkar Solapur University, Solapur for S.Y B. Tech (Mechanical Engineering Part-II), Power Plant and Energy Engineering subject has included industrial visit. In this regard,125 student along with 8 faculty members visited NPCIL Tarapur, on 3rdth, 4th and 5th March 2020. During Visit we had seen various power generation process. From this industrial visit student got knowledge about actual Power plant working process and they got satisfied with the visit

This is for your kind information and needful action.

Thanking you.

(Prof. Y. M. Khedkar)
PP and EE Subject Teacher
S.Y. B. Tech (Mech) Div:- A

(Prof. R. D. Solage)
PP and EE Subject Teacher
S.Y. B. Tech (Mech) Div:- B

123 Student alongwith 8 faculty members visited to Industry

COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2019-20 SEM: II
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 28/02/2020

We undersigned students of S. Y. B. Tech Mech. (A) div. are hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to S. G. Gears Tembhurni, Atomic Power Station Tarapur and Samundra Maritine Studies Lonavala from 3rd March to 5th March 2020. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.

We are signing the undertaking on 28/02/2020 in presence of Prof. S. M. Kale, Prof. K. S. Pukale, Prof. R. D. Solage, Prof. Y. M. Khedkar.

Sr. No.	Name of Student	Sign	Sr. No.	Name of Student	Sign
1	/Achugatla Komal		36	Jatkar Prathamesh Manohar	
2	/Gajakosh Shradhha Dattatray		37	Joshi Atharv Santosh	
3	/Joshi Gayatri Vinayak		38	Kadasare Saurabh Bandu	
4	/Lakheri Vaishnavi Mahesh		39	Kale Ayush Nitin	
5	/Mirjkar Saleha Salim		40	Khandagale Rohit Ananda	
6	/Parchandarao Madhuri Vinayak		41	Kirgat Prathmesh Ramesh	
7	/Parvat Namrata Raju		42	Kshirsagar Sachin Ashok	
8	/Sathe Deepjyoti Dattatray		43	Pansare Akshay Balasaheb	
9	/Tarapurkar Rutuja Suresh		44	Misal Mangesh Mahavir	
10	Admane Dhananjay Rajendra		45	More Suraj Dattatray	
11	Sul Amol Dhondiba		46	Motewar Aditya Vyankatesh	
12	Bansode Dnyaneshwar Rohidas		47	Mundhe Nikhil Dilip	
13	Jadhav Atish Balaso		48	Narute Bhushan Narayan	
14	Burungale Bharat Dnyandev		49	Waghmare Sachin Dattatray	
15	Chavan Samarth Suresh		50	Disale Pranay	
16	Chavan Saurabh Chandrakant		51	Mane-Deshmukh Samarth	
17	Chavan Shreeyash Rajaram		52	Khan Mohammad Sajid	
18	Chavan Yogesh Prakash		53	Mujawar Nihal Yusuf	
19	Chavare Sumeet Suhas		54	Mulani Irfan Rashid	
20	Chitari Ghanasham Shashikant		55	Musale Prajwal Dattatraya	
21	Dandage Omkar Babaso		56	Nagargoje Rambhajee R	
22	Deokar Onkar Rajendra		57	Padage Pritam Balaji	
23	Deshmukh Pruthviraj Somnath		58	Mule Paras Mahavir	
24	Todkar Ganesh Shankar — Ab	—	59	Pawar Shailesh Mahadev	
25	Gadekar Yash Yuvraj		60	Phalake Onkar Haridas	
26	Gaikwad Vaibhav Nanasaheb		61	Ronge Vivek Dashrath	
27	Gaikwad Vaibhav Ramdas		62	Sadul Sunil Ambadas	
28	Ghadage Prakash Bhimrao		63	Md Aazam Ejaz Ahmed	
29	Shelar Yuvraj Vinod — Ab	—	64	Shikalgar Sohel Humayun	
30	Satapute Rahul Rajaram		65	Somadale Pravin Dilip	
31	Godse Rutik Ramesh		66	Thorat Shashikant Dadarao	
32	Patil Rushikesh Vidyadhar		67	Vairagkar Kanhaiya	
33	Hambirrao Kiran Vinayak		68	Wadekar Chaitanya — Ab	—
34	Jagadale Milind Shashikant		69	Waykar Vallabh Trimbak	
35	Parchandrao Chandragupt Vinayak		70	Patil Omkar Sanjay	

(Prof. S. M. Kale)
CC- S.Y. B. Tech (A)

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y.: 2019-20 SEM: II
UNDERTAKING FOR INDUSTRIAL VISIT

Date: 28/02/2020

We undersigned students of SE Mech. (B) div. are hereby declare that to fulfill the requirement of our university syllabus, we are willingly going to industrial visit to Tembhurni on 5th March 2020. We shall follow all the instructions given by staff members and maintain discipline & culture of institute throughout the visit. We are responsible for our own safety. If any misbehavior will happen from our side during visit, we are ready for punishment decided by authority.
We are signing the undertaking on 29/02/2020 in presence of Prof.R.D.Solage, Prof. K. S. Pukale, Prof. S. M. Kale, Prof. S. Y. Salunkhe, /Prof. P. K. Patil , /prof. H.M.Gove.

Sr. no.	Name of Student	Sign	Sr.no.	Name of Student	Sign
01	/Deshpande Samruddhi Rajendra		36	Shaikh Aftab Bashir	
02	/Ekatpure Prerana Shrirang		37	Shinde Dipak Pandurang	
03	/Lale Arati Gajanan		38	Shinde Nanasaheb Siddheshwar	
04	/Mane Snehal Digambar		39	ShindeVishwajit Ashok	
05	/More Vaishali Dilip		40	Shitole Dnyaneshawr Ganpat	
06	/Sonawane Dhanashree Bharat		41	Ubale Harshvardhan Sudhir	
07	Bansode Aniket Annasaheb		42	Taur Mohit Nagesh	
08	BapatVinayak Vishnu		43	Kengar SachinUttam	
09	Bhosale Hritik Ramesh		44	Langote Krishna Suryakant	
10	BhosaleVaibhav Rajendra		45	Vidhate Rohit Dattatraya	
11	Deshmukh Pratik Pravin		46	Wadekar Saurabh Ganesh	
12	Dixit Manthan Milind		47	Ajgar Akash prasad	
13	Gaikwad Abhinay Rajendra		48	Autade Yogesh Somnat	Ab
14	Gavali Suraj Rajendra		49	Bagul Sandip Bhagwan	Ab
15	Waghmode Chetan	Ab	50	Bhandare pranav milind	
16	Waghmode Dhondiram Madhu		51	Dhabade Avinash B.	
17	Khote Abhijeet Sunil		52	Dhere Rupesh A.	Ab
18	Kulkarni Atharv Makarand		53	Fakmalli Nitin Tatya	
19	Londhe Vaibhav Anil	Ab	54	Gaikwad saurabh S.	
20	Madane Avinash Ajinath	Ab	55	Gangthade Vishal Ankush	
21	Mali Amol Vijay		56	Jadhav Sushant	
22	Mashalkar Omkar Basavraj		57	Jagtap Omkar chandrakant	
23	Mulani Aman Allauddin		58	Koli Akash Revappa.	
24	Nagtilak Harshal Rajendra		59	Lavate Dashrath	
25	Nanaware Jaydev Dipak		60	Londhe Avinash sandipan	
26	Patil Madan Kalyan		61	Mane Akash sandipan	
27	Patil Santosh Hanamant		62	Kadam Nilesh Sanjay	
28	Patil Yogesh Kumar				
29	Pawar Omkar Santosh				
30	Pawar ShubhamUttam				
31	Rai Hrishav Raj				
32	Rohit Dattatry Chatage				
33	Yasar Yusuf Khatik				
34	Sarak Kashiling Kalidas				
35	Saravale Aniket Rajkumar				

(Prof. R.D. Solage)
Class Coordinator

(Prof. S.A.Sonawane)
Head, Mech. Engg. Dept.

S. G. GEARS

TÜV AUSTRIA CERTIFIED EN ISO 9001

MFG. OF : GEAR, GEAR BOXES & PRECISION MACHINED COMPONENTS

HEAD OFFICE : PLOT NO. 35, SECTOR 10, PCNTDA IND. AREA, BEHIND TIMES OF INDIA, BHOSARI, PUNE - 411 026. ☎: 020-66301152
E-mail : sggears@gmail.com Web. : www.sggears.co.in

WORKS : PLOT NO. B-10/1/1, M.I.D.C., TEMBHURNI, TAL. MADHA, DIST. : SOLAPUR - 413 211.

Date :- 05/03/2020

To ,

The Principal ,

SVERI's College of Engineering ,

Pandharpur .

Sub :- About Industrial Visit ...

Respected Sir ,

With respect to above cited subject your around 140 students for S.Y.B. Tech along with 8 faculty members visited our organization as a part of industrial visit on 3rd March 2020 and 5th March 2020 related to manufacturing Technology subject of mechanical engineering . During this visit to your student were found sincere and studious . The student got practical exposure of gear manufacturing processes . We express best wishes to your institute and all students . Visit again ..

Thanking You

SVERI

Ram Solage <rdsolage@coe.sveri.ac.in>

: Request for Industrial Visit at Your Institute

sage

inJay Kumbhar <dakumbhar@coe.sveri.ac.in> Sun, Mar 1, 2020 at 1:00 PM
r. Sachin Kale" <smkale@coe.sveri.ac.in>, rdsolage@coe.sveri.ac.in, kspukale@coe.sveri.ac.in

---- Forwarded message ---------
r: simsmumbai <simsmumbai@samundra.com>
: Fri, Feb 28, 2020, 13:08
ject: RE: Request for Industrial Visit at Your Institute
hananjay Kumbhar <dakumbhar@coe.sveri.ac.in>

Sir,

tings Of The Day

riting in response to your mail after discussion. I'm delighted to accept your request to come down to for the field visit. We believe this to be an another significant step in bringing awareness about the r opportunity with SAMUNDRA INSTITUTE OF MARITIME STUDIES and relate to the training provided s importance to turn the Mechanical Engineers in to Marine Engineers.

ok forward to see your candidate and faculty as on 4th & 5th Of march.

s & Regards

fficer Representative of the Zone:

Raymond Swamy

Personnel Officer)

Samundra Institute of Maritime Studies
Gat No. 158/159 Mumbai-Pune Highway
Village - Takve Khurd, Tal- Maval,
Lonavala - 410 405, Dist - Pune
Phone No. 02114 399500

ndra Institute of Maritime Studies

Takwe-Khurd, Mumbai-Pune Highway(NH4),

ila, Dist. Pune, Maharashtra, PIN- 410 405

+91 2114-399500

e No: +91 8408920869

91 2114-399600

simsmumbai@samundra.com

: www.samundra.com

hananjay Kumbhar [mailto:dakumbhar@coe.sveri.ac.in]
February 2020 11:20
umbai <simsmumbai@samundra.com>
Request for Industrial Visit at Your Institute

h reference to our telephonic conversation, I would like to request you to give permission to our Final Year Mechanical]ineering Students for visit to your Institute on 4th March 2020 and 5th March 2020.

e of Visit: 4th March 2020

of Students: 90

of faculties accompany: 5

ıe of faculty coordinators: Prof. S M Kale - 9960118580

Prof. K S Pukale - 7776070913

of Visit: 5th March 2020

f Students: 45

f ılties accompany: 3

: of faculty coordinators: Prof. R D Solage - 9766990274

Prof. S Y Salunkhe - 8830976927

find attached request letter from Mechanical Engineering Department. Please consider our request and revert back to ıil.

ng you,

ırds,

hananjay A Kumbhar

Professor & TPO

!ls COE, Pandharpur

767107291

SVERI

SVERI's College of Engineering Pandharpur <coe@sveri.ac.in>

NFIRMATION OF VISIT REG. TAPS FIRST WEEK MARCH, 2020

essage

actms@npcil.co.in <pawactms@npcil.co.in>
HARISHAV RAI <hrishavrrai@coep.sveri.ac.in>
SVERI_PANDHARPUR_1 <coe@sveri.ac.in>

Fri, Feb 21, 2020 at 4:07 PM

spected Madam/Sir,

e Competent Authority has approved the visit.

it Of College Of Engineering, Phandharpur - 413304
tri Solapur (Maharashtra)

t As on 3,4,5,March,2020

al = 145 Visitors Including Student & Teachers

e:- Please carry originals College ID & Adhar Card while interring
urity chekpost Students & Teachers also required college id Xerox
otocopy)

se sent every day wise students& teachers list like 3,4,5,March,2020

Email through Visit Co- Ordinator Email, Mobiles, any phone no for
r communication

ards
SR CELL, TMS
ne No.02525 /244175
t 02525/283060
20

Above persons visited TAPS 3&4 ; under my guidance, thanks for Co-operation -

Saravade
Ishwar Saravade
SAIF(QA)
9 673117020

diation exposure to public from NPP is negligible **

aimer
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email and any files transmitted with it are intended solely for the use of the addressed individual or entity. It ns information that is confidential and protected from disclosure. It must not be printed, read, copied, disclosed, ded, distributed or used (in whatsoever manner) by any person other than the addressee. Unauthorized use, sure or copying is strictly prohibited and may constitute unlawful act and can possibly attract legal action.

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you.
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College of Engineering
Pandharpur

Scanned with CamScanner

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B. No. 54, Gopalpur -Ranjani Road, Gopalpur, Pandharpur- 413 304, District: Solapur (Maharashtra)
Tel.: 02186-216061, 9503103757, Toll Free No.: 1800-3000-4131, E-mail: coe@sveri.ac.in, Web: www.sveri.ac.in
(Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
NBA Accredited all eligible UG Programmes, NAAC Accredited Institute, Accredited by The Institution of Engineers (India), Kolkata and TCS, Pune. ISO 9001-2015 Certified Institute

Ref No: COEPR/2019-20/ 269 Date: 27/02/2020

To,
The Director ,
S.G. Gear Pvt.Ltd.
MIDC Tembhurni.

Sub: -About Industrial Visit

Dear Sir,

Hope this letter finds you in good health and pleasant mood.

First of all, we wish to put forth few words regarding our College. Ours is NBA accredited and an ISO 9001:2008 certified Engineering College located in Pandharpur, the "South Kashi" of India and "Spiritual capital" of Maharashtra. "Shri Vitthal Education & Research Institute", Pandharpur, the trust established by group of qualified and experienced Technocrats. We offer the following four-year degree courses in engineering viz. Mechanical Engg., Civil Engg., Electronics & Tele communication Engg. and Computer Science & Engg.

As per our S.Y B. Tech. (Mechanical Engg.) syllabus for Manufacturing Technology, we want to organize industrial visit to your well reputed Gear Industry for getting knowledge about Gear. Our Second year Mechanical students are nearly about 140, who are willing to visit to your estimated organization. So you are requested to permit us to visit your esteemed organization for our S.Y. Mechanical students along with few Staff members, probably in the period of 03/03/2020 to 05/03/2020.

We will remain grateful to you, if we get a chance to visit your well reputed Gear Manufacturing industry.

Thanking you.

S.G. GEARS SOLAPUR Tembhurni 413211

Visited
03-03.2020

Yours faithfully,

SAS

(Dr. S.A. Sonawane)
Head, Mech, Dept.

HEAD,
Dept. of Mechanical Engg
C.O.E. Pandharpur.

On dated 28/02/2020
I have discussed with
S.G. gear, Director Dilip
sir regarding permission
he has given permission for
Industrial visit on our
3/03/2020 to 5/03/2020
thanks your kind information.

[signature]
1/03/2020


S.G.GEARS
An ISO 9001 : 2008 Company

SVERI's
College of Engineering, Pandharpur
Mechanical Engineering Department

Subject: Mechanical Workshop-I

Class: S.Y. B.Tech. (Mech.)

A.Y.: 2019-2020

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20 (Sem-II)
CLASS: S. E. (MECH) DIV: A
List of Students undertaking Mechanical Workshop Practice-I

Roll No.	Name of Student	Roll No.	Name of Student
SA 01	/Achugatla Komal	SA 36	Jatkar Prathamesh Manohar
SA 02	/Gajakosh Shraddha Dattatray	SA 37	Joshi Atharv Santosh
SA 03	/Joshi GayatriVinayak	SA 38	Kadasare Saurabh Bandu
SA 04	/LakheriVaishnavi Mahesh	SA 39	Kale Ayush Nitin
SA 05	/MirjkarSaleha Salim	SA 40	Khandagale Rohit Ananda
SA06	/ParchandraoMadhuriVinayak	SA 41	Kirgat Prathmesh Ramesh
SA 07	/ParvatNamrata Raju	SA 42	Kshirsagar Sachin Ashok
SA 08	/Sathe Deepjyoti Dattatray	SA 43	Pansare Akshay Balasaheb
SA 09	/Tarapurkar Rutuja Suresh	SA 44	Misal Mangesh Mahavir
SA 10	Admane Dhananjay Rajendra	SA 45	More Suraj Dattatray
SA 11	Sul Amol Dhondiba	SA 46	Motewar Aditya Vyankatesh
SA 12	Bansode Dnyaneshwar	SA 47	Mundhe Nikhil Dilip
SA 13	Jadhav Atish Balaso	SA48	Narute Bhushan Narayan
SA 14	Burungale Bharat Dnyandev	SA49	Waghmare Sachin Dattatray
SA 15	Chavan Samarth Suresh	SA50	Disale Pranay
SA 16	Chavan Saurabh Chandrakant	SA51	Mane-Deshmukh
SA 17	Chavan Shreeyash Rajaram	SA52	Mohammad Sajid Khan
SA 18	Chavan Yogesh Prakash	SA53	Mujawar Nihal Yusuf
SA 19	Chavare Sumeet Suhas	SA54	Mulani Irfan Rashid
SA 20	Chitari Ghanasham	SA55	Musale Prajwal Dattatraya
SA 21	Dandage Omkar Babaso	SA56	Nagargoje Rambhajee
SA 22	Deokar Onkar Rajendra	SA57	Padage Pritam Balaji
SA 23	Deshmukh Pruthviraj	SA58	Paras Mahavir Mule
SA 24	Todkar Ganesh Shankar	SA59	Pawar Shailesh Mahadev
SA 25	GadekarYashYuvraj	SA60	Phalake Onkar Haridas
SA 26	Gaikwad VaibhavNanasaheb	SA61	Ronge Vivek Dashrath
SA 27	Gaikwad VaibhavRamdas	SA62	Sadul Sunil Ambadas
SA 28	Ghadage Prakash Bhimrao	SA63	Shaikh MdAazamEjaz
SA 29	ShelarYuvraj Vinod	SA64	Shikalgar Sohel Humayun
SA 30	Satapute Rahul Rajaram	SA65	Somadale Pravin Dilip
SA 31	Godse Rutik Ramesh	SA66	Thorat Shashikant Dadarao
SA 32	Patil RushikeshVidyadhar	SA67	Vairagkar Kanhaiya
SA 33	Hambirrao Kiran Vinayak	SA68	Wadekar Chaitanya Dattatray
SA 34	Jagadale Milind Shashikant	SA69	Waykar VallabhTrimbak
SA 35	Parchandrao Chandragupt V.	SA70	Patil Omkar Sanjay

(Prof. S. M. Kale)
Class Coordinator

(Prof. B. D. Gaikwad)
Workshop Incharge

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20 (Sem-II)
CLASS: S. E. (MECH) DIV: B
List of Students undertaking Mechanical Workshop Practice-I

Roll No.	Name of Student	Roll No.	Name of Student
SB 01	/Deshpande Samruddhi Rajendra	SB 36	Patil Yogesh Kumar
SB 02	/Ekatpure Prerana Shrirang	SB 37	Pawar Omkar Santosh
SB 03	/Lale Arati Gajanan	SB 38	Pawar ShubhamUttam
SB 04	/Mane Snehal Digambar	SB 39	Rai Hrishav Raj
SB 05	/More Vaishali Dilip	SB 40	Rohit Dattatry Chatage
SB 06	/Sonawane Dhanashree Bharat	SB 41	Yasar Yusuf Khatik
SB 07	/Sarwade Karuna Sunil	SB 42	Sarak Kashiling Kalidas
SB 08	/Surve Prajakta Dharmraj	SB 43	Saravale Aniket Rajkumar
SB 09	Bankar Adesh Gorakh	SB 44	Shaikh Aftab Bashir
SB 10	Bansode Aniket Annaso	SB 45	Shaikh Salim Husen
SB 11	BapatVinayak Vishnu	SB 46	Shinde Dipak Pandurang
SB 12	Bhosale Hritik Ramesh	SB 47	Shinde Nanasaheb
SB 13	BhosaleVaibhav Rajendra	SB 48	ShindeVishwajit Ashok
SB 14	Deshmukh Pratik Pravin	SB 49	Shitole Dnyaneshawr
SB 15	Dhotre Sourabh Sanjay	SB50	Ubale HarshvardhanSudhir
SB 16	Dixit Manthan Milind	SB51	Taur Mohit Nagesh
SB 17	Gaikwad Abhinay Rajendra	SB52	Kengar SachinUttam
SB 18	Gavali Suraj Rajendra	SB 53	Langote Krishna S.
SB 19	Waghmode Chetan Machchhindra	SB54	Vidhate Rohit Dattatraya
SB 20	Waghmode Dhondiram Madhu	SB55	Wadekar Saurabh Ganesh
SB 21	Kadam Nilesh Sanjay	SB56	Ajgar Akash Prasad
SB 22	Khote Abhijeet Sunil	SB 57	Autade Yogesh Samrut
SB 23	Kulkarni Atharv Makarand	SB58	Bagul Sandip Bhagwan
SB 24	LondheVaibhav Anil	SB59	Bhandare Pranav Milind
SB 25	Madane Avinash Ajinath	SB60	Dhabade Avinash Basavraj
SB 26	Mali Amol Vijay	SB 61	Dhere Rupesh Ambrushi
SB 27	Mashalkar Omkar Basavraj	SB62	Eakamalli Nitin Tatya
SB 28	Metkari Om Damodar	SB63	Gaikwad Saurabh Shahaji
SB 29	Mulani Aman Allauddin	SB64	Gangthade Vishal Ankush
SB 30	Nagtilak Harshal Rajendra	SB 65	Jadhav Sushant Bhausaheb
SB 31	Nanaware Jaydev Dipak	SB66	Jagtap Omkar Chandrakant
SB 32	Nikam Saurabh Sanjay	SB67	Koli Akash Revappa
SB 33	Parmar Ridham Girish	SB68	Lavate Dashrath Pandurang
SB 34	Patil Madan Kalyan	SB 69	Londhe Avinash Sandipan
SB 35	Patil Santosh Hanamant	SB70	Mane Akash Sambhaji

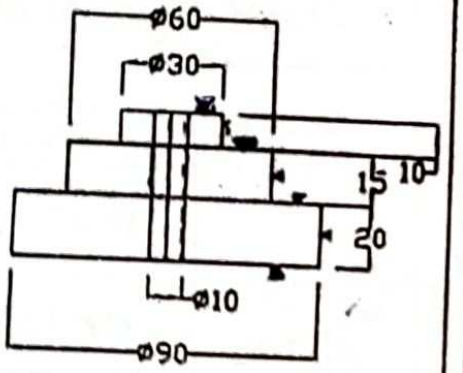
(Prof. R. D. Solage)
Class Coordinator

(Prof. B. D. Gaikwad)
Workshop Incharge

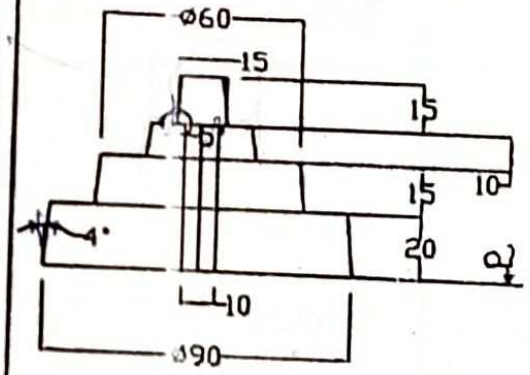
(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

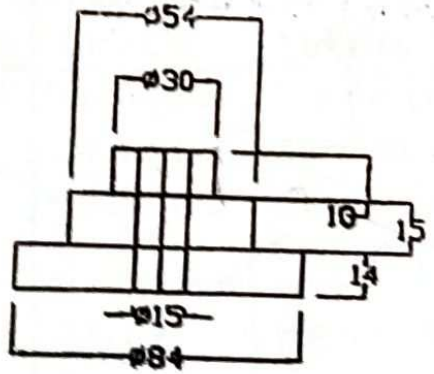
S.Y.B.Tech. (Mechanical Engineering) Pattern Making Job Drawing
Year - 2020-21

Casting Job Drawing



Pattern Job Drawing





Machined Casting Job Drawing

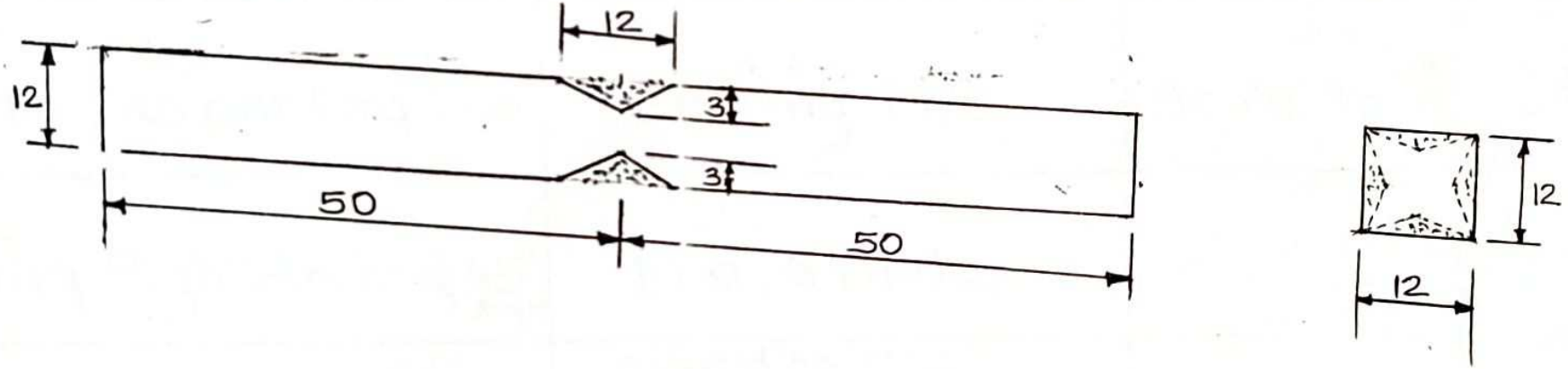
Raw Material - Teak Wood
Size - 100x100x50 mm - 1 No
Note - All Dimensions are in mm

S.Y.B.Tech. (Mech. Engineering)

Process Sheet (Pattern Making) Year - 2020-21.

Sr.No.	Description of Operation	Machine Used.	Job Holding Device.	Tool Used	Measuring Instrument Used	Cutting Parameters			Time in Min.
						Speed	Feed	Depth of Cut.	
1	Raw Material 100x100x50 mm Surface finish. (100x100 mm)	Hand Tools	Vice	Plane	Scale				
2	Marking on job Drg (centre)	Surface plate	Vice	Marker or Scriber.	Scale				
3	Holding on Four jaw chuck & Turning as per Drg.	Lathe	Four jaw chuck	Marking block.	Scale				
4	Facing L 45 mm.	Lathe	Four jaw chuck	Single point cutting tool. H.S.S.	Scale V/C				
5	Turning Ø30 L10 mm & 4° Taper (Draft) Turn.	Lathe	Four jaw chuck.	Single point cutting tool	Scale V/C				
6	Turning Ø60 L15 mm 4° Taper (Draft) Turn	Lathe	Four jaw chuck	Single point cutting tool	Scale V/C				
7	Turning Ø70 x L20. 4° Draft. (Turn).	Lathe	Four jaw chuck	Single point cutting tool	Scale V/C				
8	Material 20x20x20 Turn. (Print) Ø15 x L15. 5° (Draft)	Lathe.	Four jaw chuck	Single point cutting tool	Scale V/C.				
9	Ø15 x 15. 5° Print Fit on Ø30 as per Drg.	Hand Tool	Vice	Fevicol	Scale				
10	Finishing.	Lathe.	Three jaw Chuck.	Polish paper	—				
11	Colour as per Drg.	—	—	Brush.	—				

S.Y.B.Tech.(Mech.Engineering).
Welding Job Drawing. Year - 2020-21.



Raw Material :- M.S. Square Bar.

Size :- 50 × 12 × 12. (2 Nos)

Note :- All Dimensions are in mm.

S.Y.B. Tech. (Mech. Engineering).

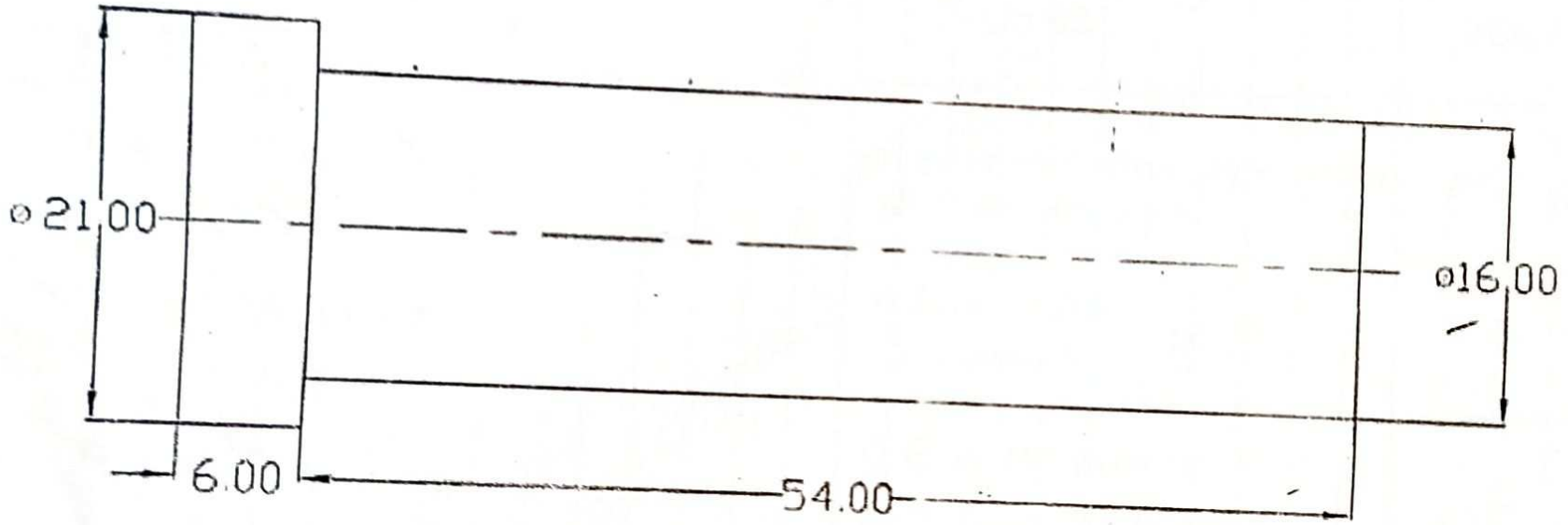
Process Sheet (Welding) Year-2020-21.

Sr. No.	Process.	Working Tools.	Measuring Tools.	Step.
1	Raw Material Marking	Scriber, Tape, Scale.	Scale, Tape.	01
2.	Cutting as per Drg. Dim.	Cutting M/c.	Scale, Tape.	02
3	Filing Right Angle & 45° Angle	File, Grinder.	-	03
4	Welding as per. Drg.	1) Welding M/C. 2) 3.15mm. M.S. weld. Rod. 3) Screen. 4) Brush.	Right Angle. Tape	04
5	Finishing.	1) File. Grinder.	-	05

1	Selection of Current.	
2	Selection of Voltage.	
3	Polurity	
4	Type of joint	
5	Tensile Strength.	
6.	Selection of welding Rod.	

S.Y.B.Tech. (Mechanical Engineering) Forging Job Drawing

Year - 2020-21



Raw Material:- M.S.Bar
Size:- Ø16x64.33mm
Note:- All diamensions are in mm

S.Y.B.Tech. (Mech. Engineering) Process Sheet (Forging Job) Year-2020-21

Sr.No.	Process	Working Tools	Measuring Tool	Step SVER
	Marking	Scale.	Scale	01
2	Cutting	1) M.S Round Bar. 2) Hack Saw ϕ 15.87 x 64.7 mm L. M/C.	Scale.	02
3	Hitting	1) Furness 2) Tungs.	—	03
4	Forging	1) Big Hammer 2) Tungs 3) Anvil.	—	04
5	Finishing	Rough File.	—	05.
*	Raw material Formula- $\frac{\pi}{4} \times (21)^2 \times 6 + \frac{\pi}{4}(16)^2 \times 64 = \frac{\pi}{4}(16)^2 \times L$. Volume = Volume.			

1	Type of Forging	Upset Forging.
2	Name of Component	Pin (Conveyor).
3	Material.	
4	Forging length calculation.	
5	Die Design. 1> Material. 2> Angular clearance. 3> ejector. 4> Furnace.	

SVERI's
College of Engineering, Pandharpur
Mechanical Engineering Department

Subject: Workshop Practice-IV

Class: T.E. (Mech.) Sem-I

A.Y.: 2019-2020

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20 (Sem-I)
CLASS: T. E. (MECH) DIV: A
List of Students undertaking Mechanical Workshop Practice-IV

Roll No.	Name of Student	Roll No.	Name of Student
TA 01	/Bhumkar Manasi Dinesh	TA 39	Kale Rohan Suresh
TA 02	/Chavan Sonali Umesh	TA 40	Kale Shubham Malashidha
TA 03	/Ghogale Mansi Sanjay	TA 41	Kale Vaibhav Pandurang
TA 04	/Attar Muskan Mukthar	TA 42	Kambire Pankaj Popat
TA 05	/Mhetre Shubhada Shantanu	TA 43	Khadake Prajwal Sunil
TA 06	/Gavali Anjali Pandurang	TA 44	Khapale Siddheshwar g.
TA 07	/Gore Gauri Ramchandra	TA 45	Khyade Amit Rajendra
TA 08	/Kothawale Shivani Sanjay	TA 46	Kodag Vasudev Dattatray
TA 09	/Nikate Pornima Milind	TA 47	Koli Charandas Appaso
TA 10	Atre Shrirang Rajendra	TA 48	Kulkarni Chaitanya Laxmikant
TA 11	Autade Dashrath Madhukar	TA 49	Mane Mahesh Gunvant
TA 12	Bagwan Mudaser Mahebob	TA 50	Nagras Pranil Prakash
TA 13	Bandai Prathamesh M.	TA 51	Pandit Yogesh Dhananjay
TA 14	Bhise Akash Namdev	TA 52	Pangudwale Purvesh Prakash
TA 15	Chavan Suraj Baban	TA 53	Patil Ganesh Basavaraj
TA 16	Dandwate Rushikesh Prasad	TA 54	PatilAshutosh Sunil
TA 17	Deshmane Rushikesh Sanjay	TA 55	Pawar Aniket Santosh
TA 18	Devkate Sachin Kisan	TA 56	Pawar DayanandYogesh
TA 19	Devkate Yogeshwar Arvind	TA 57	Pawar Pruthviraj Deepak
TA 20	Dhumal Vikas Vitthal	TA 58	Rode Vaibhav Balasaheb
TA 21	Gahirwar Pawansing Kiransing	TA 59	Sapkal Nishklank Zumbar
TA 22	Gaikwad Suraj Tanaji	TA 60	Sathe Pradip Shivaji
TA 23	Gaikwad Swapnil Rajendra	TA 61	Sayyad Azam Akram
TA 24	Gandule Rohan Rajaram	TA 62	Shaikh Juned Ramjan
TA 25	Ganjale Ashish Namdev	TA 63	Sheikh VijasJaylani
TA 26	Gavali Parit Pavan Ankush	TA 64	Shejal Samadhan Nagnath
TA 27	Ghadage Vaibhav Prabhakar	TA 65	Shinde Rajkumar Nana
TA 28	Ghadge Onkar Dhananjay	TA 66	Shinde Saurabh Mahadev
TA 29	Gore Omkar Rajkumar	TA 67	Sirsat Anna Yuvraj
TA 30	Gosavi Dada Prakash	TA 68	Sonar Sunil Ravindra
TA 31	Gund Omkar Shahaji	TA 69	Tadmare Swapnil Sanjaykumar
TA 32	Honkande Rohan Ramesh	TA 70	Vibhute Rushikesh Nandkumar
TA 33	Jadhav Ajinkya Arjun	TA 71	Wasnik Harshal Prakash
TA 34	Jadhav Rushikesh Kalyan	TA 72	Ghuge Hrushikesh Ravindra
TA 35	Mangrule Vedant D.	TA 73	Gavali Shubham Amol
TA 36	Jundale Rahul Rajkumar	TA74	Jadhav Vivek Sajjan
TA 37	Kadam Shubham Jaimilind	TA 75	Sathe Shubham Bhalchandra
TA 38	Kakade Shubham Madhukar		

(Prof. S. N. More)
Class Coordinator

(Prof. B. D. Gaikwad)
Workshop Incharge

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20 (Sem-I)
CLASS: T. E. (MECH) DIV: B
List of Students undertaking Mechanical Workshop Practice-IV

Roll No.	Name of Student	Roll No.	Name of Student
TB 01	/Ashture Chandraprabha	TB 39	Tanage Prashant Sambhaji
TB 02	/Bhosale Pranoti Ramchandra	TB 40	Pavase Mayur Santosh
TB 03	/Deomare Nikita Narayan	TB 41	Pophale Pratap Ashok
TB 04	/Kambale Pooja Dilip	TB 42	Raut Shubham Anil
TB 05	/Nistane Shweta Shadashiv	TB 43	Raut Yogesh Dattatray
TB 06	Waghmode Pradyumna Dinesh	TB 44	Salgar Laxman Balaso
TB 07	Kolekar Vijay Mahadeo	TB 45	Salgar Ram Balaso
TB 08	Adalinge Rohit Chandrakant	TB 46	Tamboli Arbaj Jabbar
TB 09	Nagane Amol Mahadeo	TB 47	Sansare Sanket Manojkumar
TB 10	Chavan Dinesh Uttam	TB 48	Shinde Mahesh Vilas
TB 11	Dandage Vaibhav Nagnath	TB 49	Shelake Girish Dnyaneshwar
TB 12	Takale Akshay Angad	TB 50	Shaikh Nihal Naushad
TB 13	Dhage Shantanu Prakash	TB 51	Thakare Bhushankumar D.
TB 14	Vhankalas Avinash Bhaskar	TB 52	Shinde Abhijeet Ashok
TB 15	Ingale Pratik Vasantrao	TB 53	Shinde Abhishek Amar
TB 16	Sathe Akshay Sunil	TB 54	Tate Rutvik Bramhadev
TB 17	Jadhav Vaibhav Satish	TB 55	Waghmare Dipak Subhash
TB 18	Tuljapurkar Gaurav Jayant	TB 56	Shrigadi Swamisamarth V.
TB 19	Valsange Akash Somanath	TB 57	Telang Sanket Satish
TB 20	Kshirsagar Abhishek Prakash	TB 58	Bansode Shubham Dattatray
TB 21	Kumbhar Ganesh Naganath	TB 59	Bhosale Saurabh Namadev
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TB 26	Magi Prasad Dattatray		
TB 27	Mandwale Pratiksinh S.		
TB 28	Jadhav Ruturaj Satish		
TB 29	Masal Samadhan Dadaso		
TB 30	Mulani Aftab Iqbal		
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TB 34	Thite Prem Ganesh		
TB 35	Nayaku Akshay Laxman		
TB 36	Nimgire Piyush Dadasaheb		
TB 37	Pandhare Rohan Anil		
TB 38	Parkam Pavan Shashikant		

(Prof. K. B. Jundale)
Class Coordinator

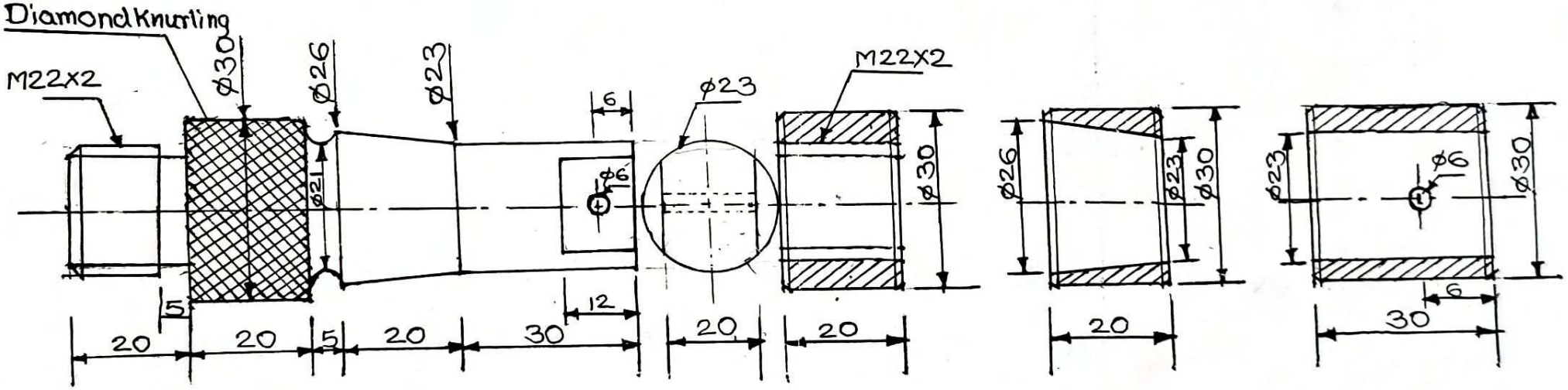
(Prof. B. D. Gaikwad)
Workshop Incharge

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

Job Drawing TE Mech Part-II

Work shop Practice IV&V Year - 2019-202

Part-A Part-B Part-C Part-D.



Note: 1) All dimensions are in mm.
2) Remove sharp corners, chamfers 1x45°.
3) Fit Part - B, C, & D on Part - A.
4) Material :-

Part A : MS Polish Bar ø32 x 100 mm = 01 Nos
Part B : MS Polish Bar ø32 x 25 mm = 01 Nos
Part C : MS Polish Bar ø32 x 25 mm = 01 Nos
Part D : MS Polish Bar ø32 x 35 mm = 01 Nos.

T. E. Mechanical Engineering 2019-20

Workshop Practical – V

PROCESS SHEET

Sr. No	Description Of Operation	Machine Used	Job Holding Device	Tool Used	Measuring Instrument Used	Cutting Parameter			
						Speed	Feed	Depth Of Cut	Cycle Time
PART-A.									
1	Raw material cutting (Ø32 mm)	Power Hexa	Vice	cutting blade	Steel rule & scale				
2	Facing	Lathe machine	3 Jaw chuck	Single pt cutting	Vernier scale				
3	Turning	Lathe machine	3 Jaw chuck	Single pt cutting	Vernier scale				
4	Step Turning (30 mm)	Lathe machine	3 Jaw chuck	Single pt cutting	Vernier scale				
5	Taper Turning (20 mm)	Lathe machine	3 Jaw chuck	Single pt cutting	Vernier scale				
6	Grooving (21 X 5 mm)	Lathe machine	3 Jaw chuck	Grooving tool	Vernier scale				
7	Champering (45°)	Lathe machine	3 Jaw chuck	Single pt cutting	Vernier scale.				
8	Threading	Lathe machine	3 Jaw chuck	Threading tool	Threading gauge				
9	Grooving (R5)	Lathe machine	3 Jaw chuck	Grooving Tool	Vernier scale				
10	Knurling	Lathe machine	3 Jaw chuck	Diamond knurling	Vernier scale				
11	Drilling	Drilling machine	Vice	Drill bit	Vernier scale				
12	Saddle milling	Milling machine	3 Jaw chuck	Milling cutter	Vernier scale				
	PART B								
1	Raw material cutting	Power Hexa	Vice	cutting blade	Steel rule scale				

Practical Teacher: -

(Prof. B. D. Gaikwad)
Workshop Incharge

T. E. Mechanical Engineering 2019-20
Workshop Practical – V

PROCESS SHEET

Sr. No	Description Of Operation	Machine Used	Job Holding Device	Tool Used	Measuring Instrument Used	Cutting Parameter			
						Speed	Feed	Depth Of Cut	Cycle Time
2	Facing	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
3	Turning	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
4	Drilling	Lathe machine	3 Jaw chuck	Drill bit	Veenier Scale				
5	Tapping	Lathe machine	3 Jaw chuck	Tap Tool	Threading gauge				
	PART - C								
1	Facing	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
2	Turning	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
3	Drilling	Lathe machine	3 Jaw chuck	Drilling bit	Veenier Scale				
4	Taper boring	Lathe machine	3 Jaw chuck	Boring Tool	Veenier Scale				
	PART - D								
1	Facing	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
2	Turning	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
3	Drilling	Lathe machine	3 Jaw chuck	Drilling bit	Veenier Scale				
4	Boring (Straight)	Lathe machine	3 Jaw chuck	Boring Tool	Veenier Scale				

Practical Teacher: -

(Prof. B. D. Gaikwad)
Workshop Incharge

SVERI's
College of Engineering, Pandharpur
Mechanical Engineering Department

Subject: Workshop Practice-V

Class: T.E. (Mech.) Sem-II

A.Y.: 2019-2020

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20 (Sem-II)
CLASS: T. E. (MECH) DIV: A

List of Students undertaking Mechanical Workshop Practice-V

Roll No.	Name of Student	Roll No.	Name of Student
TA 01	/Bhumkar Manasi Dinesh	TA 39	Kale Rohan Suresh
TA 02	/Chavan Sonali Umesh	TA 40	Kale Shubham Malashidha
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TA 36	Jundale Rahul Rajkumar	TA74	Jadhav Vivek Sajjan
TA 37	Kadam Shubhani Jaimilind		
TA 38	Kakade Shubham Madhukar		

(Prof. C. C. Jadhav)
Class Coordinator

(Prof. B. D. Gaikwad)
Workshop Incharge

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

SVERI's COLLEGE OF ENGINEERING PANDHARPUR
DEPARTMENT OF MECHANICAL ENGINEERING
A.Y. 2019-20 (Sem-II)
CLASS: T. E. (MECH) DIV: B
List of Students undertaking Mechanical Workshop Practice-V

Roll No.	Name of Student	Roll No.	Name of Student
TB 01	/Ashture Chandraprabha	TB 39	Tanage Prashant Sambhaji
TB 02	/Bhosale Pranoti	TB 40	Pavase Mayur Santosh
TB 03	/Deomare Nikita Narayan	TB 41	Pophale Pratap Ashok
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TB 36	Nimgire Piyush Dadasaheb		
TB 37	Pandhare Rohan Anil		
TB 38	Parkam Pavan Shashikant		

(Prof. D. D. Ronge)
Class Coordinator

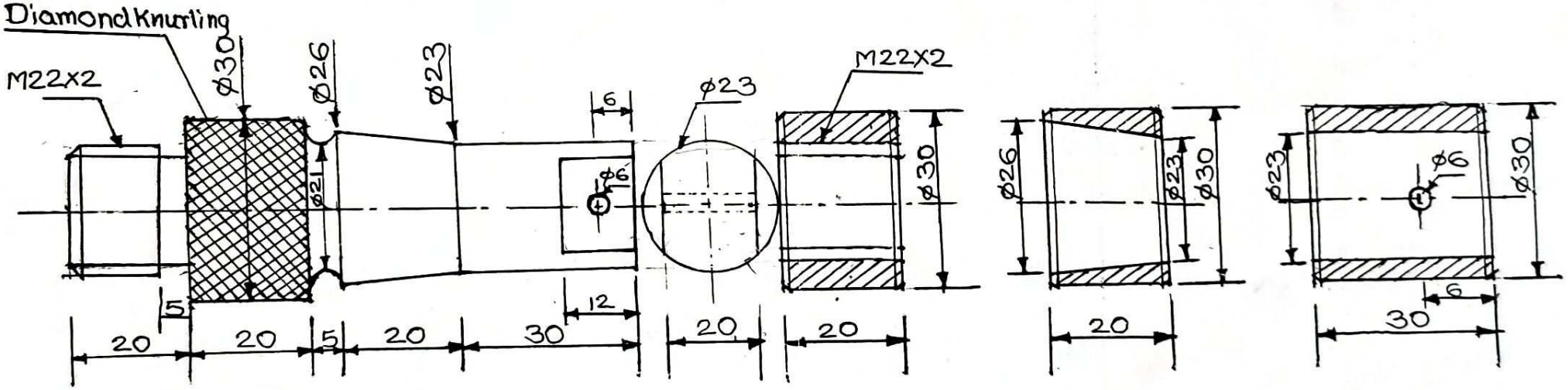
(Prof. B. D. Gaikwad)
Workshop Incharge

(Dr. S. A. Sonawane)
Head, Mech. Engg. Dept.

Job Drawing TE Mech Part-II

Work shop Practice IV&V Year - 2019-202

Part-A Part-B Part-C Part-D.



Note: 1) All dimensions are in mm.
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4) Material :-

Part A : MS Polish Bar ø32 x 100 mm = 01 Nos
Part B : MS Polish Bar ø32 x 25 mm = 01 Nos
Part C : MS Polish Bar ø32 x 25 mm = 01 Nos
Part D : MS Polish Bar ø32 x 35 mm = 01 Nos.

T. E. Mechanical Engineering 2019-20

Workshop Practical – V

PROCESS SHEET

Sr. No	Description Of Operation	Machine Used	Job Holding Device	Tool Used	Measuring Instrument Used	Cutting Parameter			
						Speed	Feed	Depth Of Cut	Cycle Time
PART-A.									
1	Raw material cutting (Ø32 mm)	Power Hexa	Vice	cutting blade	Steel rule & scale				
2	Facing	Lathe machine	3 Jaw chuck	Single pt cutting	Vernier scale				
3	Turning	Lathe machine	3 Jaw chuck	Single pt cutting	Vernier scale				
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11	Drilling	Drilling machine	Vice	Drill bit	Vernier scale				
12	Saddle milling	Milling machine	3 Jaw chuck	Milling cutter	Vernier scale				
	PART B								
1	Raw material cutting	Power Hexa	Vice	cutting blade	Steel rule scale				

Practical Teacher: -

(Prof. B. D. Gaikwad)
Workshop Incharge

T. E. Mechanical Engineering 2019-20
Workshop Practical – V

PROCESS SHEET

Sr. No	Description Of Operation	Machine Used	Job Holding Device	Tool Used	Measuring Instrument Used	Cutting Parameter			
						Speed	Feed	Depth Of Cut	Cycle Time
2	Facing	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
3	Turning	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
4	Drilling	Lathe machine	3 Jaw chuck	Drill bit	Veenier Scale				
5	Tapping	Lathe machine	3 Jaw chuck	Tap Tool	Threading gauge				
	PART - C								
1	Facing	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
2	Turning	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
3	Drilling	Lathe machine	3 Jaw chuck	Drilling bit	Veenier Scale				
4	Taper boring	Lathe machine	3 Jaw chuck	Boring Tool	Veenier Scale				
	PART - D								
1	Facing	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
2	Turning	Lathe machine	3 Jaw chuck	Single pt cutting	Veenier Scale				
3	Drilling	Lathe machine	3 Jaw chuck	Drilling bit	Veenier Scale				
4	Boring (Straight)	Lathe machine	3 Jaw chuck	Boring Tool	Veenier Scale				

Practical Teacher: -

(Prof. B. D. Gaikwad)
Workshop Incharge