

DEPARTMENT OF MECHANICAL
ENGINEERING 1.3.2

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STUDENTS LIST OF INTERNSHIP 21-22

SI No.	USN	NAME
1	4BP18ME001	ABUBAKKAR KHAN SHIRED
2	4BP18ME005	B S ABDUL RAHIMAN
3	4BP18ME006	D DRITHA KUMAR
4	4BP18ME007	DINAKARA M S
5	4BP18ME008	FAYIZ UMMER
6	4BP18ME009	H MOHAMMED ANAZ
7	4BP18ME010	IBRAHIM APRAZ
8	4BP18ME011	IBRAHIM SAFEEK
9	4BP18ME012	IBRAHIM SUFAIL G K
10	4BP18ME013	K PAVAN KUMAR
11	4BP18ME014	MAHAMMED JUNAID
12	4BP18ME015	MOHAMMED RAMEEZ A S
13	4BP18ME016	MOHAMMED AFTHAB
14	4BP18ME017	MOHAMMED KHAIF K
15	4BP18ME020	MOHAMMED SHAIZAAD
16	4BP18ME021	MOIDEEN ARSHAD K
17	4BP18ME022	MUHAMMED RAEES A
18	4BP18ME024	MUHAMMED MUSHARAF
19	4BP18ME025	PRASHANTH KUTINHA
20	4BP18ME026	RASID SHAIKH
21	4BP18ME027	RIYAZ N PATTANAD
22	4BP18ME031	SHAIKH AFRID
23	4BP18ME032	TANWEER ALI N
24	4BP18ME033	VANASYAM M
25	4BP18ME034	WAHID AHMED DINDAWAD
26	4BP18ME400	MEHBOOB SAB
27	4BP19ME400	AZAR DHANISH
28	4BP19ME401	PATEL OMAIR JAVID
29	4BP17ME009	MOHAMMED ANSER
30	4BP17ME028	SUHAIL
31	4BP17ME030	SWIBGHATULLA
32	4BP16ME046	SHOUKAT ALI
33	4BP15ME029	IRFAN KA

Internship coordinator
(Prof. Vinod Kumar)

Manjur Basha Sheik Ibrahim
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HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
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Near Mangalore University
MANGALORE - 574 153



Bearys
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of Technology
Mangaluru

BEARYS INSTITUTE OF TECHNOLOGY

Department of Mechanical Engineering

Bearys Knowledge Campus, Lands End, Innoli,
Near Mangalore University, Mangalore - 574153

M.Tech Machine Design		
INTERNSHIP STUDENTS LIST 21-22		
SL NO.	USN	NAME
1	4BP20MMD02	MOHAMMED ANAS K
2	4BP20MMD03	SABIR ASHRAF

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BEARYS INSTITUTE OF TECHNOLOGY

Department of Mechanical Engineering

Bearys Knowledge Campus, Lands End, Innoli,
Near Mangalore University, Mangalore - 574199

Following students visited GURUCHARAN INDUSTRIES on 22nd June 2022

Sl.no	USN	Names
1	4BP19ME025	Syed Tanveer Ahmed
2	4BP19ME020	Shahid Sulaiman
3	4BP20ME001	Akeel Fahim
4	4BP20ME002	Fayaz M
5	4BP20ME003	Ismail Afraz
6	4BP20ME004	M D Zawed Equbal
7	4BP20ME005	Mohammed Azzha K A
8	4BP20ME006	Pawan Kumar
9	4BP20ME007	Sahel Zahed Ahmed
10	4BP20ME008	Shuhaib
11	4BP21ME400	Abdulla Junaid C H
12	4BP21ME401	Ahmed Nashad
13	4BP21ME402	Ahmed Shahin
14	4BP21ME403	Karthik M
15	4BP21ME404	Mahammad Ashfak
16	4BP21ME405	Mahammad Fazil
17	4BP21ME406	Mahammad Shafi
18	4BP21ME407	Mahammad Zamshid
19	4BP21ME408	Mohammad Aamir Hussain
20	4BP21ME409	Mohammad Fahad
21	4BP21ME410	Mohammad Hasheer N
22	4BP21ME411	Mohammed Shahe Jahan
23	4BP21ME412	Mohammad Ziyad K

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Following students visited KIOCL LIMITED on 2nd July 2022 as industrial visit

SL NO.	USN	NAME
1.	4BP18ME003	AHAMMED BILAL
2.	4BP19ME001	ABDUL RAHIMAN RASHEEQ B L
3.	4BP19ME002	AHMED AZWEER
4.	4BP19ME003	AHMED SHEESH
5.	4BP19ME004	B.M MUJEEB
6.	4BP19ME005	BEENA MANDEL
7.	4BP19ME006	HASAN ASHIQ
8.	4BP19ME007	IMTHIYAZ AHMED
9.	4BP19ME008	ISMAIL MUZAMMIL
10.	4BP19ME009	M MOHAMMED RAQUEEB
11.	4BP19ME010	MOHAMMED AFSHAN
12.	4BP19ME011	MOHAMMED HASHIR C A
13.	4BP19ME014	MOHAMMED SHAKIR ALI
14.	4BP19ME015	NAJEEB AHMED SHAFIK
15.	4BP19ME016	NIYAZ AHAMMAD
16.	4BP19ME018	SAIYYAD MOHAMMED THAMZEEM
17.	4BP19ME019	SHAFFIULLA KHAN
18.	4BP19ME021	SHAIKH KAIF
19.	4BP19ME022	ZIAD AHMED
20.	4BP19ME023	AZEEZ MUHOMMAD AYAZ
21.	4BP19ME024	MOHAMED AKRAM HUSSAIN
22.	4BP20ME400	ABDUL KHADER SAJJID A M
23.	4BP20ME401	MOHAMMAD HUSSAIN RAZA SHAIK
24.	4BP20ME402	MOHAMMED GHOUSEPEER NAWAZ
25.	4BP20ME403	SAFWAN AHMAD RIFAY
26.	4BP20ME404	SWASTHIK

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Department of Mechanical Engineering

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M.Tech Machine Design		
MAJOR PROJECT STUDENT'S LIST 21-22		
SL NO.	USN	NAME
1	4BP20MMD02	MOHAMMED ANAS K

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12/01/22



PROJECT BATCH LIST 2021-22

SEMESTER: 8

2018 SCHEME

SL NO	STUDENT NAME	USN	BATCH NO	GUIDE
1	IBRAHIM SAFEER	4BP18ME011	B-1	Dr.Vasantha Kumar
2	MOHAMMED AFTHAB	4BP18ME016		
3	MOIDEEN ARSHAD K	4BP18ME021		
4	TANWEER ALI N	4BP18ME032		
1	D DRITHA KUMAR	4BP18ME006	B-2	Prof.Arvind Kumar
2	DINAKARA M S	4BP18ME007		
3	PRASHANTH KUTINHA	4BP18ME025		
1	B S ABDUL RAHIMAN	4BP18ME005	B-3	Prof.Imran Mokashi
2	MOHAMMED KHAIF K	4BP18ME017		
3	VANASYAM M	4BP18ME033		
1	MOHAMMED ANAZ	4BP18ME009	B-4	Prof.Manjunath Ichchangi
2	MAHAMMED JUNAID	4BP18ME014		
3	MOHAMMED SHAIZAAD H	4BP18ME020		
4	SHAIKH AFRID	4BP18ME031		
1	IBRAHIM APRAZ	4BP18ME010	B-5	Dr.Vasantha Kumar
2	K PAVAN KUMAR	4BP18ME013		
3	MOHAMMED RAMEEZ A S	4BP18ME015		
4	MUHAMMED MUSHARAF	4BP18ME024		
1	THASEEN	4BP17ME031	B-6	Prof.Mohammed Kafeel Delvi
2	FAYIZ UMMER	4BP18ME008		
3	IBRAHIM SUFAIL G K	4BP18ME012		
4	MUHAMMED RAEES A	4BP18ME022		
1	ABUBAKKAR KHAN SHIRED	4BP18ME001	B-7	Prof.Vinod Kumar N
2	RASID SHAIKH	4BP18ME026		
3	RIYAZ N PATTANAD	4BP18ME027		
4	WAHID AHMED DINDAWAD	4BP18ME034		
1	MEHBOOBSAB M PARDEW	4BP18ME400	B-8	Prof.Prithviraj
2	AZAR DHANISH	4BP19ME400		
3	PATEL OMAIR	4BP19ME401		

Project Coordinator
(Prof.Manjunath Ichchangi)

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BEARYS INSTITUTE OF TECHNOLOGY

Department of Mechanical Engineering

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M.Tech Machine Design		
MINI PROJECT STUDENTS LIST 21-22		
SL NO.	USN	NAME
1	4BP20MMD02	MOHAMMED ANAS K
2	4BP20MMD03	SABIR ASHRAF

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MINI PROJECT BATCH LIST 2021-22

Sl. No.	Batch No.	USN	Name	Guide
1	B-1	4BP19ME004	B M Mujeeb	Prof. Arvind Kumar
2		4BP19ME006	Hasan Ashiq	
3		4BP19ME008	Ismail Muzamil	
4		4BP19ME011	Mohammed Hashir C A	
5	B-2	4BP19ME019	Shaffiulla Khan	Prof. Gokuldas M
6		4BP19ME021	Sheikh Kaif	
7		4BP20ME402	Mohammed Nawaz	
8		4BP20ME401	Hussain Raza	
9	B-3	4BP19ME010	Mohammed Afshan	Prof. Vinod Kumar N
10		4BP19ME005	Beena Mandal	
11		4BP19ME024	Akram Mohamed Hussain	
12		4BP20ME404	Swasthik	
13	B-4	4BP19ME018	Saiyyad Mohammed Thamzeem	Dr. Vasantha Kumar
14		4BP19ME009	Mohammed Rakeeb	
15		4BP19ME001	Rasheeq	
16		4BP18ME003	Bilal Ahmed	
17	B-5	4BP19ME015	Najeeb Ahmad Shafeeq	Dr. Imran Mokashi
18		4BP19ME007	Imthiyaz Ahammad	
19		4BP19ME014	Mohammed Shakir Ali	
20		4BP19ME016	Niyaz Ahammad	
21	B-6	4BP19ME002	Ahmad Azweer	Prof. Manjunath I
22		4BP20ME403	Safwan	
23		4BP20ME400	Sajjid	
24	B-7	4BP19ME023	Azeez Muhammad Ayaz	Prof. Mohammed Kafeel Delvi
25		4BP19ME003	Ahmed Sheesh	
26		4BP19ME022	Ziad Ahmed	

Mini Project Coordinator

(Dr. Imran Mokashi)

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MANGALORE PIPE INDUSTRIES

MFRS. OF SUPERIOR QUALITY REGID PVC PIPES

Kamblapadavu, Near Mangalore University, Konaje, P.O. Kurnad, Bantwal Taluk, D.K.-574153.

Ph: 0824- 2288395, 2288895. E-mail: mangalorepipes@gmail.com

Ref.

Date :

COMPLETION CERTIFICATE

This is to certify that **Mr.MOHAMMED ANAS K** Bearing **Reg. No 4BP20MMD02** Student of **THIRD** semester of **BEARYS INSTITUTE OF TECHNOLOGY**, Mangalore, has successfully completed Internship Program from **27-09-2021** to **06-11-2021** in our organization under the guidance of **Mr. Ravinarayana Karanth**, Manager.

During Internship Program period, he was regular in attendance and has taken keen interest in the work assigned to him from time to time. His conduct and behavior is fine.

We wish him all the success and a better future.

Date : 08-11-2021

For Mangalore Pipe industries

Place : Kamblapadav

Ravi
Manager

Manjur
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Ibrahim

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MANGALORE PIPE INDUSTRIES
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MANGALORE PIPE INDUSTRIES

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Kamblapadavu, Near Mangalore University, Konaje, P.O. Kurnad, Bantwal Taluk, D.K.-574153.
Ph: 0824- 2288395, 2288895. E-mail: mangalorepipe@gmail.com

Ref.

Date :

COMPLETION CERTIFICATE

This is to certify that **Mr.SABIR ASHRAF** Bearing **Reg. No 4BP20MMD03** Student of **THIRD** semester of **BEARYS INSTITUTE OF TECHNOLOGY**, Mangalore, has successfully completed Internship Program from **27-09-2021** to **06-11-2021** in our organization under the guidance of **Mr. Ravinarayana Karanth**, Manager.

During Internship Program period, he was regular in attendance and has taken keen interest in the work assigned to him from time to time. His conduct and behavior is fine.

We wish him all the success and a better future.

Date : 08-11-2021

For Mangalore Pipe industries

Place : Kamblapadav

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Manager

MANGALORE PIPE INDUSTRIES
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DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY
Lands End, Innoli, Mangaluru-574153, KARNATAKA

(Affiliated to Visvesvaraya Technological University, Belagavi)



Bearys
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MANGALORE

CERTIFICATE

This is to certify that project work entitled "SMART GUTTER GUARD SYSTEM" Is a work carried out by **MOHAMMED ANAS K - 4BP20MMD02** are bonafide students of **Bearys Institute of Technology** in partial fulfilment for the award of **Master in Mechanical Engineering** of the Assistant Professor Department of Mechanical Engineering, BIT during year 2021-22 The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Master in Mechanical Engineering.

Dr. IMRAN M

Project Guide

Dept. of Mechanical Engg.

BIT, Mangalore

Dr. Vasantha Kumar

Head of the Department

Dept. of Mechanical Engg.

BIT, Mangalore

Name

Signature

Examiner 1:

Examiner 2:

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangama, Belagavi-590 018.

Bearys Institute of Technology
Department of Mechanical Engineering

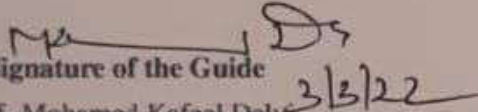
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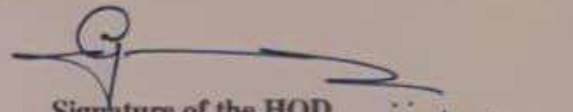


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CERTIFICATE

This is to certify that the report entitled "COMPUTATIONAL TRIBOLOGY" is a bonafide bonaide record of mini project presented by **Mr. SABIR ASHRAF(4BP20MMD03)** in partial fulfillment of requirements for award of degree of **Master of Technology in Machine Design** from **Visvesvaraya Technological University , Belgaum** during the academic year 2021-2022.


Signature of the Guide
Prof. Mohamed Kafeel Delvi
Project Guide


Signature of the HOD
Dr. Vasantha Kumar
HOD, Mechanical Engineering

HOD
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DEPARTMENT OF MECHANICAL ENGINEERING

BEARYS INSTITUTE OF TECHNOLOGY

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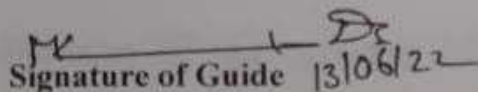
CERTIFICATE

Certified that the Internship on "INPLANT TRAINING AT MANGALORE PIPE INDUSTRIES" of a bonafide work carried out by Mr. MUHAMMAD RAEES A (USN:4BP18ME022) in partial fulfillment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

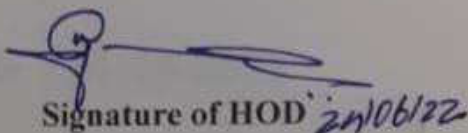
Submitted by


MUHAMMAD RAEES A

4BP18ME022


Signature of Guide 13/06/22


Signature of Coordinator 13/6/22


Signature of HOD 21/06/22


Signature of Principal 24/6/22

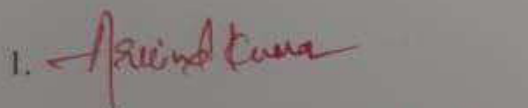
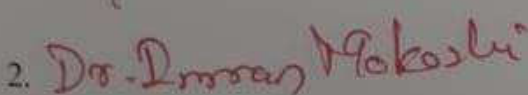
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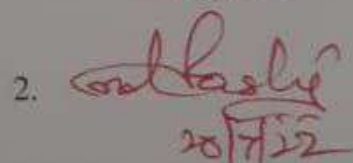
PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
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MANGALORE - 574 153

EXTERNAL VIVA

Name of Examiners

Signature with Date

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2. 

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DEPARTMENT OF MECHANICAL ENGINEERING

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CERTIFICATE

Certified that the Internship on 'CNC PROGRAMMING & OPERATIONS AND AUTOCAD' of a bonafide work carried out by Mr. MOHAMMAD RAMEEZ A S (USN:4BP18ME015), in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2021 – 22. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.


Submitted by


MOHAMMAD RAMEEZ A S

(4BP18ME015)


Signature of Guide 08/06/22


Signature of Coordinator 01/06/22


Signature of HOD 01/06/22


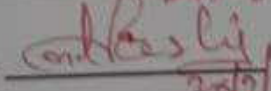

Signature of Principal 01/06/22

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Land End, Innoli, Boliyar Village
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MANGALORE - 574153
Name of Examiners

EXTERNAL VIVA

PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574153
Signature with Date

1. Azizul Khamar
2. Dr. Imran P. Dasli

1.  28/06/22
2.  29/06/22

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DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Land's End, Innoli, Mangaluru-574153, Karnataka



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CERTIFICATE

Certified that the Internship on "INPLANT TRAINING AT MANGALORE PIPE INDUSTRIES" of a bonafide work carried out by Mr. K MOHAMMAD KHAIF (USN:4BP18ME017) in partial fulfillment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.


Submitted by

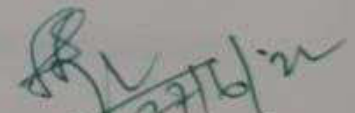
K MOHAMMAD KHAIF

4BP18ME017


Signature of Guide 27/06/22


Signature of Coordinator 27/06/22


Signature of HOD 27/06/22


Signature of Principal 27/06/22

EXTERNAL VIVA

Name of Examiners

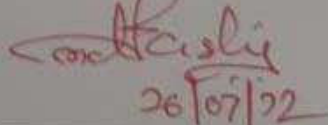
Signature with Date

1. Arvind Kumar

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1. 

2. Dr. Imran Mokashi

2. 
26/07/22

**DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY**

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CERTIFICATE

Certified that the Internship on 'CNC PROGRAMMING & OPERATIONS AND AUTOCAD' of a bonafide work carried out by Mr. MAHAMMAD JUNAID (USN:4BP18ME014), in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2021 – 22. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

Submitted by

MAHAMMAD JUNAID

(4BP18ME014)

Signature of Guide

Signature of Coordinator

Signature of HOD

HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

Name of Examiners

Signature of Principal
PRINCIPAL

Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
Signature with Date

EXTERNAL VIVA

1. Ahmed Basha
2. Dr. Imran Moheeshi

Manjur
Basha
Sheik
Ibrahim

Digitally signed
by Manjur Basha
Sheik Ibrahim
Date: 2023.08.08
12:03:31 +05'30'

1. Dr. Imran Moheeshi
2. Manjur Basha
24/07/22

DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Lands End, Innoli, Mangaluru - 574153, Karnataka



Bearys
Institute
of Technology
MANGALORE

CERTIFICATE

Certified that the Internship on 'CNC PROGRAMMING & OPERATIONS AND AUTOCAD' of a bonafide work carried out by Mr. H MOHAMMED ANAZ ABUBAKAR (USN:4BP18ME009), in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2021 - 22. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

Submitted by

H MOHAMMED ANAZ ABUBAKAR

(4BP18ME009)

Signature of Guide

Signature of Coordinator

Signature of HOD

HOD 02/06/22

Dept. of Mechanical Engineering
Bearys Institute of Technology
Lands End, Innoli, Soliyar Village
Near Mangalore University
Mangalore - 574153

Name of Examiners

Signature of Principal

PRINCIPAL

Bearys Institute of Technology
Land End, Innoli, Soliyar Village
Near Mangalore University
Signature with Date

EXTERNAL VIVA

1. Arvind Kumar
2. Dr. Brijendra Mohan

1. Arvind Kumar
2. Dr. Brijendra Mohan

Manjur
Basha Sheik
Ibrahim

Digitally signed by
Manjur Basha
Sheik Ibrahim
Date: 2023.08.08
12:03:45 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING

BEARYS INSTITUTE OF TECHNOLOGY

Lands' End, Innoli, Mangaluru-574153, Karnataka



Bearys
Institute
of Technology
MANGALORE


CERTIFICATE

Certified that the Internship on **"MARUTI INDUS MOTORS KASARAGOD"** of a bonafide work carried out by **Mr. B S ABDUL RAHIMAN (USN: 4BP18ME005)** in partial fulfillment for the award of **Bachelor of Engineering in Mechanical Engineering** of the **Visvesvaraya Technological University, Belagavi**, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

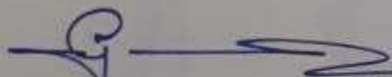
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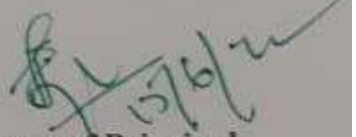
B S ABDUL RAHIMAN

4BP18ME005


Signature of Guide 15/6/22


Signature of Coordinator 15/6/22


Signature of HOD 15/06/22


Signature of Principal 15/6/22


HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

EXTERNAL VIVA

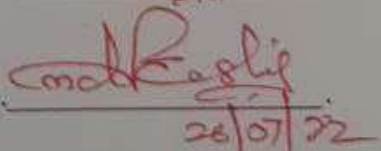
Name of Examiners

Signature with Date

1. 

1. 

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Manjur
Basha Sheikh
Ibrahim
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by Manjur Basha
Sheikh Ibrahim
Date: 2023.08.08
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DEPARTMENT OF MECHANICAL ENGINEERING

BEARYS INSTITUTE OF TECHNOLOGY

Lands End, Innoli, Mangaluru – 574153, Karnataka



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of Technology
MANGALORE

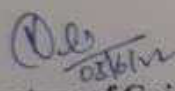
CERTIFICATE

Certified that the Internship on 'CNC PROGRAMMING & OPERATIONS AND AUTOCAD' of a bonafide work carried out by Mr. DINAKARA M S (USN:4BP18ME007), in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2021 – 22. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

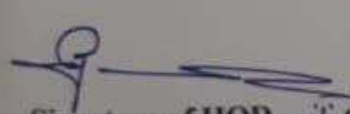
Submitted by

DINAKARA M S

(4BP18ME007)


Signature of Guide


Signature of Coordinator


Signature of HOD
HOD 09/06/22


Signature of Principal
PRINCIPAL


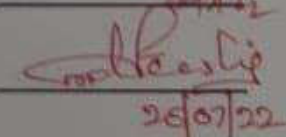
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Lands End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

EXTERNAL VIVA

Bearys Institute of Technology
Lands End, Innoli, Boliyar Village
Near Mangalore University
Signature with Date 153

Name of Examiners

1. Arvind Kumar
2. Dr. Anjan Mohanli

1.  26/07/22
2.  26/07/22

Manjur
Basha Sheikh
Ibrahim
Digitally signed
by Manjur Basha
Sheikh Ibrahim
Date: 2023.08.08
12:04:16 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY
Lands' End, Innoli, Mangaluru-574153, Karnataka



Bearys
Institute
of Technology
MANGALORE

CERTIFICATE

Certified that the Internship on "INPLANT TRAINING AT MANGALORE PIPE INDUSTRIES" of a bonafide work carried out by Mr. MAHAMMAD ANSAR (USN: 4BP17ME009) in partial fulfillment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

Submitted by

MAHAMMAD ANSAR

4BP17ME009


Signature of Guide
06/06/2022


Signature of Coordinator
6/6/22


Signature of HOD
06/06/22
HOD
Dept. of Mechanical Engineering
Bearys Institute of Technology
Lands' End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153


Signature of Principal
6/6/22

EXTERNAL VIVA


Name of Examiners

Signature with Date

1. Prof. Vinod Kumar


27/5/22

2. Prof. Mohamed
Kader Didi


27/5/22

Manjur
Basha Sheikh
Ibrahim

Digitally signed by
Manjur Basha
Sheik Ibrahim
Date: 2023.08.08
12:06:45 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY
Lands End, Innoli, Mangaluru – 574153, Karnataka



Bearys
Institute
of Technology
MANGALORE

CERTIFICATE

Certified that the Internship on 'MACHINE LEARNING' of a bonafide work carried out by Mr. D DRITHA KUMAR (USN: 4BP18ME006), in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2021 – 22. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.


Submitted by

D DRITHA KUMAR

(4BP18ME006)


Signature of Guide


Signature of Coordinator


Signature of HOD 15/07/22


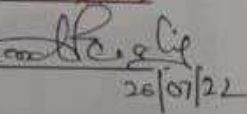

Signature of Principal 15/07/22

HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Lands End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

EXTERNAL VIVA

PRINCIPAL
Bearys Institute of Technology
Lands End, Innoli, Boliyar Village
Near Mangalore University
Signature with Date 15/07/22

- Name of Examiners
1. Ashwin Kumar
 2. Dr. Imran Mokashi

1. 
2. 
26/07/22

Manjur
Basha
Sheik
Ibrahim
Digitally signed
by Manjur Basha
Sheik Ibrahim
Date: 2023.08.08
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DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Lands' End, Innoli, Mangaluru-574153, Karnataka



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Institute
of Technology
MANGALORE


CERTIFICATE

Certified that the Internship on "INPLANT TRAINING AT MANGALORE PIPE INDUSTRIES" of a bonafide work carried out by Mr. IBRAHIM SAFEEK (USN: 4BP18ME011) in partial fulfillment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

Submitted by

IBRAHIM SAFEEK

4BP18ME011


Signature of Guide 06/06/22


Signature of Coordinator 01/06/22


Signature of HOD 06/06/22
HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Lands' End, Innoli, Bolyar Village
Near Mangalore University
MANGALORE - 574 153




Signature of Principal
PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Bolyar Village
Near Mangalore University
MANGALORE - 574 153

EXTERNAL VIVA

Name of Examiners

Signature with Date

1. Ajith Kumar
2. Dr. Divya Mokashi

1. 
2. 
26/07/22

Manjur
Basha
Sheik
Ibrahim

Digitally signed
By Manjur Basha
Sheik Ibrahim
Date: 2023.08.08
12:08:44 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Lands' End, Innoli, Mangaluru-574153, Karnataka



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MANGALORE


CERTIFICATE

Certified that the Internship on "**MARUTI INDUS MOTORS KASARAGOD**" of a bonafide work carried out by Mr. VANASYAM M (USN: 4BP18ME033) in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.


Submitted by

VANASYAM M

4BP18ME033


Signature of Guide 15/06/22


Signature of Coordinator 15/6/22


Signature of HOD 15/06/22


Signature of Principal
PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Eoliyar Village
Near Mangalore University
MANGALORE - 574 153

HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Land End, Innoli, Eoliyar Village
Near Mangalore University
MANGALORE - 574 153

EXTERNAL VIVA

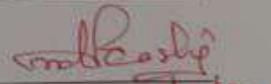
Signature with Date

Name of Examiners

1. Arvind Kumar

1. 
26/06/22

2. Dr. Dorrao M. Karli

2. 
26/07/22

Manjur Basha Sheikh Ibrahim
Digitally signed by Manjur Basha Sheikh Ibrahim
Date: 2023.08.08 12:09:05 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING

BEARYS INSTITUTE OF TECHNOLOGY

Lands End, Innoli, Mangaluru – 574153, Karnataka



Bearys
Institute
of Technology
MANGALORE


CERTIFICATE

Certified that the Internship on 'CNC PROGRAMMING & OPERATIONS AND AUTOCAD' of a bonafide work carried out by Mr. SHAIKH AFRID (USN:4BP18ME031), in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2021 – 22. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

Submitted by

SHAIKH AFRID


(4BP18ME031)


06/08/2022

Signature of Guide


02/08/22

Signature of Coordinator


02/10/22

Signature of HOD

Dept. of Mechanical Engineering
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

Name of Examiners


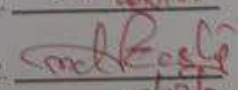
EXTERNAL VIVA


26/07/22

Signature of Principal

PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE

1. Afrid Afrid
2. Dr. Damodar Molakshi

1. 
2. 
26/07/22

Manjur
Basha Sheik
Ibrahim
Digitally signed by
Manjur Basha
Sheik Ibrahim
Date: 2023.08.08
12:09:29 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Lands End, Innoli, Mangaluru – 574153, Karnataka



Bearys
Institute
of Technology
MANGALORE

CERTIFICATE

Certified that the Internship on 'CNC PROGRAMMING & OPERATIONS AND AUTOCAD' of a bonafide work carried out by Mr. MOHAMMED SHAIZAAD (USN:4BP18ME020), in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2021 – 22. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

Submitted by

MOHAMMED SHAIZAAD

(4BP18ME020)

Signature of Guide

Signature of Coordinator

Signature of HOD 01/06/22

HOD
Dept. of Mechanical Engineering
Bearys Institute of Technology
Lands End, Innoli, Bullisur Village
Near Mangalore University
MANGALORE - 574 153

Signature of Principal

EXTERNAL VIVA

Name of Examiners

Signature with Date

1. Aswath Kumar
2. Dr. Dhanraj Pokasli

1. Aswath Kumar
2. Dr. Dhanraj Pokasli
26/07/22

Manjur
Basha Sheikh
Ibrahim
Digitally signed
by Manjur Basha
Sheikh Ibrahim
Date: 2023.08.08
12:09:49 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Lands' End, Innoli, Mangaluru-574153, Karnataka



Bearys
Institute
of Technology
MANGALORE


CERTIFICATE

Certified that the Internship on "MARUTI INDUS MOTORS KASARAGOD" of a bonafide work carried out by Mr. MOHAMMED AFTHAB (USN: 4BP18ME016) in partial fulfillment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

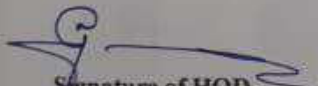
Submitted by

MOHAMMED AFTHAB

4BP18ME016


Signature of Guide 02/06/22


Signature of Coordinator 02/06/22


Signature of HOD 02/06/22


Signature of Principal
PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Boliver Village
Near Mangalore University
MANGALORE - 574 153

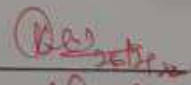

HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Land End, Innoli, Boliver Village
Near Mangalore University
MANGALORE - 574 153

EXTERNAL VIVA

Name of Examiners

Signature with Date

1. Arvind Kumar
2. Dr. Bhanu Prakash

1. 
2. 
26/07/22

Manjur Basha Sheikh Ibrahim
Digitally signed by Manjur Basha Sheikh Ibrahim
Date: 2023.08.08 12:10:09 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING

BEARYS INSTITUTE OF TECHNOLOGY

Lands' End, Innoli, Mangaluru-574153, Karnataka



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Institute
of Technology
MANGALORE

CERTIFICATE

Certified that the Internship on "MARUTI INDUS MOTORS KASARAGOD" of a bonafide work carried out by Mr. MOIDEEN ARSHAD K (USN: 4BP18ME021) in partial fulfillment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.

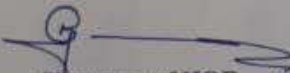
Submitted by

MOIDEEN ARSHAD K

4BP18ME021


Signature of Guide 02/06/22


Signature of Coordinator 02/06/22


Signature of HOD 02/06/22




Signature of Principal
PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153


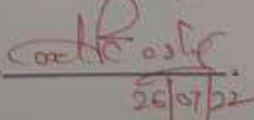
HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

EXTERNAL VIVA

Name of Examiners

Signature with Date

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26/07/22

Manjur
Basha Sheikh
Ibrahim
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by Manjur Basha
Sheikh Ibrahim
Date: 2023.08.08
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DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Lands End, Innoli, Mangaluru – 574153, Karnataka



Bearys
Institute
of Technology
MANGALORE

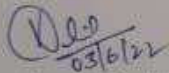
CERTIFICATE

Certified that the Internship on 'CNC PROGRAMMING & OPERATIONS AND AUTOCAD' of a bonafide work carried out by Mr. PRASHANTH KUTINHA (USN:4BP18ME025), in partial fulfilment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi during the year 2021 – 22. It is certified that all corrections / suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.


Submitted by

PRASHANTH KUTINHA

(4BP18ME025)


03/06/22

Signature of Guide



03/06/22

Signature of Coordinator


Signature of HOD 09/06/22
HOD

(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

Name of Examiners


Signature of Principal
PRINCIPAL


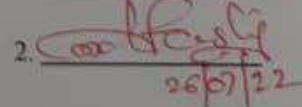
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

Signature with Date

1. Arun Kumar
2. Dr. Anwar Mokashi

Manjur
Basha Sheik
Ibrahim

Digitally signed
by Manjur Basha
Sheik Ibrahim
Date: 2023.08.08
12:10:54 +05'30'

1. 
26/07/22
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26/07/22

DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Lands' End, Innoli, Mangaluru-574153, Karnataka



Bearys
Institute
of Technology
MANGALORE

CERTIFICATE

Certified that the Internship on "MARUTI INDUS MOTORS KASARAGOD" of a bonafide work carried out by Mr. TANWEER ALI N (USN: 4BP18ME032) in partial fulfillment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.


Submitted by

TANWEER ALI N

4BP18ME032


Signature of Guide 02/10/22


Signature of Coordinator 02/10/22


Signature of HOD 02/10/22


Signature of Principal

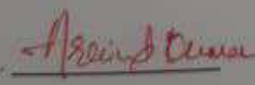

HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153


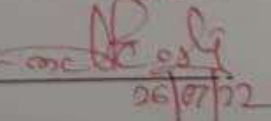
PRINCIPAL
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
Near Mangalore University
MANGALORE - 574 153

EXTERNAL VIVA

Name of Examiners

Signature with Date

1. 
2. 

1. 
2. 

Manjur
Basha
Sheik
Ibrahim

Digitally signed
by Manjur Basha
Sheik Ibrahim
Date: 2022.08.08
12:12:41 +05'30'

DEPARTMENT OF MECHANICAL ENGINEERING
BEARYS INSTITUTE OF TECHNOLOGY

Lands' End, Innoli, Mangaluru-574153, Karnataka



Bearys
Institute
of Technology
MANGALORE

CERTIFICATE

Certified that the Internship on **"MAINTENANCE AND SERVICE OF SPLIT AC IN SPEXXA COOLING SOLUTIONS"** of a bonafide work carried out by Mr. SHOUKATH ALI K P (USN:4BP16ME046) in partial fulfillment for the award of Bachelor of Engineering in Mechanical Engineering of the Visvesvaraya Technological University, Belagavi, during the year 2021-2022. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The Internship report has been approved as it satisfies the academic requirements in respect of Internship work prescribed for the said Degree.


Submitted by

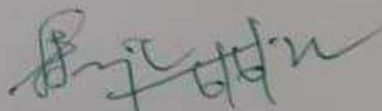
SHOUKATH ALI K P

4BP16ME046


Signature of Guide
06/06/2022


Signature of Coordinator
06/06/22


Signature of HOD
06/06/22


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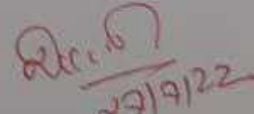
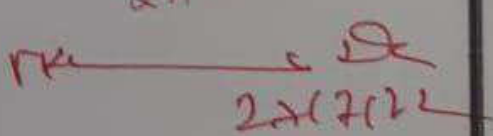
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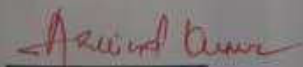
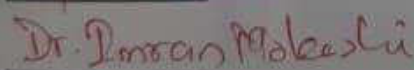

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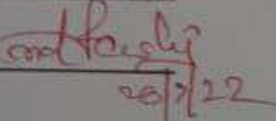

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A
PROJECT PHASE-2 REPORT
ON

**“DESIGN AND FABRICATION OF FOOD
GRADE PLASTIC RECYCLING UNIT FOR
INNOLI VILLAGE, MANGALORE”**

Sponsored by
Karnataka State Council for Science and Technology (KSCST), IISc, Campus
Bengaluru

Submitted in partial fulfilment of the requirement for the award of degree of

BACHELOR OF ENGINEERING
IN
MECHANICAL ENGINEERING

For the academic year
2021-22

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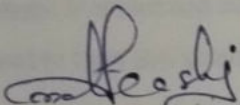
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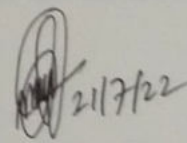


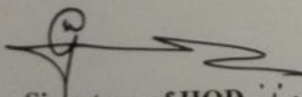
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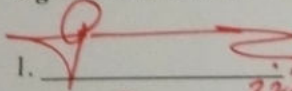
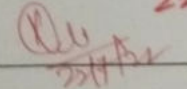
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ABSTRACT

Plastics are inexpensive, lightweight and durable material, which can be readily, be model into a variety of products that uses in wide range of application. As a consequence, plastic has increased marked over last 60 years. The current level of their usage and disposal generates several problems. Around 3-4% of worldwide oil or gas production a non-renewable resource is a feed stock for plastic production. This plastic produced each year is used to make disposable item that are used for packaging like food grade plastic packaging which are very short lived and disposed within weeks and months. This observation alone indicates that our current use of plastic is not sustainable. Because of durability of plastic polymer, they often end up in land fill and natural habitats worldwide.

So recycling is the one of best option which can be reduce use of oil, carbon emission and quantity of waste requiring disposal. Recycling is the one of the most important actions currently available to reduce these impacts and represent one of the most dynamic areas in plastic industry today, taking these things into consideration for designing a “**DESIGN AND FABRICATION OF FOOD GRADE PLASTIC RECYCLING UNIT FOR INNOLI VILLAGE, MANGALORE**” The machine employees the principle of melting food grade plastic and extruding it into pellet. This machine consists of hopper to feed the LDPE plastic pieces to the heater and extruder. The extruder melts the LDPE plastics into molten fluid at a temperature between 150-200°C through induction heating, the screw inside pushes the molten plastic out. The screw is driven using a motor and this molten plastic is cooled and cut into pellets which can be used to form new products.

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DECLARATION

We students of 8th semester Mechanical Engineering, Bearys Institute of Technology Mangalore, hereby declare that the Project Phase-2 work entitled “DESIGN AND FABRICATION OF FOOD GRADE PLASTIC RECYCLING UNIT FOR INNOLI VILLAGE, MANGALORE” has been independently carried out by us, and submitted in partial fulfilment of the requirements for the award of the degree of **Bachelor of Engineering in Mechanical Engineering** of the **Visvesvaraya Technological University** during the academic year **2021-2022**. Further, the matter embodied in the Project Phase-2 Report has not been submitted previously by anybody for the award of any degree or diploma to any other University.

Place: Mangalore

Date: 22-07-2022

By

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ACKNOWLEDGEMENT

The realization of the goal would not be possible without mentioning a few instrumental people behind this Project Phase-2 work.

We thank our guide **Dr. Imran Mokashi** and co-guide **Prof. Mohamed Kafeel Delvi** for their valuable guidance, help and support throughout this Project Phase-2.

We thank **Dr. Vasantha Kumar**, H.O.D of Mechanical Engineering, for his encouragement and providing necessary facilities in the department.

We wish to express our gratitude to principal, **Dr. S. I. Manjur Basha** for his encouragement during the period of this Project Phase-2.

We are grateful to the chairman, **Mr. Syed Mohammed Beary** for providing excellent facilities in the college during our course.

We like to thank our **Faculty members and Technical staffs**, Department of Mechanical Engineering for their help and support. Without their co-operation it would have been difficult to complete the Project Phase-2 successfully.

We thank our **Family members and Friends** for their support throughout the completion of this project.

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ABBREVIATIONS

PVC	Poly Vinyl Chloride
PET	Polyethylene Terephthalate
PP	Polypropylene
HDPE	High-Density Polyethylene
LDPE	Low-Density Polyethylene
PC	Polycarbonate
BPA	Bisphenol A
FDA	Food and Drug Administration
PE-LD	Low Density Polyethylene
MPa	Megapascal
ASTM	American Society for Testing and Materials
ISO	International Organization for Standardization
LLDPE	Linear Low-Density Polyethylene
PSW	Plastic Solid Waste
2D	Two Dimension
3D	Three Dimension
mm	Millimeter
cm	Centimeter
W	Watt
V	Volt
RPM	Revolution Per Minute
HP	Horse Power

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CHAPTER 1

INTRODUCTION

1.1 About the Plastic

Plastic is a wide range of synthetic or semi synthetic that use polymer as main ingredient their plasticity makes it possible for plastic to be moulded, extruded or pressed into a solid object of various shape. The world's first fully synthetic plastic was Bakelite invented in New York in 1907.

Most of plastic contain organic polymer. The vast majority of polymers are formed from chain of carbon atoms, with or without attachment of oxygen, nitrogen or sulphur atoms Plastic product contains a variety of additives, however, some of which can be toxic. Plasticizers like adipates and phthalates are often added to brittle plastic like PVC to make them pliable enough for use in food packing, toy, and many other things

1.2 Types of Plastic

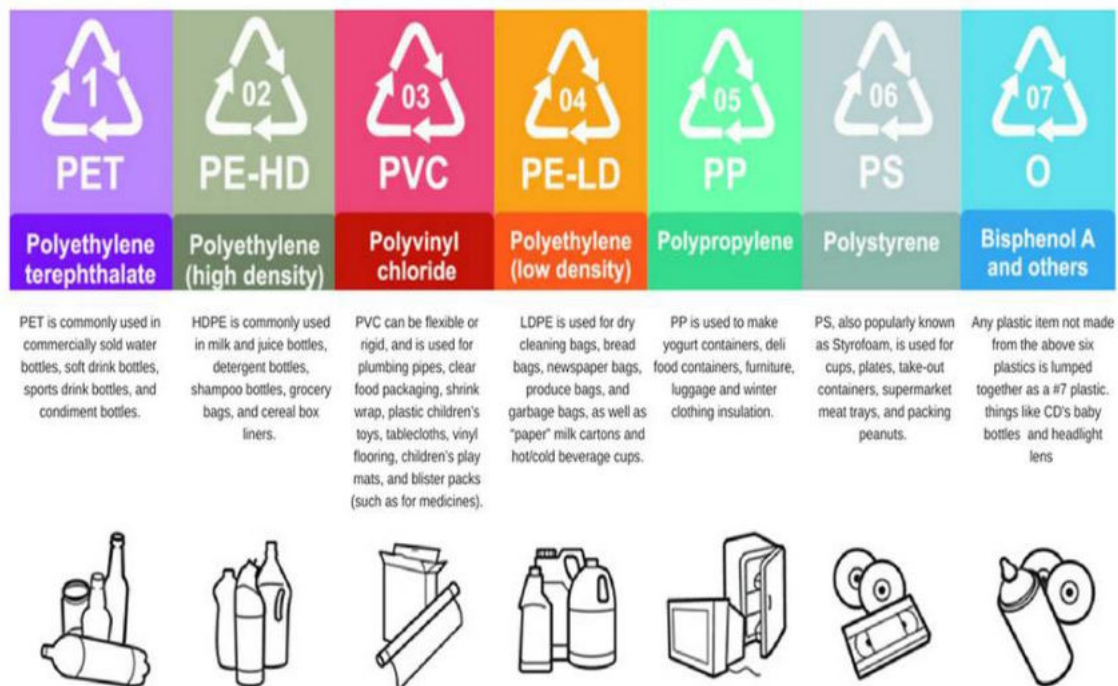


Fig. 1.1 Types of plastic

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1) Polyethylene Terephthalate (PET or PETE)

PET demonstrates excellent wear resistance, high strength and flexural modulus, and superior dimensional stability (i.e., impact resistance). So, they are used commercially sold water bottles as shown in Fig.1.1.

2) Polypropylene (PP)

PP has a high melting point and exhibits excellent thermal resistance, making it an ideal plastic for use in the microwave. Additionally, the material does not produce a reaction when exposed to acids, bases, and resists fracturing and stress even when flexed. So, they are used as insulation in winter clothing as shown in Fig.1.1

3) High-Density Polyethylene (HDPE)

HDPE has a high strength-to-density ratio. Additionally, it demonstrates resistance to mild dew, rot, and insects, as well as to corrosion and weathering. Due to this reason, they are used to bottle cosmetics as mentioned in Fig.1.1.

4) Poly Vinyl Chloride (PVC)

It is the world's third-most widely produced synthetic plastic polymer. About 40 million tons of PVC is produced each year. Roughly half of the world's PVC resin manufactured annually is used for producing pipes for municipal and industrial applications as listed in Fig.1.1.

5) Low-Density Polyethylene (LDPE)

Compared to many other resins, LDPE is thinner. Although it commonly finds use in film applications as mentioned in Fig.1.1, it is also used for rigid applications. The material is tough, flexible, and chemical and impact resistant.

6) Polycarbonate (PC)

Although Polycarbonate is FDA approved, there has been ongoing concern about the health effects of bisphenol A (BPA)—a key component in the manufacture of polycarbonate. Currently, the FDA states that very low levels of BPA are safe in food applications. PC exhibits good heat resistance and thermal stability and high impact resistance so it's used in making meat tray as mentioned in Fig.1.1.

7) Other (BPA and LEXAN)

BPA is a xenoestrogen, a known endocrine disruptor. Number 7 plastics are used to make baby bottles, Sippy cups, water cooler bottles and car parts as listed in Fig.1.1. BPA is found in polycarbonate plastic food containers often marked on the bottom with the letters "PC" by the recycling label

1.3 Food Grade Plastics

Food grade plastics are the shortest lived and produced in large quantities on a daily basis. Any plastic that comes into contact with something humans will consume including beverages and food is held to a much higher standard than other forms of plastic. So, such plastics are termed as “food grade plastic. “Food grade plastic must meet certain standards of purity. It cannot contain dyes, other additives or recycled plastic products deemed harmful to humans. Food grade plastic can contain some levels of recycled materials as long as those materials fit the guidelines and regulations outlined by the respective regulatory agency.

The above mentioned all 7 types of plastics are used to make Food grade plastics but we emphasize on LDPE plastics as they are the most used form of food grade plastic in the form of milk and curd pouches.

1.4 LDPE Plastics

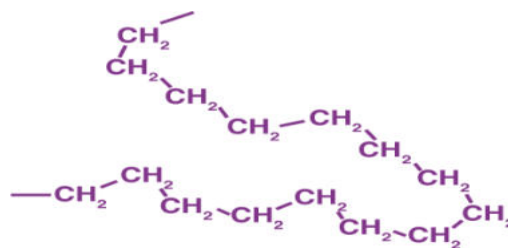


Fig.1.2 Chemical Structure of LDPE

PE-LD is a flexible and low-weight form of polyethylene. As its chemical structure is so agile as shown in Fig.1.2, it is used to manufacture a variety of plastic bags, wraps, toys, phone cables and storage tanks, due to its variety of physical properties mentioned in Table1.1. PE-LD is the most commonly recycled polymer in South Africa due to its multiple applications for daily life.

Table 1.1 Physical Properties of LDPE Plastics

Tensile strength at break	11.8 MPa
Elongation	600%
Stiffness	180 MPa
Melting point	160°C

1.5 Theory of Recycling

Recycling is one of the most important actions currently available to reduce the impacts on environment and represents one of the most dynamic areas in the plastics industry today. Recycling provides opportunities to reduce oil usage, carbon dioxide emissions and the quantities of waste requiring disposal. The different methods of recycling and quantities that are recycled vary geographically, according to plastic type and application. Recycling of packaging materials has seen rapid expansion over the last decades in a number of countries. Advances in technologies and systems for the collection, sorting and reprocessing of recyclable plastics are creating new opportunities for recycling, and with the combined actions of the public, industry and governments. Recycling of plastics is one method for reducing environmental impact and resource depletion. Fundamentally, high levels of recycling, as with reduction in use, reuse and repair or re-manufacturing can allow for a given level of product service with lower material inputs than would otherwise be required. Recycling can therefore decrease energy and material usage per unit of output and so yield improved eco-efficiency

Once material enters the waste stream, recycling is the process of using recovered material to manufacture a new product. Terminology for plastics recycling is complex and sometimes confusing because of the wide range of recycling and recovery activities. These include four categories: primary (mechanical reprocessing into a product with equivalent properties), secondary (mechanical reprocessing into products requiring lower properties), tertiary (recovery of chemical constituents) and quaternary (recovery of energy). Primary recycling is often referred to as closed-loop recycling, and secondary recycling as downgrading. Tertiary recycling is either described as chemical or feedstock recycling and applies when the polymer is de-polymerized to its chemical constituents. Quaternary recycling is energy recovery, energy from waste or valorisation.

Table 1.2 Terminology Used in Different Types of Plastics Recycling and Recovery

ASTM D5033 Definitions	Equivalent ISO 15270 (Draft) Definitions	Other Equivalent Terms
primary recycling	mechanical recycling	closed-loop recycling
secondary recycling	mechanical recycling	downgrading
tertiary recycling	chemical recycling	feedstock recycling
quaternary recycling	energy recovery	valorisation



Fig.1.3 Circular Economy

1.6 Mechanical Recycling

Prior to the actual reprocessing of recycled materials into new products, the conversion from waste to new raw materials needs to occur. This phase is generally termed the “End of Waste” and begins after the collection step. The following steps are followed through:

1. Separation and sorting: This occurs based on shape, density, size, colour or chemical composition.
2. Baling: If the plastic is not processed where it is sorted, it is often baled in between for transport purposes.
3. Washing: Removal of (often organic) contaminants.
4. Grinding: Size reduction from products to flakes.
5. Compounding & pelletizing: Optional reprocessing of the flakes into a granulate, which is easier to use for converters than flakes.

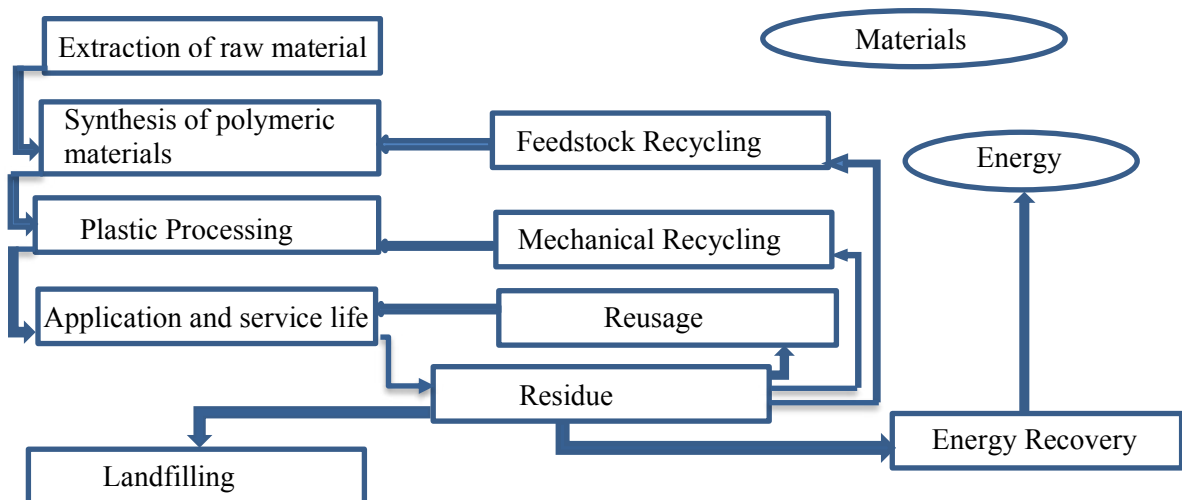


Fig.1.4 Plastic waste management cycles

1.7 Recycling of LDPE plastic

After being separated, LDPE film gets shredded into flakes with grinders. Once in flake form, the plastic gets cleaned to remove dirt, contaminants and other debris. The cleaned flakes are then dried, melted and turned into pellets for ease of handling.

Recycled LDPE can be combined with virgin LDPE material or used on its own to create new end-products.

Many factors can affect recycled plastic's value, resulting in different grades of LDPE film, many of which can also be made into or use linear low-density polyethylene (LLDPE) film, which has different structural properties:

1. **Premium:** Premium film is made with 100% clean, dry, clear, post-industrial material made with LLDPE or LDPE film.
2. **A:** Grade A LDPE film is 95% clean, clear, dry and natural, with very little contamination allowed from sources like labels and colouring.
3. **B:** Grade B film is 80% clear, with a 20% allowance for coloured, clean, natural LDPE or LLDPE film.
4. **C:** The lowest grade of recycled film is made with just 50% clear, 50% colour, dry LLDPE or LDPE film. HDPE and polypropylene (PP) films are permissible

Recycled LDPE is often used to produce piping, sheeting, films and trash bags for composite lumber, building and agricultural applications and other products. Beyond reducing waste and creating a cleaner world, there are practical benefits for companies that make the effort to recycle LDPE film:

1. Reducing waste costs
2. Reducing energy demand
3. Gaining reputational benefits

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CHAPTER 2

LITERATURE REVIEW

As the main agenda of our project is to reduce the waste produced by Food Grade Plastic in the village areas using Food Grade Plastic Recycling unit. Following are some of the literatures related to this present work,

Kalpana Patil et al. [1]

Recycling has been debated endlessly for many years now. There are two points of view regarding this issue. The argument in support of recycling concerns the negative impact of waste and emissions on our planet. The counter case is that costs undertaken to recycle are larger than the revenue returns. only recycles 5% of its plastic waste even though it is one of the largest industrial cities in the country and there is growing concern about its part in the release of greenhouse gases from industry and the waste system. This is a relevant matter because pollution is at high levels and there must be efforts from every department to control this.

Vannessa Goodship [2]

When heated they melt and flow and when cooled they solidify. This process of heating and cooling can be repeated many times and therefore to reprocess a thermoplastic material is it necessary to re-melt them. HDPE, LDPE and PP materials are used in vast quantities to make many consumer items such as lids, carrier bags and fast food packaging. PET is used for carbonated. PVC is used to make flooring, shoes and bottles. Thermosets whilst initially processed by melting in a similar manner to thermoplastics cannot be re-melted and will decompose rather than melt. This is because they are chemically cross linked during a process called curing.

Milivoje M. Kostic et al. [3]

Both pipe and tubing are made in dies with an annular die exit. A pipe product is defined as being greater than 1 in. in outer diameter and a tube less than 1 in. Dies for these products are made in two styles: 1) in-line dies (also called spider dies)

S M Al-Salem et al. [4]

Plastic solid waste (PSW) presents challenges and opportunities to societies regardless of their sustainability awareness and technological advances. In this paper, recent progress in the recycling and recovery of PSW is reviewed. A special emphasis is paid on waste

generated from polyolefin sources, which makes up a great percentage of our daily single-life cycle plastic products. The four routes of PSW treatment are detailed and discussed covering primary (re-extrusion), secondary (mechanical), tertiary (chemical) and quaternary (energy recovery) schemes and technologies. Primary recycling, which involves the re-introduction of clean scrap of single polymer to the extrusion cycle in order to produce products of the similar material, is commonly applied in the processing line itself but rarely applied among recyclers, as recycling materials rarely possess the required quality. The various waste products, consisting of either end-of-life or production (scrap) waste, are the feedstock of secondary techniques, thereby generally reduced in size to a more desirable shape and form, such as pellets, flakes or powders, depending on the source, shape and usability

Kusekar S.K et al. [5]

Using compound dies we can produce components on scale and avoid the time consumption. By using automation and multi stage heating coils we can increase the production rate. The results above counter exactly that showing that by recycling, companies can further reduce these cheap production costs

Anh T. M. Le et al. [6]

The heating process in the oven up to now, there have been many different technologies which can provide a very high efficiency and short heating time such as microwave, heating element, inductor and infrared. However, every technology has specific disadvantages which affect the heating process of recycling plastic

Pascoe R. D. [7]

Size reduction may be necessary because the feed stock must be of a compatible size to fit into reprocessing machinery. Large items may first have to be shredded to about 25 – 50 mm and then flaked. Washing using a detergent will remove residues and contamination. It improves the purity of the feed stock and in some cases will increase the efficiency of some further sorting processes. Labels, glue, dirt Etc. are removed and then the material is dried.

Often sorting will need to be carried out. Using identification codes this can be done manually. However, this is obviously very labour intensive and final purity relies on human accuracy. If man power is cheap this can be an economic method. However, in the developed world mechanized sorting is preferred. There are a variety of sorting technologies in use that take advantage of the differing properties of plastics for separation

U. Emifoniye et al. [8]

Recycling is cheaper than reproducing the plastic product from the raw material in most cases. Recycling also takes care of the emerging waste disposal crisis that is ravaging our society. For this reason, there is a need for an expansion of the recycling program, as well as cheaper machine to fix all the problems that involves plastic recycling. A furnace is a device in which the chemical energy of a fuel or electrical energy is converted into heat which is then used to raise the temperatures of materials. Furnaces operating at low temperatures are often called ovens depending on their purposes and there is other furnace used at higher temperatures for various materials and purposes

Jassim M Abdulkarim Jaff et al. [9]

The design of screw is important for plastic processing. It has mainly three different functions: namely, feeding mechanism; uniform melting and mixing of plastic and finally it generates the pressure to push the molten material through die. A screw length (L) is referenced to its diameter (D) as L/D ratio. Generally, L/D ratio is used as 24:1, but for more mixing and output, it may increase up to 32:1.

Abebe Mengistu Alemayehu et al. [10]

The large particles of plastic need to be broken down into small pieces to melt simply, reduce storage and transportation space requirement. Shredder machine; product/mass flow rate increase when speed of motor is rise. Extruder machine; product increases when the die geometry is great and the density of polymers are low.

J.M. Soto et al. [11]

The objective of the washing is to remove contaminants/impurities, often the organic waste sticking to the plastics but also adhesives or pulp fibres (Hopewell et al., 2009; Ragaert et al., 2017). There are several practices to remove residues, two widely used are: 1) using water or NaOH solution (wet techniques) and 2) using friction without addition of water (dry techniques) (Hopewell et al., 2009). In literature, there are very few studies that have analysed in depth the washing process of post-consumer plastic film waste as an essential step in its mechanical recycling

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CHAPTER 3

PROBLEM IDENTIFICATION

3.1 Problem Statement

- 1) **Reduce the ever increasing piles of Food Grade Plastic in Village areas of Innoli and Gramachaavadi.**

Since food grade plastics are the most common kind of plastic waste that are dumped in villages there should be an effective way to control the waste, as the food grade plastic waste tend to be more durable and harmful to the eco system.

- 2) **Design and construction of small scale economical Food Grade Plastic Recycling Unit to satisfy the need of Innoli and Gramachaavadi.**

The design and fabrication of a food grade plastic recycler at economical rate is a huge task as it should be affordable by a small village and it should be able to meet its waste recycling needs.

3.2 Objectives

- 1) To conduct a survey of food grade plastic use and disposal in villages of Innoli and Gramachavadi (Nearby villages to Bearys Institute of Technology, Mangalore).
- 2) To design a small-scale economical food grade plastic recycling unit.
- 3) To fabricate a small-scale economical food grade plastic recycling unit.
- 4) To reduce the cost of extruder machine.
- 5) To produce recycled plastic pellets from the food grade plastic waste.

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3.3 Methodology

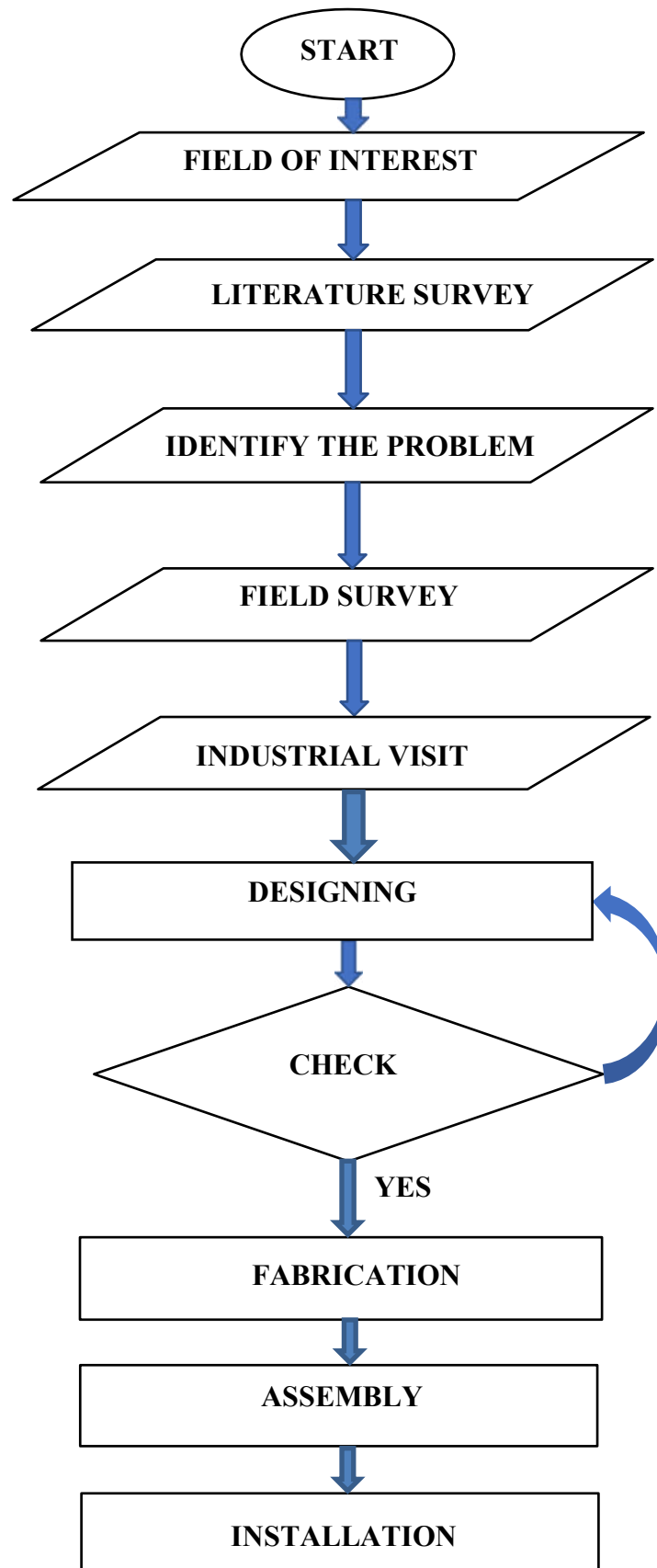


Fig.3.1 Methodology Flow Chart

CHAPTER 4

DESIGN

The concept model designing is an important part before fabricating a product. A Small, fully working, robust Food Grade Plastic Recycling Machine was designed with the help of Solid Edge V2 designing software.

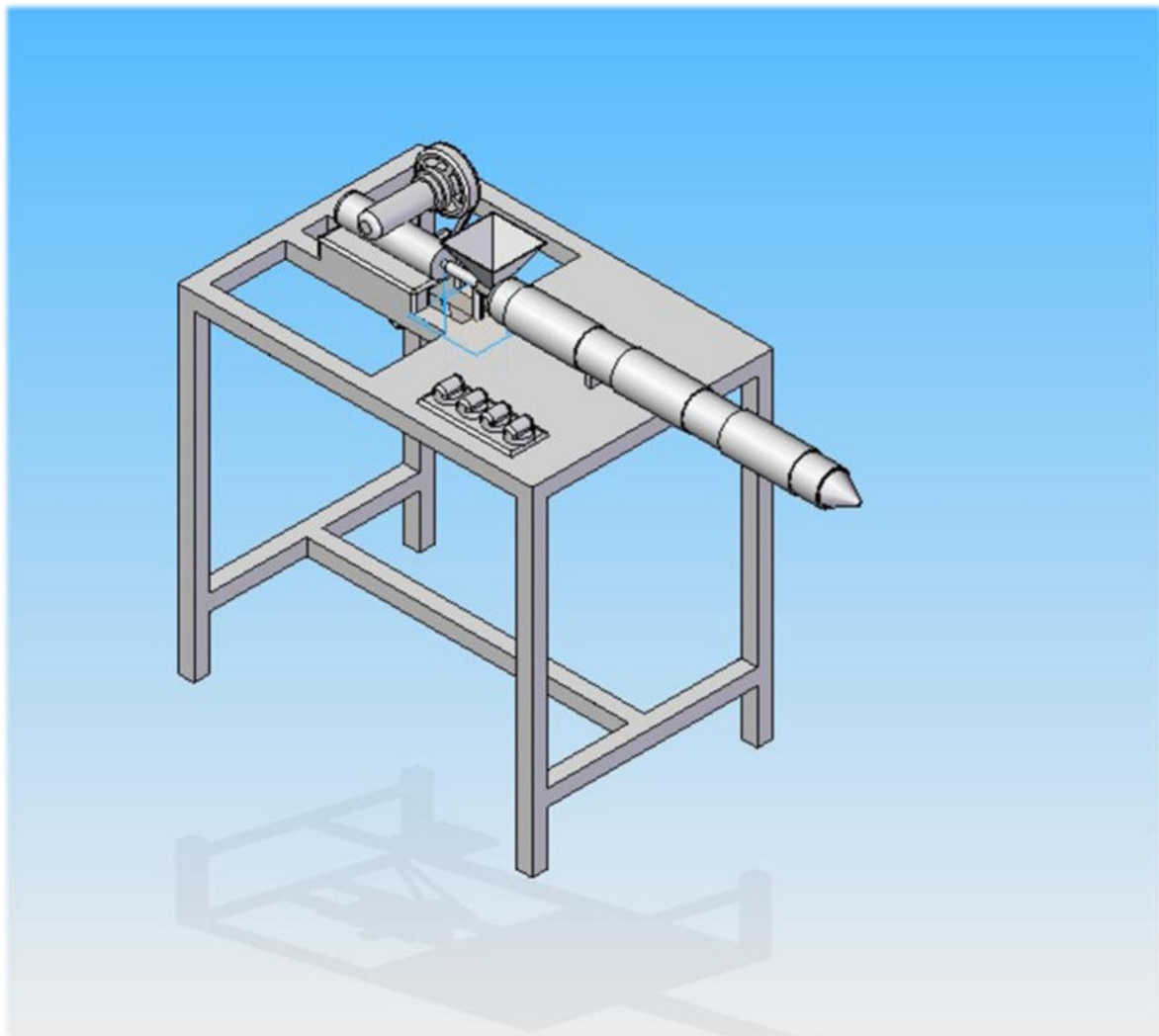


Fig.4.1 3D Design

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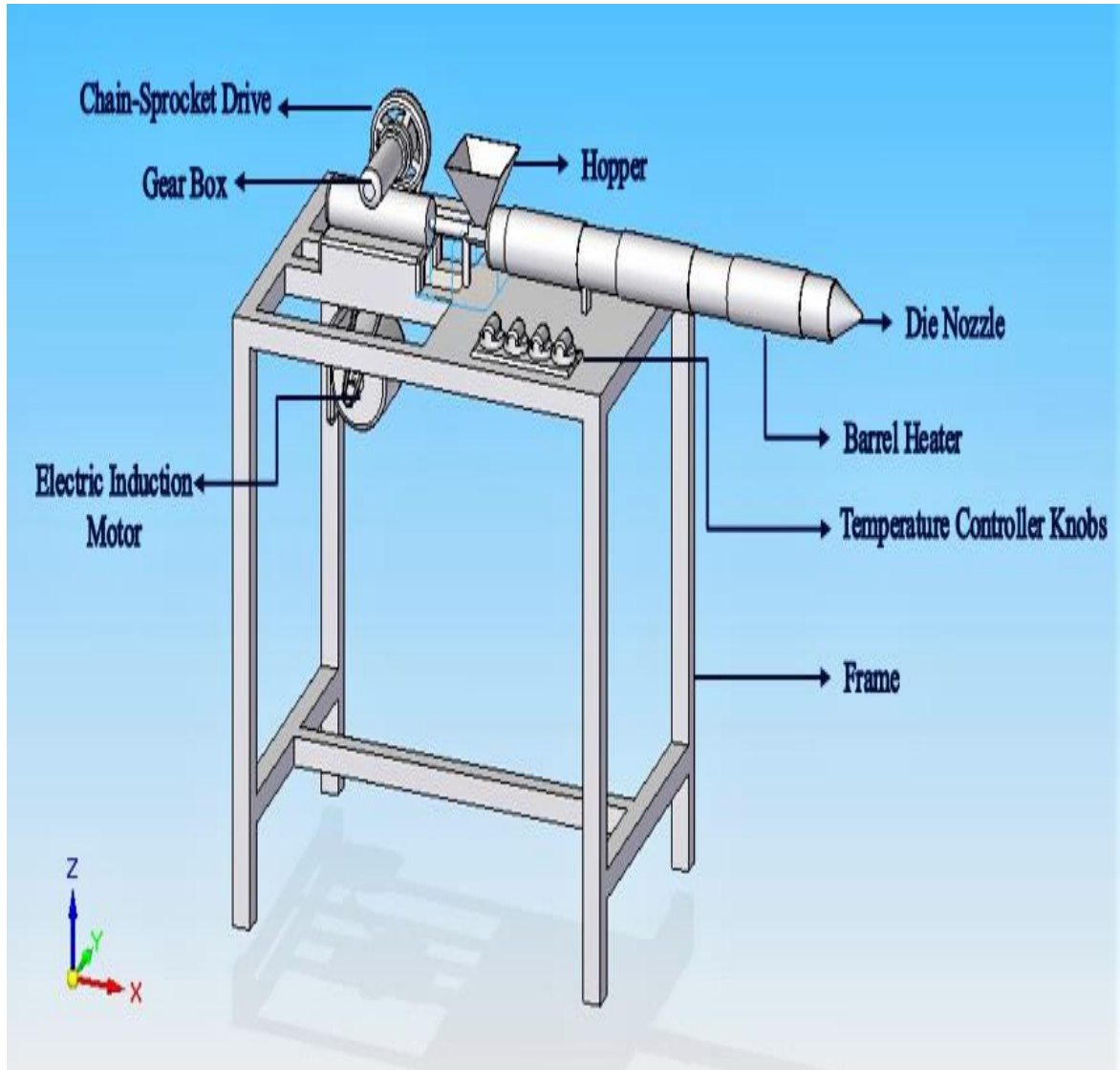


Fig.4.2 Isometric View

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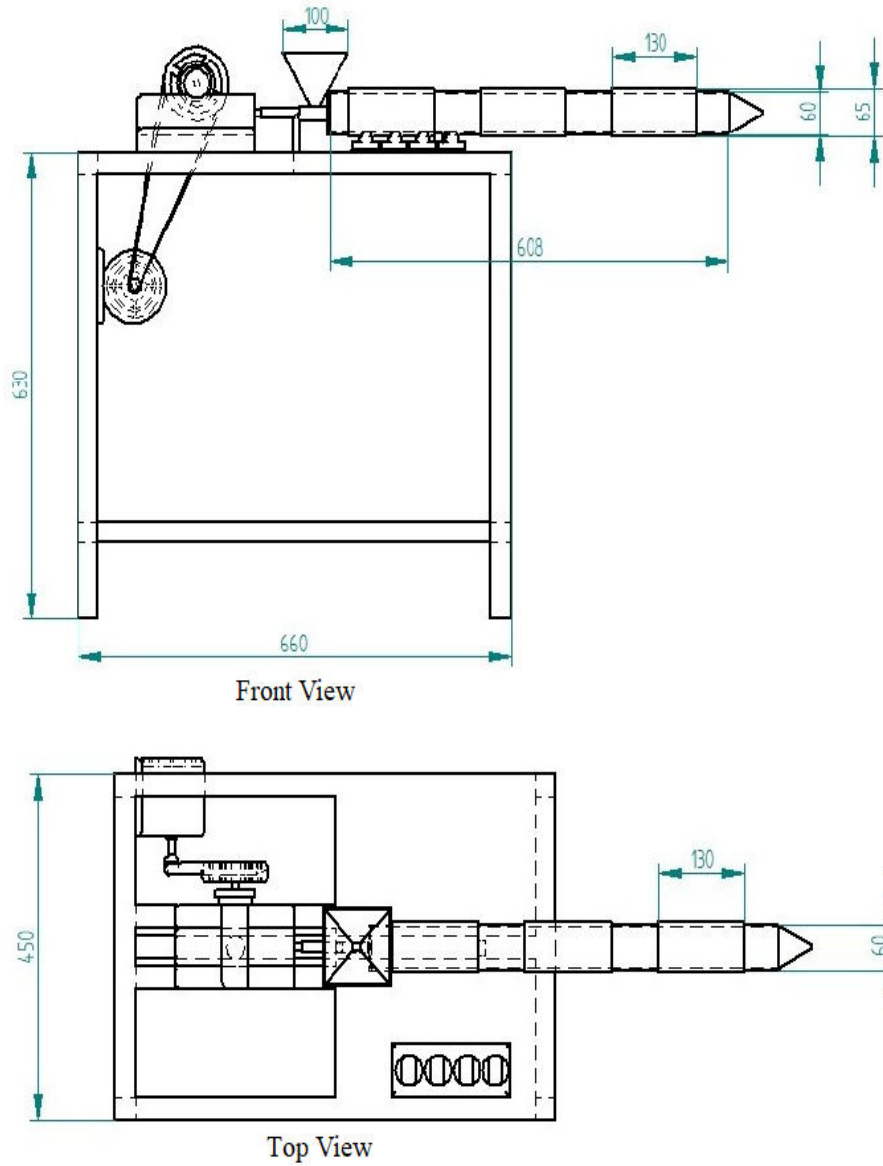


Fig.4.3 2D Drawing

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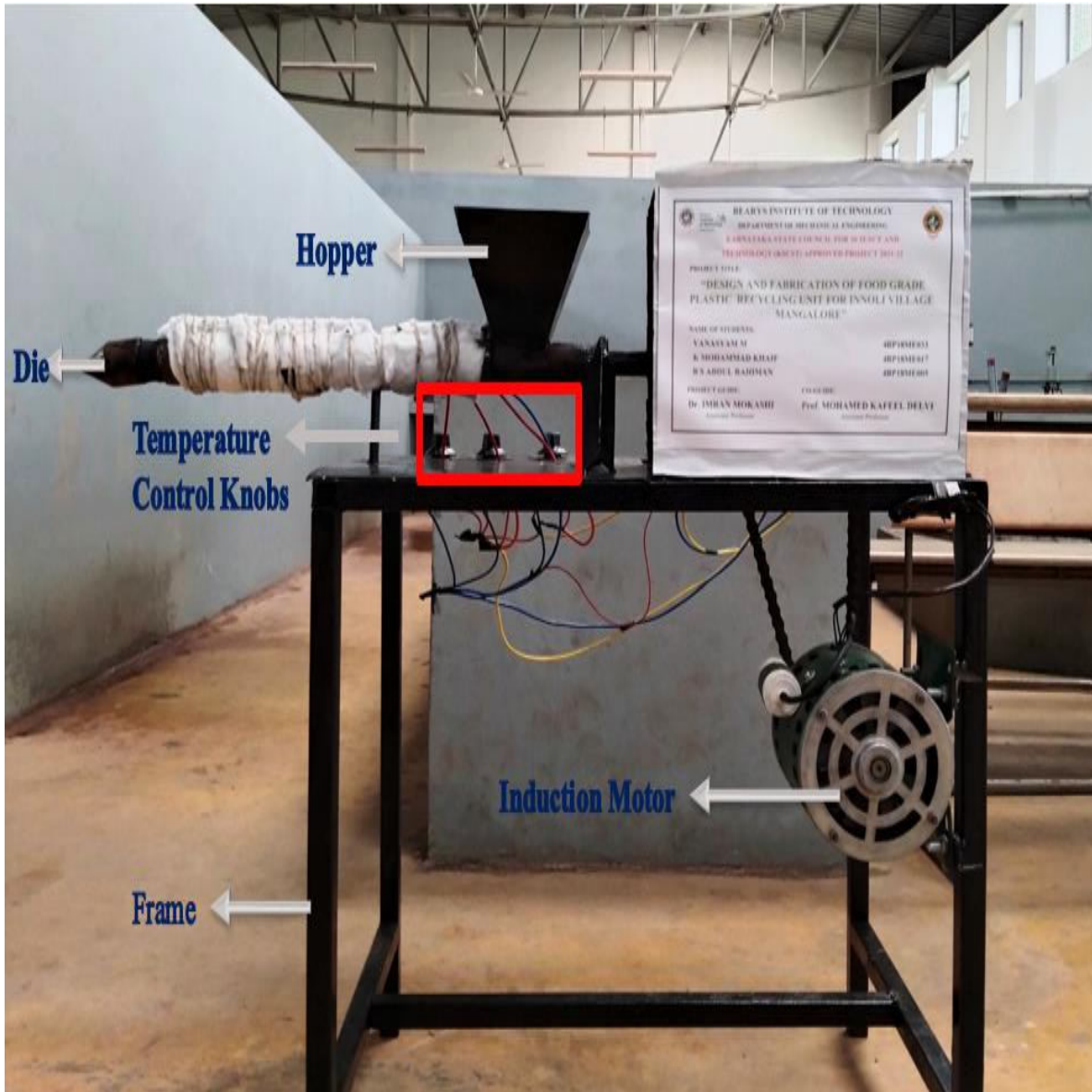


Fig.4.4 Fabricated Food Grade Plastic Recycling Unit

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4.1 Specifications

1. **HOPPER:**
 - i) Material: Sheet Metal.
 - ii) Process: Cutting and Welding
2. **EXTRUDER:**
 - i) Material: Steel Pipe.
 - ii) Size: 608x60mm (Length x Diameter)
 - iii) Process: Welding, Lathe work, Hobbing
3. **STAND:**
 - i) Material: Mild Steel Square Pipe
 - ii) Size: 2.5x2.5x600cm
 - iii) Process: Cutting & Welding.
4. **GEARBOX:**
 - i) Material: Cast Iron
 - ii) Type: 25:1 Worm Gear box
5. **GEARS:**
 - i) Material: Worm & Worm wheel both of cast iron.
 - ii) Size: worm (40mm) worm wheel (60mm)
 - iii) Process: Milling process.
6. **TRANSMISSION SHAFTS:**
 - i) Material: Mild Steel.
 - ii) Size: 70mmx25mm (Length x Diameter)
 - iii) Process: Lathe work.
7. **BARREL HEATERS:**
 - i) Material: Carbon plates with copper lining
 - ii) Power: 1000W
8. **MOTOR:**
 - i) Type: Single Phase Induction Motor
 - ii) Voltage: 230V
 - iii) Speed: 1440RPM
 - iv) Power: 0.25HP

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4.2 Bill of Materials:

Sl. No.	PARTS	Specification	Qty.	COST
1	AC motor	.25HP, 1440RPM, Single phase induction motor, Brand: Lakshmi	1	3150
2	Worm gear box	Dia. of Worm wheel=60mm, Dia. of Worm Gear= 40mm, High Torque with Velocity Reduction of 30:1	1	2820
3	Chain & Sprocket	Length of chain 128cm, No. of teeth of Motor Sprocket=13, Inner Dia.=4.5cm, No. of teeth of Gear sprocket=41, Inner Dia.=16cm; Material: Mild steel	1	1600
4	Heater	1000W, Barrel Heater with copper lining	3	1800
5	Simmerstat	SUNBIM Simmerstat Type60, Temperature range of 0 to 100 ^o c	3	600
6	Bearing	Stainless steel, Deep Groove Ball Bearing, Outer Dia.=47mm, Inner Dia.=20mm, No. of bearing balls=8	2	650
7	Transmission Shaft	Mild Steel, length=70mm, Dia.=25mm	1	800
8	Lead Screw	Square type, Pitch=25mm, Depth=5mm, Length 608mm	1	2000
9	Hopper	4x8 Feet, Sheet Metal	1	500
10	Frame stand	2.5x2.5x600cm Mild Steel Square tubes	2	1300
11	Glasswool & Ceramic Rope	Thermal Insultion	2	800
12	Labour Cost	Lathe Work, Drilling, Welding, Grinding, Power Hacksaw, Gas Cutting	-	6740
13	Transportation	-	-	2100
14	Miscellaneous	-	-	3300
	TOTAL		-	28160/-

Table 4.1 Bill of Materials

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CHAPTER 5

RESULT

- 1) The food grade plastic waste is successfully recycled and pellets are made (only milk and curd packets were used).
- 2) An optimized and economical machine designing was done.
- 3) The machine is robust and easy to assemble and install.
- 4) Small scale production machine designing is made possible.
- 5) Village people can produce income by selling the pellets.
- 6) The Food Grade Plastic Recycling unit is capable of recycling 16kg of food grade plastic per day.

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CHAPTER 6

FUTURE SCOPE

- 1) The temperature control can be digitalized.
- 2) Exhaust or vents can be provided to remove harmful fumes emitted from melting of plastic.
- 3) The food grade plastic recycling unit can be fully automated.
- 4) Solar can be used to power the machine.

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CHAPTER 7

CONCLUSION

- 1) The Food Grade Plastic Recycling unit designing was optimized on the basis of economical and safety aspect.
- 2) Minimal mechanical components are incorporated in the design with no compromise in machine quality.
- 3) Integrated die was used to reduces material and machining cost.
- 4) The machine manufactured is robust and easy to assemble and install.
- 5) Small scale plastic recycling unit was success fabricated and installed, which produced an output by recycling food grade plastic into small pellets.
- 6) Small industries can be setup by villagers to produce and sell recycled plastic as it generates profit as well as provide employment to people.
- 7) This initiate can be taken up by the local Government bodies as it promotes Swachh Bharat Abhiyan mission.

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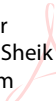
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BEARYS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

Lands End, Innoli, Mangalore – 574199, Karnataka

(Affiliated to Visvesvaraya Technological University, Belagavi)



Bearys
Institute
of Technology

MANGALORE

CERTIFICATE


This is to certify that project report has been successfully completed for the title
“DESIGN AND INSTALLATION OF HYDRAULIC DISC BRAKE TO TROLLEY” in partial fulfillment for the award of the degree of **Master of Technology in Machine Design** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**, during the year 2021-2022.

Submitted by

MOHAMMED ANAS K

4BP20MMD02


Signature of Guide


Signature of HOD ^{10/08/22}
HOD
(Dept. of Mechanical Engineering)
Bearys Institute of Technology
Land End, Innoli, Boliyar Village
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Signature of Principal

EXTERNAL VIVA

Name of the Examiners

Signature with Date

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1 _____

2 _____

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DECLARATION

I student of 4th semester M-Tech, Machine Design, Bearys Institute of Technology Mangaluru, hereby declare that the Project Work entitled “**DESIGN AND INSTALLATION OF HYDRAULIC DISC BRAKE TO TROLLEY**” has been independently carried out by us, and submitted in partial fulfillment of the requirements for the award of the degree of **Master of Technology in Machine Design** from **Visvesvaraya Technological University** during the academic year **2021-2022**. Further, the matter embodied in the Project Work report has not been submitted previously by anybody for the award of any degree or diploma to any other University.

Place: Mangaluru

Date: 13-08-2022

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ACKNOWLEDGEMENT

The realization of the goal would not be possible without mentioning a few instrumental people behind this Project Work.

I thank my guide **Dr. Imran Mokashi**, Associate Professor Mechanical Engineering for his valuable guidance, his encouragement and support, providing necessary facilities in the department throughout this Project Work.

I thank PG Co-ordinator **Prof. Mohammed Kafeel Delvi**, for his valuable guidance, his encouragement and support, providing necessary facilities in the department throughout this Project Work.

I thank **Dr. Vasantha Kumar**, H.O.D of Mechanical Engineering, for providing necessary facilities in the department throughout this Project Work.

I wish to express our gratitude to principal, **Dr. S I Manjur Basha** for his encouragement during the period of this Project Work.

I am grateful to the chairman, **Mr. Syed Mohammed Beary** for providing excellent facilities in the college during our course.

I like to thank our dear Faculty members and technical staffs, Department of Mechanical Engineering for their help and support. Without their co-operation it would have been difficult to complete this Project Work successfully.

I thank my Family members and Friends for their support throughout the completion of this Project Work.

MOHAMMED ANAS K


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INDUSTRIAL VISIT REPORT 2021-22

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Class/semester	4 th semester
No. of Students Visited	20
Faculty coordinators	1. Prof. Arvind Kumar 2. Dr. Imran Mokashi
Date of Visit	22 nd JUNE 2022

OBJECTIVES:

1. To learn industrial practices in Manufacturing.
2. To learn product development processing through Drawing, Machining & Assembly.
3. To understand Machine Operation and Applications.

COURSE CO-PO MAPPING:

SL. NO.	SEM	COURSE	CO	PO
1	3	MATERIALS SCIENCE-18ME34	C03 C04	PO1
2		METAL CASTING AND WELDING-18ME35B	C06 C07	
3		COMPUTER AIDED MACHINE DRAWING-18ME36A	C04	
4		FOUNDRY FORGING AND WELDING LAB-18MEL38B	C05	
5	4	METAL CUTTING & FORMING-18ME45A	C01 C02 C05	PO3 PO5
6		WORKSHOP AND MACHINE SHOP PRACTICE-18MEL48B	C01 C02 C03 C04 C05 C06	PO6 PO8 PO12
7		MECHANICAL MEASUREMENTS AND METROLOGY-18ME46B	C02 C04 C05	
8		MECHANICAL MEASUREMENTS AND METROLOGY LAB-18MEL47B	C04 C06	



INDUSTRIAL VISIT REPORT 2021-22

DETAILS OF JOURNEY:

BIT Mangalore had organized an industrial visit on 22nd June, 2022 to Gurucharan Industries located in Bayikampady industrial Estate Mangalore for the students of Mechanical Engineering. The visit was organized by HOD of Mechanical engineering Department Dr. Vasantha Kumar. Dr. Imran Mokashi & Prof. Arvind kumar were the Faculty co-ordinators for the industrial visit. We started travelling from the college campus at 10:30 am via our college bus. Totally 20 students along with 2 coordinators faculty were there in the journey.

COMPANY PROFILE

GURUCHARAN INDUSTRIES was promoted by Mr. JAYAKAR SHETTIGAR in the year 1996 to manufacture the following:

1. Plastic Processing Machineries.
2. Allied Machineries.
3. Spare Parts and Components of Plastic Processing & Allied Machineries.

To undertake vast research in extrusion of films, GURUCHARAN INDUSTRIES has started manufacturing of single screw HMHDPE/LDPE/LLDPE Blown Film Plant and PP Blown Film Plant at the initial stage. Gradually developed the same to Twin Die, Four Die and Rotating Die Blown Film Plants in HMHDPE/LDPE/LLDPE and Twin Die Film Plant in PP. Also developed single Colour Flexo Printing Machine, Pepsi Plant, HMHDPE/LDPE/LLDPE Blown Film Plant with Rotating Die & On-line printing attachment, Two Layer HMHDPE/LDPE / LLDPE Blown Film Plant with Haul off Attachment, Nano Blown Film Plant, also invented other allied machineries such as Scrap Crusher. Twin Chamber Air Cooled Reprocessing Plant, Water Cooled Reprocessing Plant. Gussetting Machine, Hopper Dryer, Mixing Machine (screw type & Air Force), Pneumatic Punching Machine etc. To save time and labor in color printing, we have developed a HMHDPE two color film extrusion with two color flexo printing. Our new addition is Two Three Layer (A+B+A) HMHDPE/LDPE/ LLDPE Blown Film Plant with Haul off Attachment & Three Layer HMHDPE/LDPE/ LLDPE Blown Film Plant with Haul off and Stripped Film Attachment introduced to the market.



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The unit has got latest and state of the art special purpose facilities for in house machining. The unit manufactures critical components of extruder machines like screws, barrels, dies, spirals, helical gearbox, housing etc. Our Machines are sturdy and robust built, a unique quality of power, labor and space saving device introduced to the global market. We got an experienced technical team to cater the needs of our valued customers and troubleshooting will be attended promptly.

OUTCOME OF THE VISIT:

1. The students learnt various industrial workshop practices.
2. Students learnt about CNC Machine operations and applications.
3. Students also observed metal surface treatments like nitriding and HDPE plastic product properties.
4. The student got knowledge about application of GD&T in engineering drawings.

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PHOTOS:



Industrial Visit Coordinator

1. Prof. Arvind Kumar

HOD

2. Dr. Imran Mokashi

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DEPARTMENT OF MECHANICAL ENGINEERING

Bearys Knowledge Campus, Lands End, Innoli, Near Mangalore University, Mangalore-574199

INDUSTRIAL VISIT REPORT 2021-22

KIOCL Limited

(A Government of India Enterprise)

MANGALORE, KARNATAKA

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DEPARTMENT OF MECHANICAL ENGINEERING

Bearys Knowledge Campus, Lands End, Innoli, Near Mangalore University, Mangalore-574199

INDUSTRIAL VISIT REPORT 2021-22

Company Name	KIOCL LIMITED
Address	KIOCL LIMITED PANAMBUR MANGALORE Tel: +91- 824- 2403378 Mobile: +91- 9449304805 E-mail:mgmp@kiocltd.in
Contact Person	Raghu s, Mb:+91-9448500061
Class/semester	6 th semester
No. of Students Visited	26
Faculty coordinators	1. Prof. Prithviraj M 2. Prof. Gokul Das
Date of Visit	2 nd July 2022

OBJECTIVES

- To experience and understand real life situation in an industrial organization and related environment and accelerating the learning process of how knowledge could be used in realistic way.
- To help students get accustomed to an organizational structure, business operation and administrative functions.
- To gain the knowledge of selecting the optimal solution in handling the situation and to learn the accepted safety practices in the industry.
- The essence of the university education lies in the synergic relationship between the student and his department. An industrial visit at **KIOCL** will be the most logical extension of our academic pursuits and will be very helpful in achieving our objectives

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INDUSTRIAL VISIT REPORT 2021-22

COURSE CO-PO MAPPING

SL. NO.	SEM	COURSE	CO	PO
1	3	MATERIALS SCIENCE-18ME34	C03 C04	PO1
2		METAL CASTING AND WELDING-18ME35B	C06 C07	
3		FOUNDRY FORGING AND WELDING LAB-18MEL38B	C05	
4	4	METAL CUTTING & FORMING-18ME45A	C01 C02 C05	PO3 PO5
5		WORKSHOP AND MACHINE SHOP PRACTICE-18MEL48B	C01 C02 C03 C04 C05 C06	PO6 PO8 PO12
6	5	MANAGEMENT AND Entrepreneurship-18ME51	C04 C05	

VISIT SUMMARY

We batch of 6TH semester students of Department of Mechanical Engineering along with faculty Prof.Prithviraj M and Prof. Gokul Das M visited KIOCL Limited, Panambur by our college bus on 2nd July 2022 at 9.00 am

We first visited the training division at KIOCL. Mr.Shivaraj, Head of training division briefed us about the company. He also showed us two videos which gave us lot of information about the company.

We visited the ore collecting center. The ore was offloaded from ships which came from India and abroad.

We visited the pellet delivery plant. A stream of pellets were discharged by the conveyor and pellets were stored in heaps on the ground.

We visited the Ball mill where the ore gets crushed into fine particles. We also saw the filtration unit where vacuum filters were used to separate water and Iron Ore.

The separated ore was sent into the pellet plant unit. Here the ore is subjected to pellet disc which is having 7 metres diameter and has got tilted provision of 45°. When disc rotates at certain rpm iron ore gets converted into pellets due to centrifugal force. The pellets fall outside the disc and goes into roller wheel which is of required size. The large size pellets gets separated and finally the standard size of 9mm to 16mm diameter is collected.



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COMPANY PROFILE

Incorporated on April 2, 1976, the KIOCL Ltd, a Government of India enterprise, was Asia's largest iron ore mining and palletization complex and the country's biggest 100% export oriented unit engaged in the business of exporting high quality iron oxide pellets and pig iron. The company was formed in April 1976. The 7.5 million ton annual capacity project at Kudremukh along with the 110 km slurry pipeline and filtration units at Mangalore was to be completed in August 1980. Shipments were to commence in September 1980. KIOCL completed the project in time. Mining activities at the worksite at Kudremukh, 110 kms from Mangalore came to halt from the end of 2005 with the Supreme Court confirming the status of Kudremukh National Park area over the present mines at Kudremukh. KIOCL's products are now widely accepted in the domestic and international markets and have a very high brand equity.

The annual capacity of the Pellet Plant is to produce about 3.5 Million tons of Iron ore Pellets. Other facilities include Reclaimer to load Pellets directly from Stockyard to vessel. Pellets produced at the Mangalore Plant have excellent metallurgical properties and are an ideal feed for Blast Furnace and DRI Units. KIOCL has its credit ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007 certifications.

KIOCL has dedicated and experienced senior level staff having more than 25 years of experience in Operation and Maintenance of Beneficiation and Pelletization Plant. KIOCL has already entered into several O&M works across India. It has entered O&M contract with NMDC for Iron Ore Beneficiation and Pelletization Plant, O&M contract with Orissa Mining Corporation (OMC) to operate and manage 1.4 MTPA Chrome Ore Beneficiation plant at Kaliapani Odisha and had Operated Coke Handling System(Crusher Conveyors) of M/s MRPL, Mangaluru.

Under the Make in India initiative of Government of India KIOCL produced high grade Pellets out of imported high grade ore procured from Brazil and made first shipment of 64463 DMT high grade pellets to Iran.



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In order to support and participate in the National Policy on Skill Development of Govt of India, KIOCL has entered into MoU with National Skill Development Corporation and Qess Corporation Ltd an approved NSDC Partner, which envisages conducting training programme for employees, contract workers, local youth, women and disadvantaged groups and employees of other establishments including CPUs on their behalf

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SYSTEM DEPARTMENTS

1. **Captive power plant:** It controls by APP control system. It uses three generators. Each generators have power of 10M watts
2. **Pellet plant:** The pellet plant at Mangalore products high quality iron oxide pellets as following facilities. - Palletizing disc - Roller screens - Indurating Machines
3. **Filter plant:** KIOCL Limited at its Port Facilities departments has iron ore grinding unit, filtering unit and loading system for handling the panama vessels for cargo loading at a draft depth of 13 meters.
4. **Blast Furnace:** KIOCL in additional to dispatch of pellet by sea route dispatch of pellets by trucks to meet the demand of small customer like coal based sponge iron manufacturers, mini - steel plants etc. The blast unit has a blast furnace of 350 cum capacity of producing 2, 27,500MT of hot metal per annum

SAFETY MEASURES

KIOCL is trying its level best for the safety of the workers and engineers working in all departments of the company.

Following are the steps taken by the company for the safety of the employees:

1. Compulsory use of the hand gloves while working in repair units.
2. When the repair of any machine in the plant is undertaken, compulsory shut down of the entire plant so as to avoid untoward incidents for working personnel who are repairing the machinery.
3. A number of slogans regarding safety is put up everywhere in the campus. For example "**PRODUCTION IS MUST, BUT SAFETY IS SUPER MOST**".
4. Warning boards are put tip near every machine to avoid hazards. - A fire brigade is always kept ready to fight fire accidents.
5. In case of accidents, a first aid center is made available in the plant for immediate treatment.
6. Compulsory wearing of the helmets in all sections of the industry.



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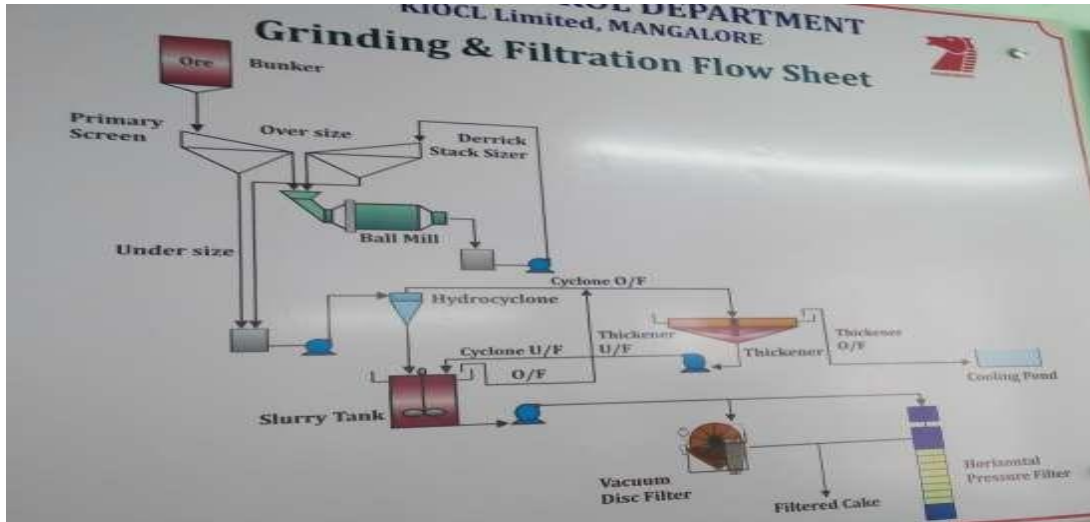
Adopting these safety measures, the company is able to reduce the number of accidents in the working area very efficiently. A separate department has been set aside to oversee the proper implementation of safety measures and thus reducing the no of accidents in the plant.

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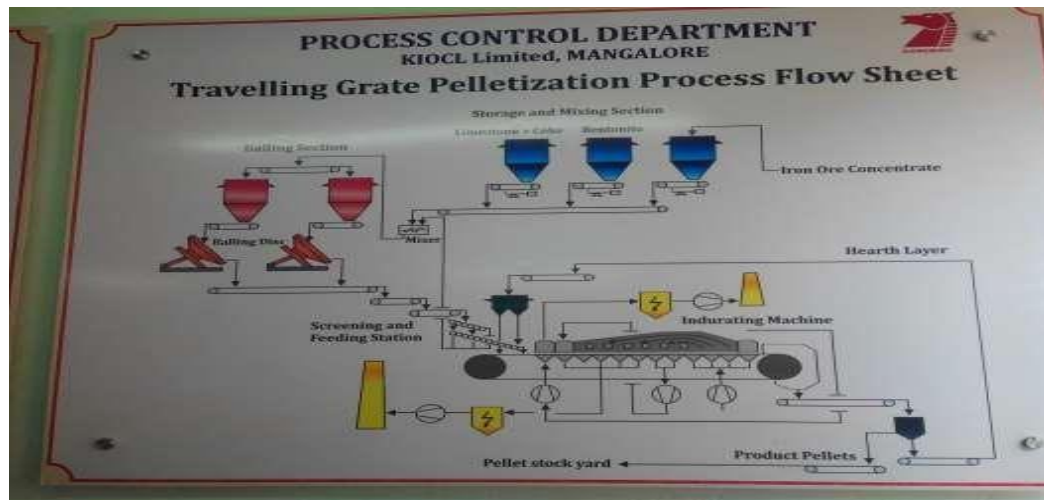
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1) Grinding & Filtration process



2) Palletization process



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INDUSTRIAL VISIT REPORT 2021-22

3. Group photos of students with faculty members & employees





INDUSTRIAL VISIT REPORT 2021-22

CONCLUSION AND ACKNOWLEDGEMENT

The Industrial visit to KIOCL was an excellent and rewarding experience. We have been able to understand the working of an Industry. Before this visit we had never imagined walking around in an industrial plant. We will share the wonderful experience we had at KIOCL with our parents, relatives and friends.

We thank the General Manager, KIOCL for permitting us to visit the company. We thank the Raghu s ,trainee officer, KIOCL for gave brief explain about plant as a guide. We also thank our Principal Dr.S I Manjur Basha and Head of Department Dr. Vasantha kumar for their support.

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