INDUSTRIAL VISIT REPORT

Industrial visit organised by **Chaitanya Degree & P G College for Women's**, for the students of **B.S.C computers [MPCs] 2nd Year 4th semester** in order to get practical knowledge about "advanced technology used in manufacture of sophisticated moulds, dies and tools".

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Details of Journey

Chaitanya Degree &P G College for Women's had organised an industrial visit on 10 June, 2023 to CEMS located in Scindia an industrialtraining centre in Visakhapatnam, Andhra Pradesh.

This visit was organised by HOD of Physics Department Lecturer

M. SatyaGowri.

We started traveling from the college campus at 09:00 am via totally **48 students** along with **1 coordinator faculty** was there in the journey.

Company Profile

CEMS is a global alliance of leading business schools, multinational companies and NGOs jointly delivering a pre-experience Master's in

Management programme that prepares future generations of responsibleleaders.


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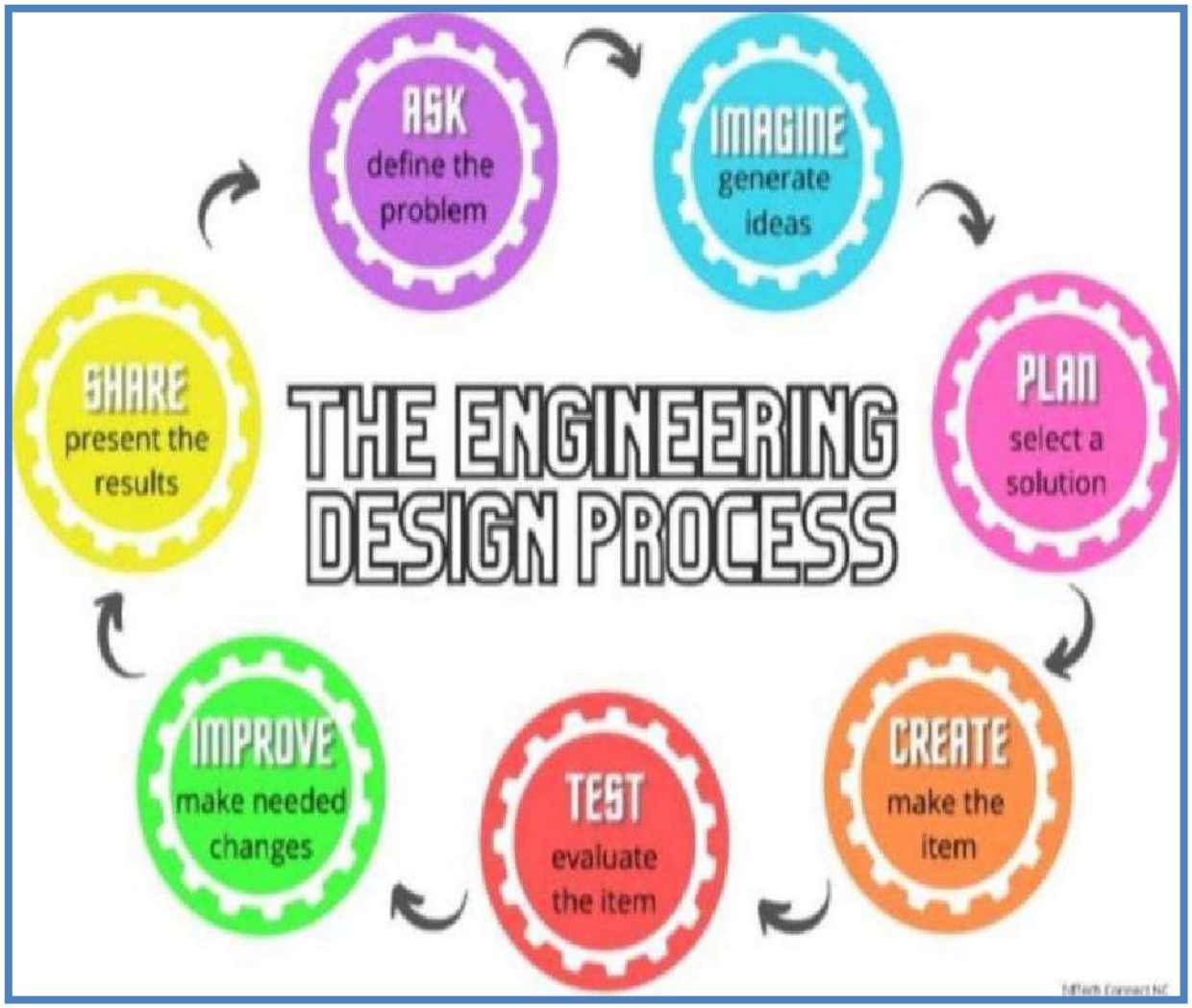

ASK
define the problem
IMAGINE
generate ideas
PLAN
select a solution
CREATE
make the item
TEST
evaluate the item
IMPROVE
make needed changes
SHARE
present the results
THE ENGINEERING DESIGN PROCESS

INTRODUCTION

Design for Manufacturing (DFM) is the process of designing parts, components or products for ease of manufacturing with an end goal of making a better product at a lower cost. This is done by simplifying, optimizing and refining the product design. The acronym DFMA (Design for Manufacturing and Assembly) is sometimes used interchangeably with DFM.

PRINCIPAL OF DFM

Process

The manufacturing process chosen must be the correct one for the part or product. You wouldn't want to use highly-capitalized process like injection molding which involves building of tools and dies to make a low-volume part that could have been manufactured using a lower-capitalized method, such as thermoforming. That would be equivalent to using a tank to squash

DESIGN

Constant wall thickness, which allows for consistent and quick part cooling

Appropriate draft (1 — 2 degree is usually acceptable) Texture — need 1degree for every 0.001" of texture depth on texture side walls

Ribs = 60 percent of nominal wall, as a rule of thumbSimple transitions from thick to thin features

Wall thickness not too small — this increases injection pressure.

MATERIAL

Mechanical properties — How strong does the material need to be? Optical properties — Does the material to be reflective or transparent?Thermal properties How heat resistant does it need to be?

Color — What color does the part need to be?

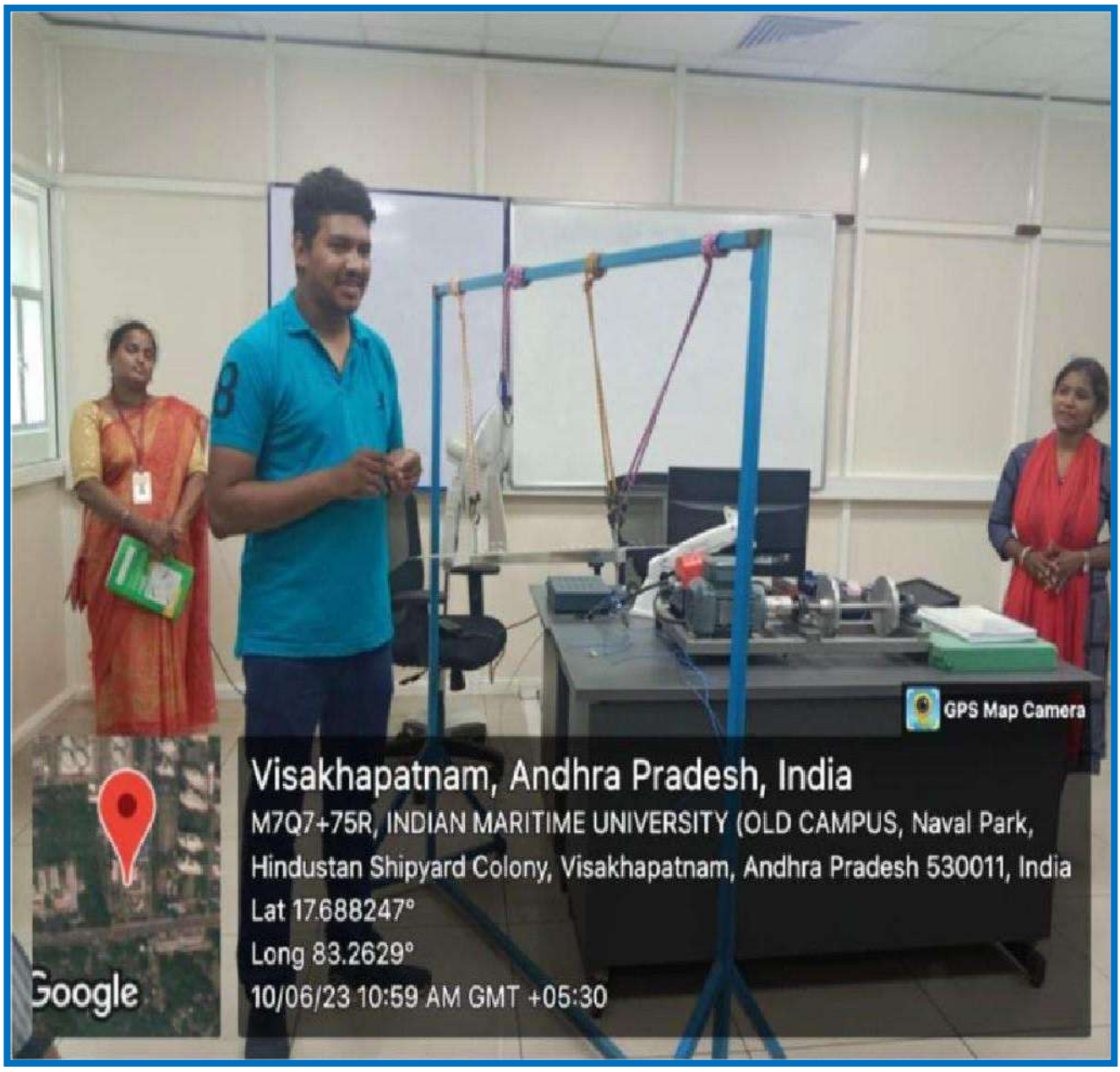
Electrical properties Does the material need to act as a dielectric (act as an insulator rather than a conductor)

Flammability — How flame/burn resistant does the material need to be?

Again, be sure to discuss the material with your contract manufacturer, who mighthave access to existing materials in their portfolio which would allow you to secure lower material pricing.

Environment

our part/product must be designed to withstand the environment it will be subjected to. All the form in the world won't matter if the part can't function properly under its normal operating conditions:



COMPLIANCE AND \TESTING

All products must comply with safety and quality standards. Sometimesthese are industry standards, others are third-party standards and someare internal, company-specific standards.

Factors that Affect DFM:

The goal of DFM is to reduce manufacturing costs without reducing performance. In addition to the principles of DFM, here are five factors that can affect design for manufacturing and design for assembly.

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DIMENSIONAL ACCURACY CONTROL SYSTEM

In this lab students observed about IOT (internet of things)advantages in our daily life. We also studied aboutthe sensors which detect when a obstacle or person or thing moving before a sensor. How to control the lightsand fans (on or off) from anywhere through mobile inany time. There is a involvement of embedded system .


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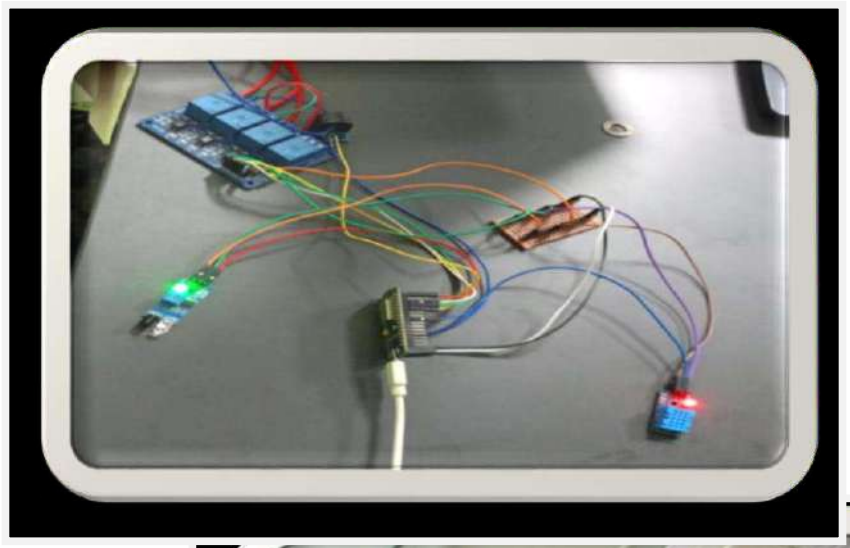
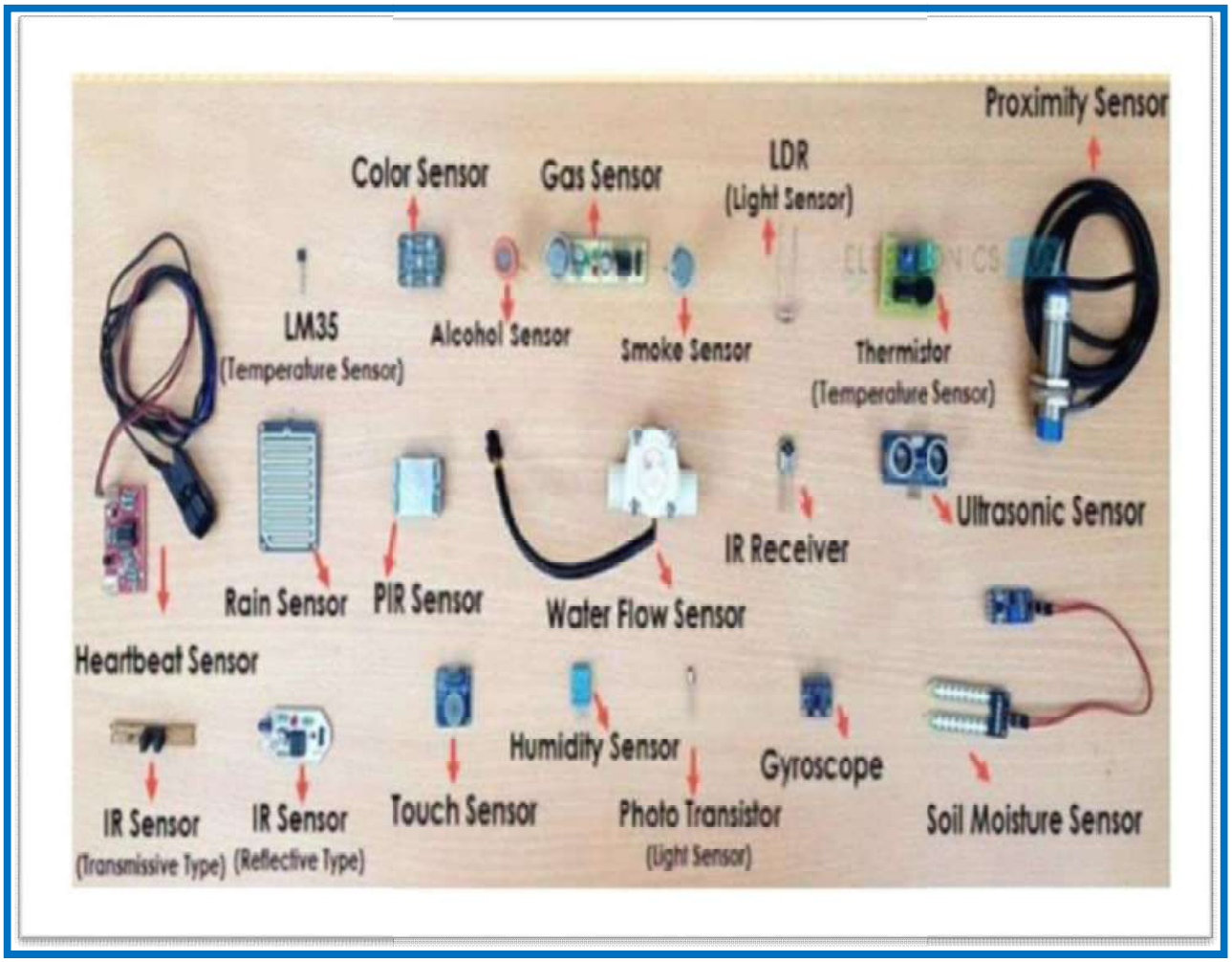
In this lab students know about the temperature and humidity in a room what embedded system involvedin it.



IOT (INTERNET OF THINGS)

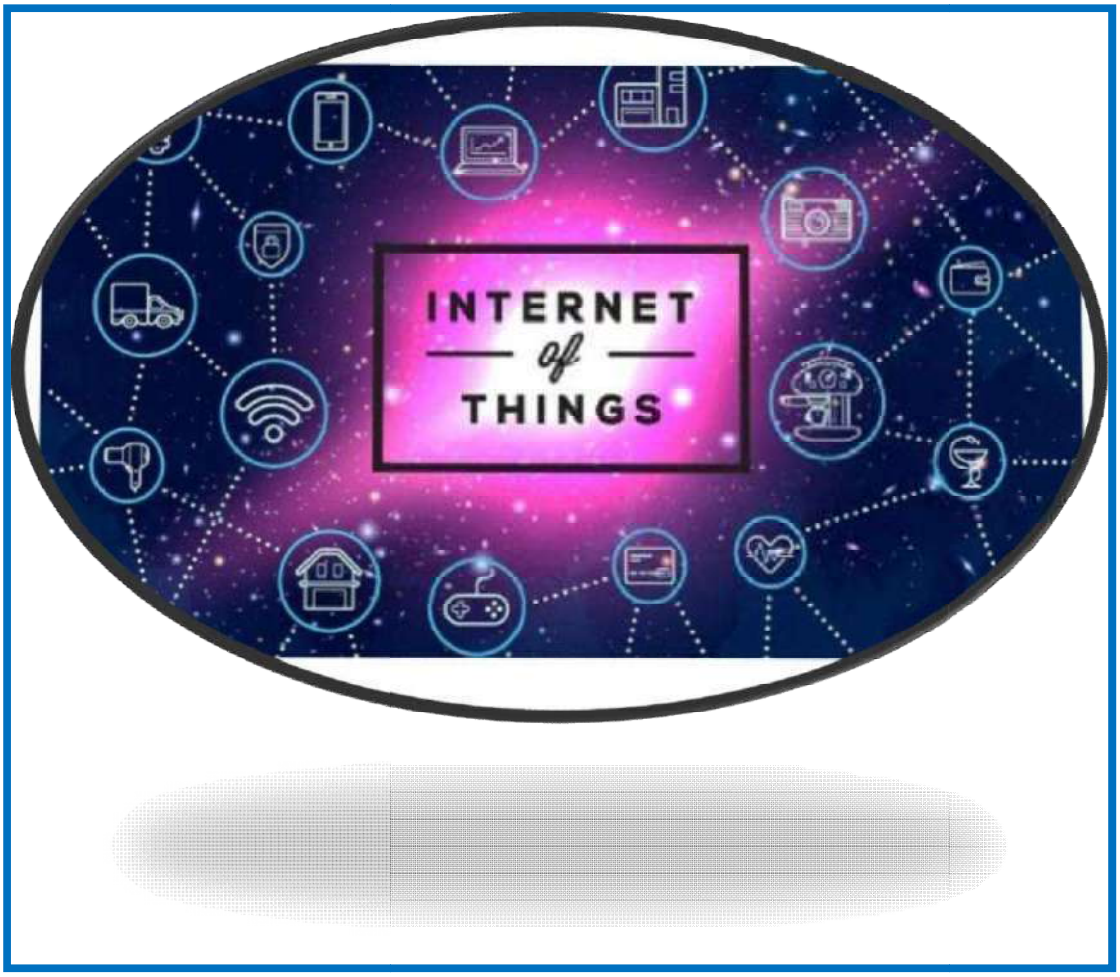
The internet of things (IOT) describes physical objects(or)group of such objects with sensors ,processing ability, software and other technologies that connect and

exchange data with other devices and system over theInternet or other communications network.



Application of IOT:

- :Smart Home Security. Let's start with how IOT helps secure your home. ...
- **Smart Home: Heating & Cooling.**
- **Smart Home: Kitchen. .**
- **Smart Díiving. .**
- **Smart l'ull Collection.**
- **Weaíables.**

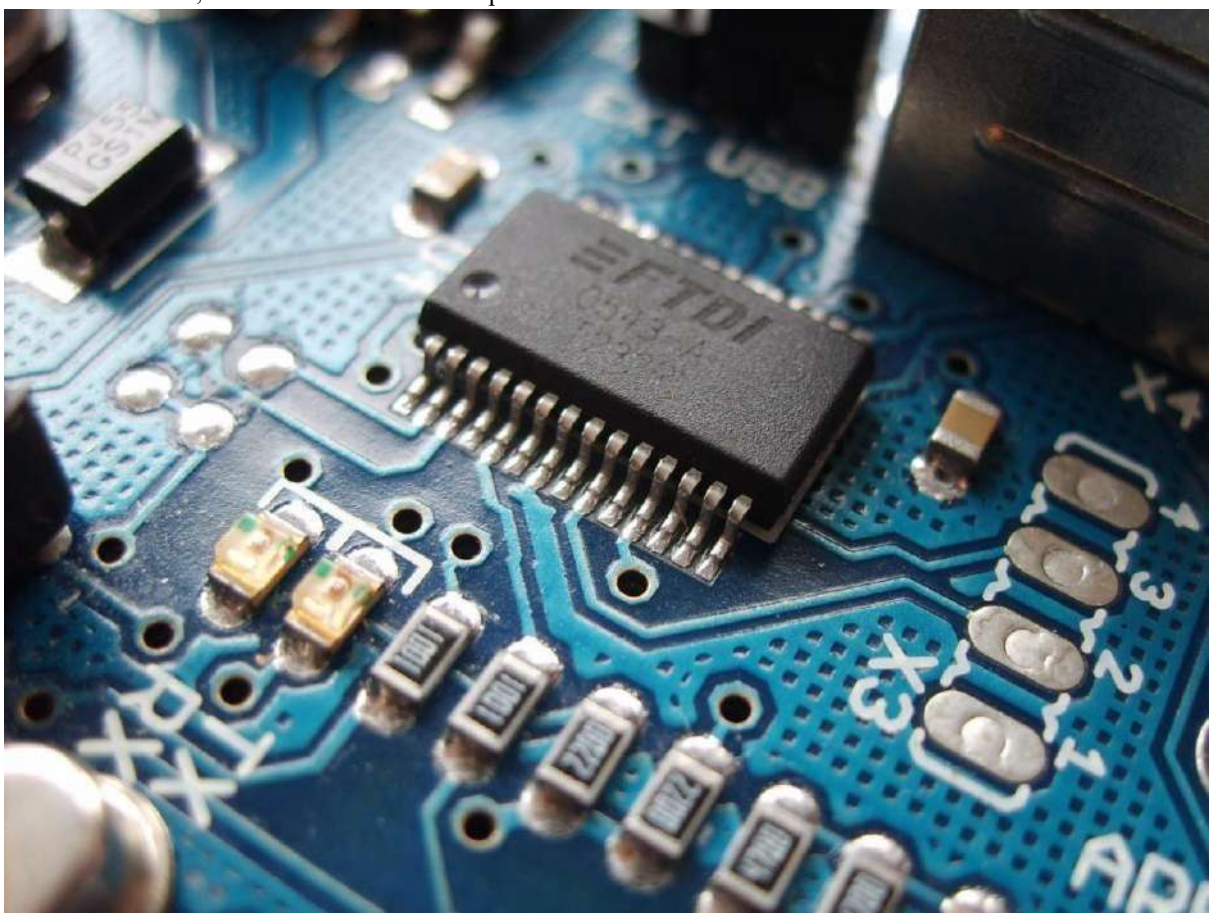


ELECTRONICS AND ENERGYSAVING LAB

In this lab, students had a great opportunity to learn the basics of electrical and electronics. This lab entirely runs up with the latest technologies in the

Electronics Apart from academic side, students had a chance to learn about newthings that are not in our syllabus.

In this field visit, we had learnt about some practical stuffs that are used in industrial sides which



cannot acquired through academics.

The involved technical person in this lab has explained everything about thetest facilities as well as the technical details along with the procedure of testingvoltage levels.

Here, in this we got to know about some of the electrical devices like time relaykit, MCB, fuse etc.

- Time relay kit: Time delay relays control the flow of electrical power andcan be used to control power to many different types of electrical loads.
- MCB: Miniature switch breaker is an automatic switch their opinion whenexcessive current flows through the circuit.
- Fuse: Fuse is a metal piece that melts when excess current overloads thecircuit.


During our recent field trip to the robotic lab we had the opportunity to learn about virtual reality(VR).
VR has emerged as a transformative technology with importance in various fields. VR offers a heightened sense of presence & engagement them to explore realistic scenarios.
GPS Map Camera

Impression

The trip to robotic lab was a fascinating experience.I was amazed by the innovative robotic technologiesand their real-world applications .

Robotics is truly shaping the future.


The Lab Tour
This profund implications for industries such as gaming entertainment and education.VR providing viewers with an entairly immersive and interactive cinematic experience.
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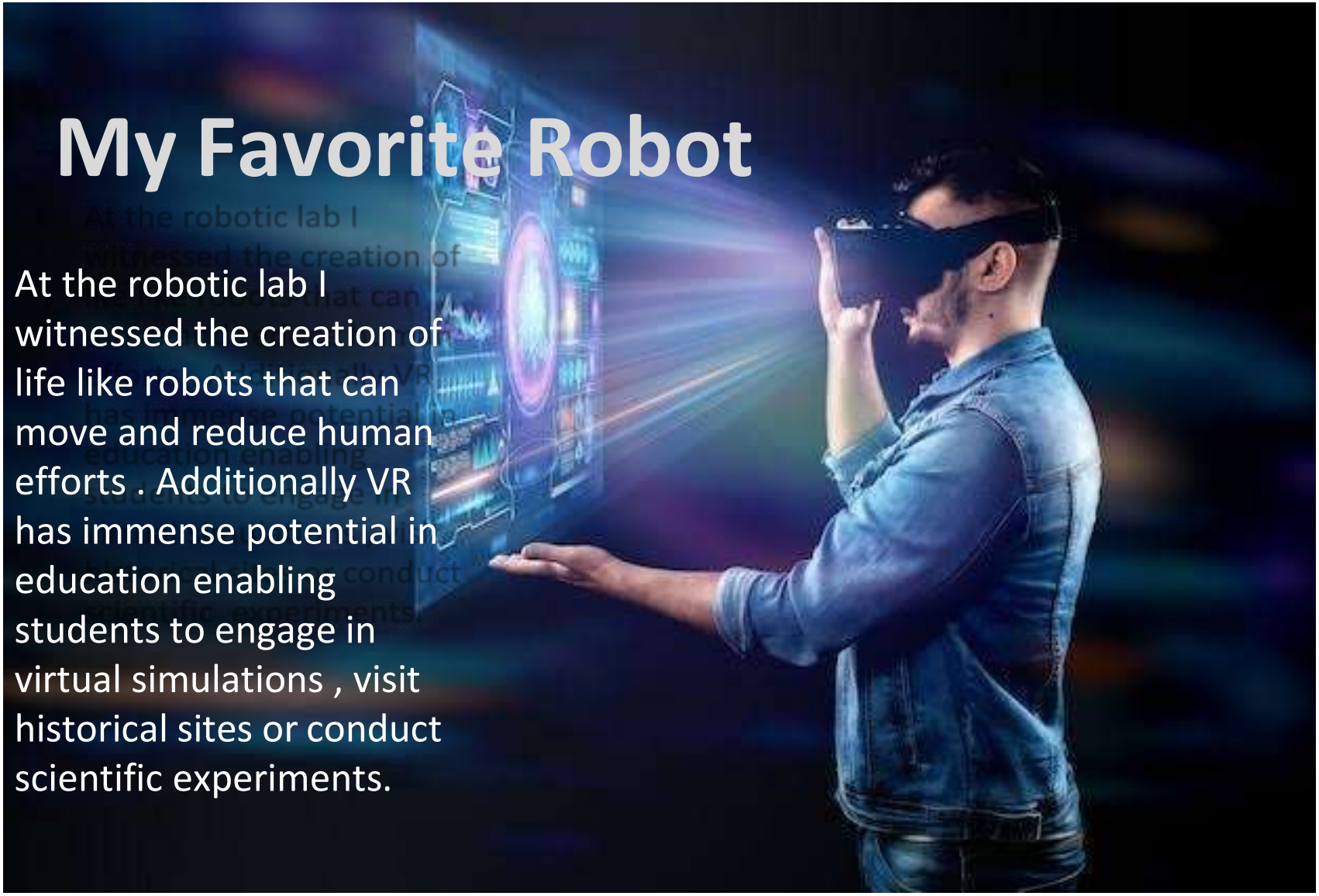
The robotics we save

Explored the latest advancements in robotictechnology

- Witnessed the robots being built and tested in alaboratory setting.
- Learned how robotics isimpacting different industries, from health care to manufacturing .

My Favorite Robot

At the robotic lab I witnessed the creation of life like robots that can move and reduce human efforts . Additionally VR has immense potential in education enabling students to engage in virtual simulations , visit historical sites or conduct scientific experiments.



CONCLUSION

VR technology continues to advance it holds the premise of unlocking new possibilities and reshaping the way we interact with digital content and physical world VR providing us with increasingly immensive and interactive experiences that enrich our lives.

Hydraulics & Pneumatics

THE JOURNAL OF FLUID POWER AND SYSTEMS

Introduction

In the lab takes an In-depth look at Hydraulics and Pneumatics Students learn more about topics such as:

- The Importance of Hydraulics and Pneumatics
- Similarities and Differences Between Hydraulics andPneumatics
- Uses of Hydraulics and Pneumatics
- Advantages of Hydraulics and Pneumatics

The Importance of Hydraulics & Pneumatics:

When examining hydraulics and pneumatics, it is important to understand the mechanical differencesbetween them. Both are essential parts of various industries and are critical to the performance of severaltypes of tasks. Which of them is chosen for a particulartask is dependent on what is to be accomplished and the setting. In most cases, they are applicable in multiple environments and conditions but can be restricted by climatic conditions as well as the type ofterrain.

Similarities AND Differences Between hydraulics and pneumatics

Hydraulics and pneumatics work as an actuator using apump, which are controlled by valves used to convert pressure into mechanical motion. The amount of force

Created by the process is greater than that which is initially applied. Though both processes use pressure,the medium to create the pressure is different where hydraulics use oil or water and pneumatics use a gas,which is mainly air. Since hydraulic systems use oil, which is very viscous, they require time to beginoperation and operate slowly.

Uses of hydraulics and pneumatics

The scientific definition of hydraulics is the mechanical study of fluids, which have the ability to perform complicated work. When you apply pressure to a liquidin a confined space, the pressure is applied equally to all parts of the space. A hydraulic system is capable of multiplying the force created by the pressure. This simple principle enables people to lift thousands ofpounds by using a very small amount of force

The mechanical force from the brake pedal is converted into hydraulic pressure in the mastercylinder.

Advantages of hydraulic and pneumatics

- Safe and easy to maintain with fewer moving parts
- Responsive and supplies more power
- Simple in construction and easy to handle.
- Ability to control pressure and force
- Low Maintenance
- Explosion-proof

ROBOTICS LAB

In robotic lab , Students had the opportunity to see first hand the amazing capabilities. Robotic cutting machine (kuka) these machines

robotic cutting machine (kuka) these machines are used in a variety of industries to automate tasks and improve efficiency .

The trip to the robotic lab fascinating experience I was amazed by Innovative robotic technologies and their real world applications .Robotics is truly shaping the future.

The Lab Tour

KUKA Robot can perform complex movements and tasks with precision . it has endless applications in manufacturing healthcare and industries.

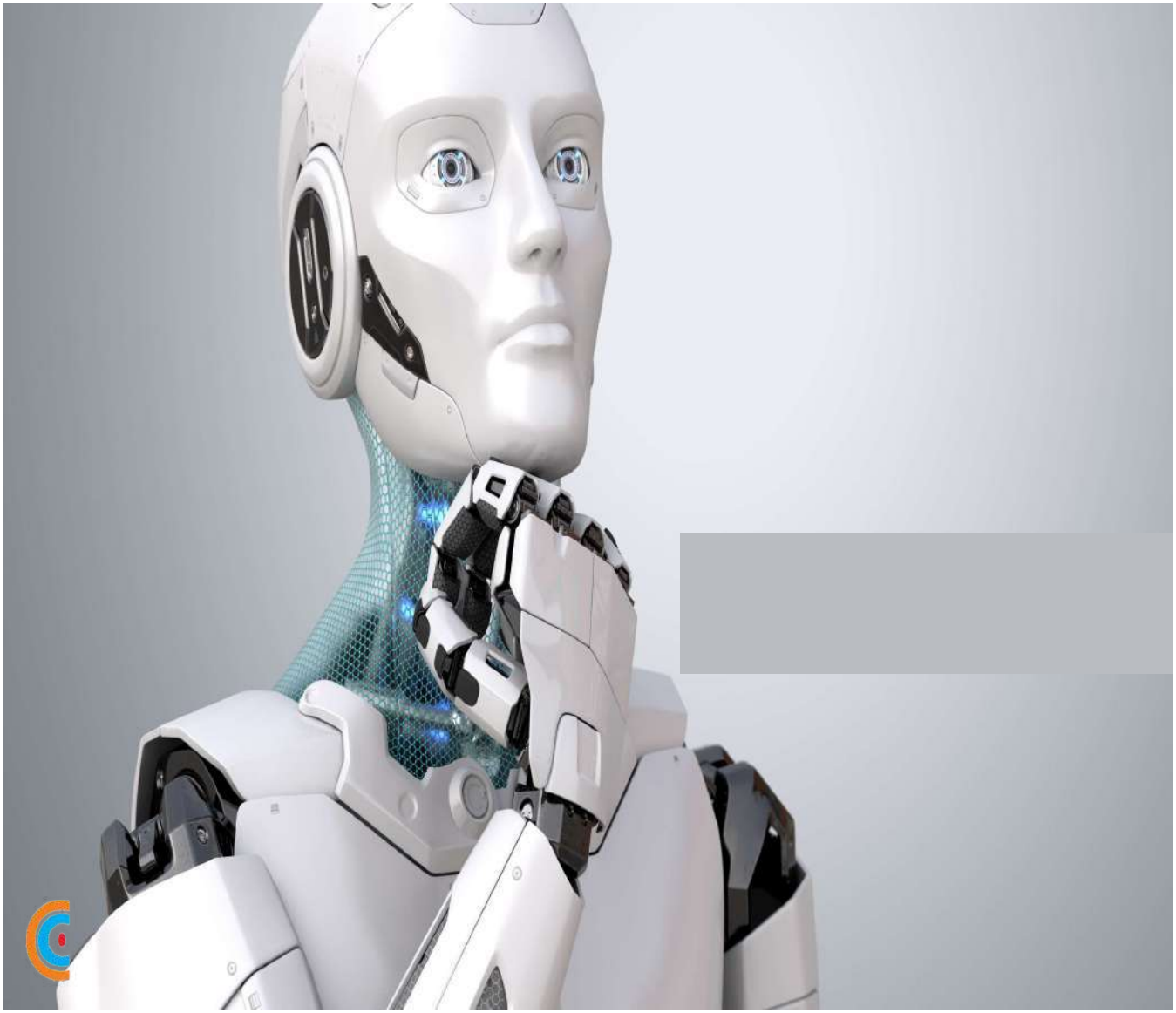

DANGER
KEEP AWAY

The robots we saw

Explored the latest advancements in robotic technology.

Witness to robots being built and tested In a laboratory setting.

Learned how robotics is impacting different industries , from health care to manufacturing.



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Students observed in this automation lab the Automation is a term for technology and innovation application where physical human input is minimized . In thisautomation lab we observed a machine which is called as modular mechatronics system.

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MODULAR MECHATRONICS SYSTEM :

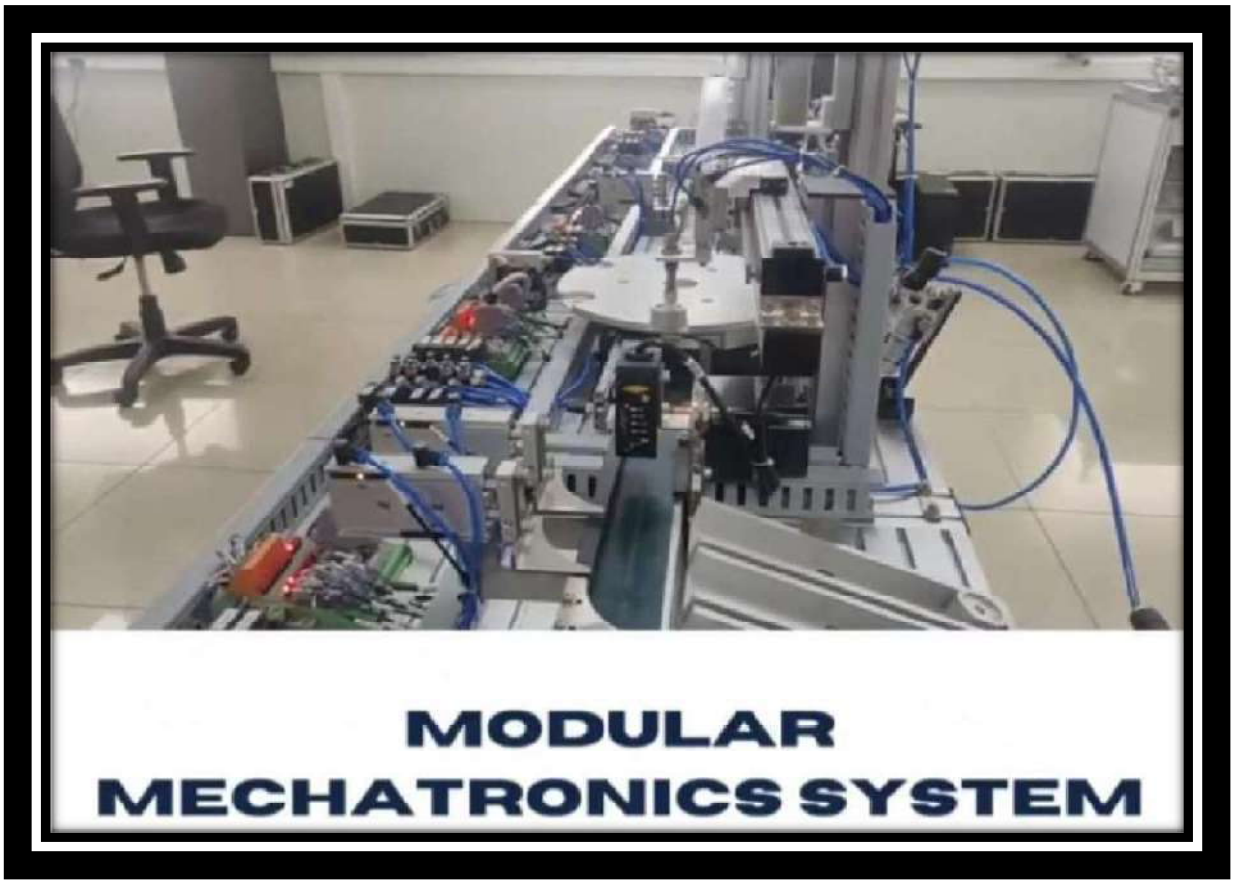
Modular Mechatronics System

Modular mechatronics system it is a stem including distributing,testing, processing, handling, assembling, and storing stations.

This modular production system is designed based on a simulation ofreal industrial production processes.

Each station can be operated separately or 6 stations can be set upas a system to simulate a production line.

This system provides a total solution to teach students mechatronics design and control.



The learning concepts include sensors, PLC programming, motor control, pneumatic control, sequential control, installation, industrialwiring, industrial safety, trouble shooting, and automation.

This modular industry-based training system is flexible for futureexpansion.

Features:

1.ABS(Anti-lock Braking System) 2.ESP(Electronic Stability Program)3.ABC (Active Body Control) 4.Comfort In Turbulence System

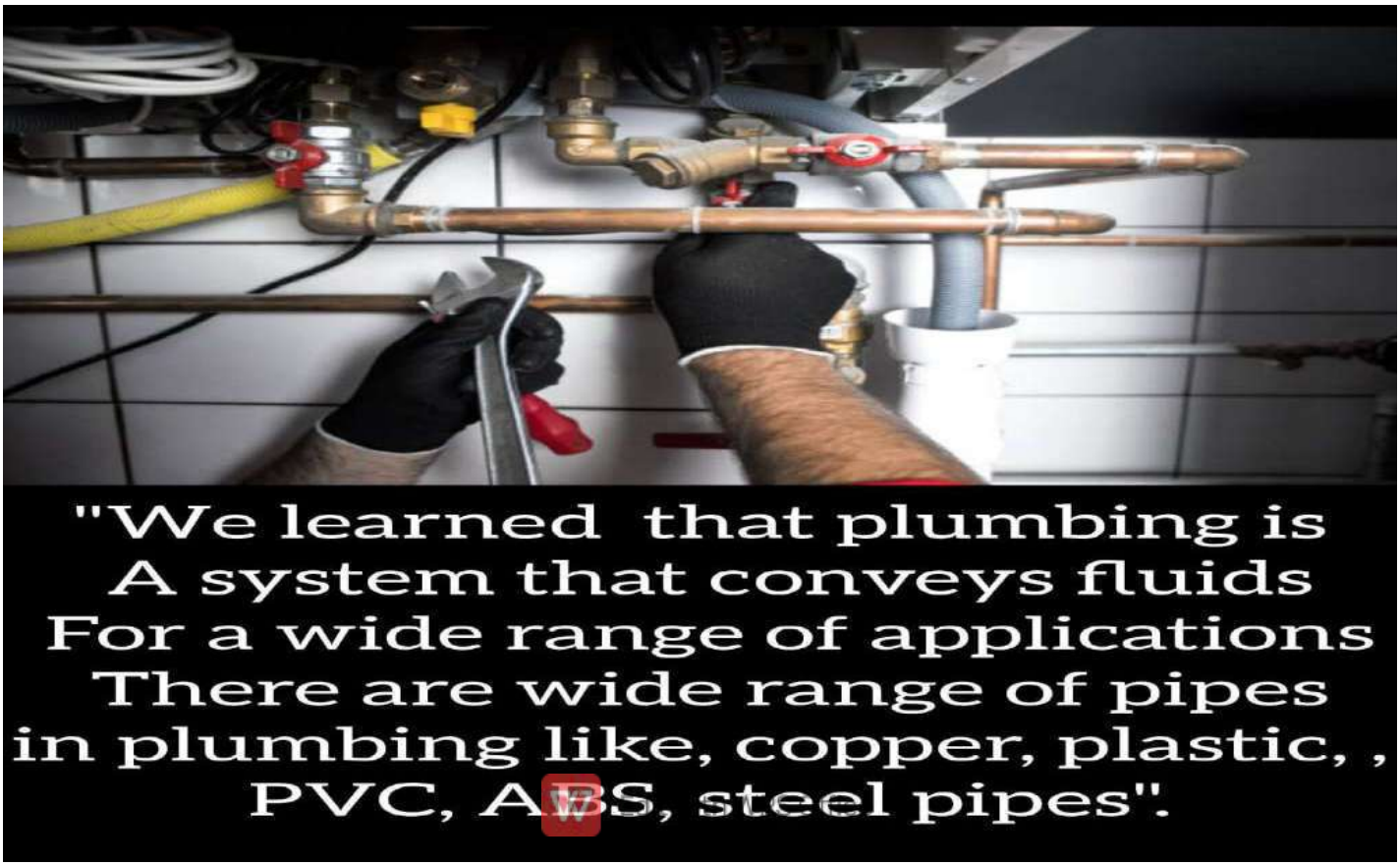
USES OF ATOMOTION:

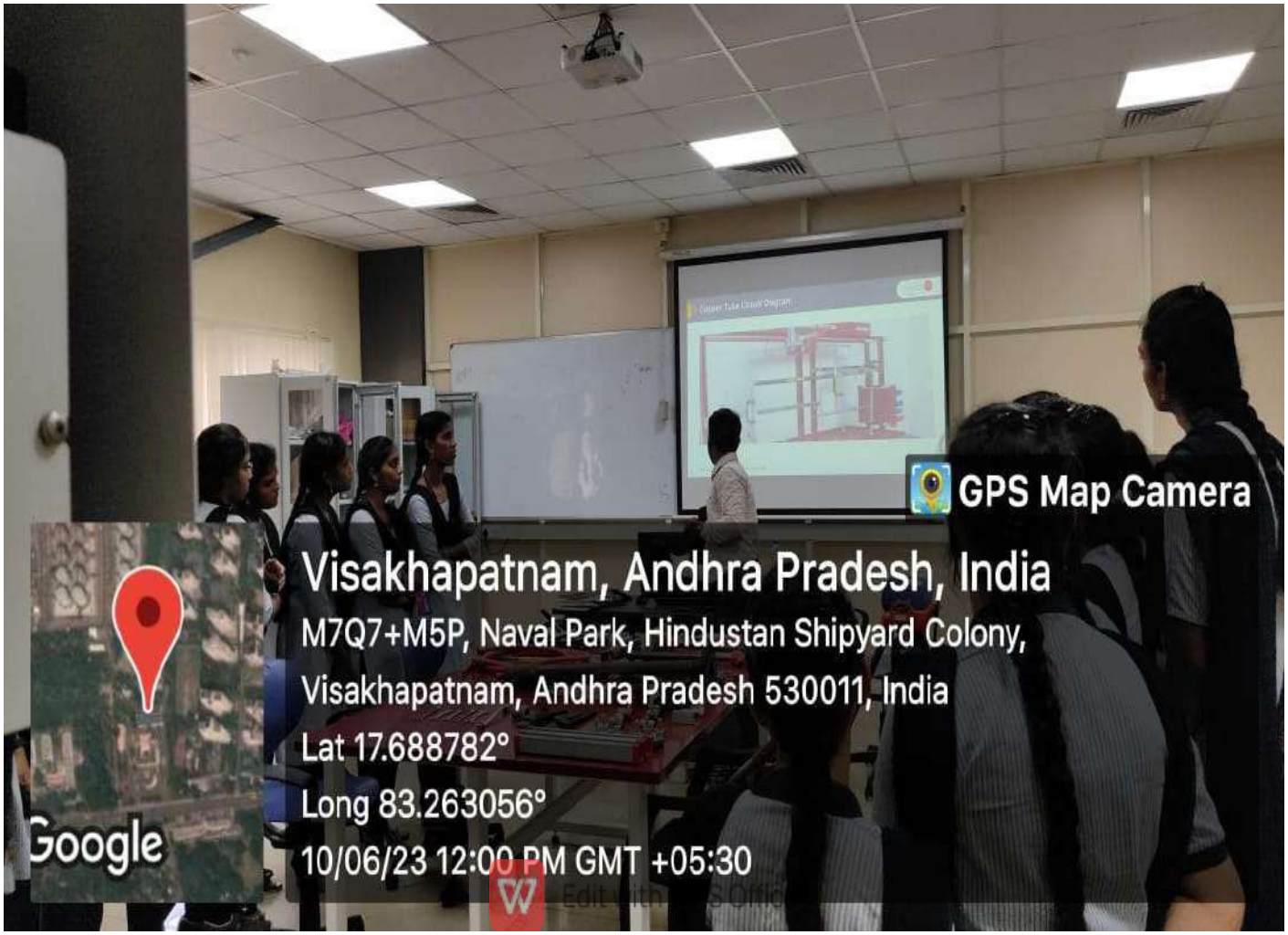
Students noticed that automation is a manufacturing canhelp lower costs, improve worker safety, reduce factory lead times, provide faster ROI, allow your operation to become more competitive, increase production output.

Introduction

During my recent field trip,to the welding and plumbing lab I had experienced the fascinating process of welding and plumbing Welding involves melting metal together to create a strong bond and it can be used to create everything from simple household items to complex industrial machinery

"Welding is a fascinating and important
that has been around for centuries.
Welding requires a lot of skill and precision,
and it can be dangerous if not done properly.
With the right training and equipment,
Welding can be a rewarding and fulfilling career"


"We learned that plumbing is
A system that conveys fluids
For a wide range of applications
There are wide range of pipes
in plumbing like, copper, plastic, ,
PVC, ABS, steel pipes".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STUDENT FEED BACK FORM

1.	G. Priyanka.	useful for future
2.	M. Vandana.	helped in improving skills and knowledge
3.	D. Sarika.	helpful in technical skills.
4.	G. Manisha.	Informative and useful
5.	E. Manasa.	Experienced practical knowledge.
6.	D. Rishika.	A little info gained in technical field
7.	B. Keerthi	It helped me to learn soft skills.
8.	A. Vijaya.	Develop and enhance interpersonal skills
9.	M. Leelakshi	Improve job prospects.
10.	A. Santhoshi	learning good knowledge
11.	M. Rama Lakshmi	Improved my skills.
12.	G. Sisi Varshini	Awesome experience.
13.	J. Nishitha.	Gain some knowledge about Industry work.
14.	SK. Munisha.	It helps in improving knowledge.
15.	T. Khetha Sai	Useful for future
16.	L. Haritha.	Good information
17.	P. Tulasi Anusha.	I Learn few more knowledge
18.	G. Gayatri	It is very helpful for my carrier.
19.	P. Sai Kumari	It improves my knowledge and skills
20.	D. Asha	Acquire skills & information.
21.	A. Padma rani	Improve knowledge skills.
22.	K. Sravani	Opportunity to interactive with industrial experts
23.	K. Manisha.	

24.	S. Likitha.	Amazing Experience
25.	V. Meghana.	~~Awesome~~ Awesome Experience.
26.	P. S. Niharika.	Amazing experience.
27.	V. Geethika.	Grateful ~~Experience~~ Experience.
28.	B. Asha Jyothi	Awesome experience.
29.	D. Neelaveni	useful Information.
30.	N. Indu.	Greatful Experience
31.	K. Renuka	Greatful Experience
32.	D. Jyoshna	Useful information.
33.	B. Sravani	Amazing Experience
34.	B. Mani	opportunity to interactive with Industrial experts
35.	K. M. Kalyani	Good environment
36.	J. Tejaswari	Improve good knowledge
37.	E. Dharani.	useful information.
38.	P. Hema.	I experienced a practical knowledge about Industries
39.	K. Lavanya	It is used for future and improve my skills.
40.	V. Pujitha	learned new skills.
41.	R. Madhuri	Information is useful for future.
42.	G. Yamini	Helpful for learning new skills
43.	S. Sithabai	Good Environment
44.	D. Dhanusha.	Improve good knowledge
45.	V. Kalyani	It helpful for learn new things
46.	A. Harika.	useful for future
47.	G. Tejasri	
48.	G. Dhanusha.	