



Agnel Charities'
Padre Conceicao College of Engineering ,
Verna



Department of Mechanical Engineering
Consortium of Students of
Mechanical Engineering
(COSME)
Presents

ECHO '23



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Padre Conceicao College of Engineering , Verna
Department of Mechanical Engineering
Consortium of Students of Mechanical
Engineering (COSME)

Presents

ECHO

(2022 – 2023)

Industry 4.0

INSTITUTE PROFILE

On June 9, 1957 when the Ashram was inaugurated at Bandra, Mumbai, Our Founder, **Fr. Conceicao Rodrigues** spelt out his dream. *“Our principle aim will be to promote our rich heritage“*, he said. As the first Indian Missionary Society, we have strived to serve our fellow citizens while nurturing this dream. The Ashram has branches all over India and is immersed in the development of modern Indian society at every level.

The Agnel Ashram in Goa spreading over 25 acres of verdant, hilly slopes, at Verna, was the fulfillment of a long felt need of providing technical education facilities for the youth of Goa. Within a span of two decades, the project has made considerable progress, thanks to the generous support from the Government, friends and well wishers.

Padre Conceição College of Engineering (PCCE) is an engineering college in Verna, Goa, India, established in 1997. The college is affiliated to Goa University, Taleigao, Goa, and the programmes are approved by All India Council for Technical Education (AICTE), New Delhi. The college is a part of Agnel Technical Education Complex, Verna, Goa. PCCE has 4 Bachelor disciplines: Mechanical Engineering, Computer Engineering, Electronics and Telecommunication Engineering and Information Technology and Masters in Information Technology



Institute Vision

“ To establish a sustainable engineering ecosystem”

To strive towards excellence in Technical Education and Research by facilitating students with modern technology, interdisciplinary approach and problem solving ability to meet the needs of the industry, society and nation at large.

Institute Mission

- ❖ To continuously improve students' educational outcomes through effective teaching learning methodology.
- ❖ To provide students and faculty with advanced technology and excellent scholastic ambience for research.
- ❖ To provide opportunities for holistic development of students with a focus on self-learning, ethics, leadership, and entrepreneurship skills.
- ❖ To strengthen the network with alumni and industries.

Mechanical Engineering Department Vision:

To empower the students to serve the society and nation, by imparting value based education through contemporary infrastructure, excellence in education and research, in the realm of Mechanical Engineering

Mechanical Engineering Department Mission:

- To provide an effective and appropriate pedagogy to instill critical and proactive thinking in mechanical engineering students and empower them to make cogent contributions to the society.
- To endow the students with ethical values, professional and entrepreneurial skills and make them competitive at the national as well as global level.
- To develop alliances with Research & Development organizations, industries and alumni for excellence in teaching, research and consultancy.

Program Educational Objectives (PEO):

Within a few years of graduating, the Mechanical Engineering graduates will:

PEO 1: Have successful careers in industry, academia and entrepreneurship in various fields of mechanical engineering and allied disciplines.

PEO 2: Have professional, ethical, leadership qualities, and proactively address a variety of technical and societal problems.

PEO 3: Retain intellectual curiosity and disseminate knowledge through lifelong learning, to tackle the rapidly evolving challenges of the modern world.

PEO 4: Contribute effectively towards the advancement of industry, society and nation through research and development.

Program Specific Outcomes (PSO):

At the end of this program the student will be able to:

- Apply the knowledge of design, industrial, manufacturing, thermal engineering and multidisciplinary perspectives to address the needs of Mechanical Engineering systems.
- Develop and implement solutions for products and services with the help of engineering tools.

HOD'S MESSAGE



It gives me immense pleasure at the outset to wish ' congratulations to the COSME team. After assuming charge late 2022 as Head , I have certainly witnessed an overwhelming enthusiasm of the Mechanical Engg., students who have worked tirelessly in the semester to keep pace with emerging trends in the field of engineering vis-à-vis their project presentations during the Silver Jubilee celebrations of our Institute. Every project on display certainly was intriguing and note worthy. The Annual Cultural function Mithya' 23 was also a grand success.

I congratulate Prof. Flasio Colaco – the COSME faculty in charge, and his team of other colleagues who have worked towards bringing forth this issue of ECHO'23. I wish everyone good health and happiness.

- Dr. Rahul Riberio.

COSME - FACULTY CO-ORDINATOR'S



The Institute proudly boasts of its 25 years of engineering excellence in the State of Goa & beyond vis-à-vis the Alumni spread across the Globe holding positions of repute. And this year, The Consortium of Mechanical Engineering (COSME), I must say organized a lot of sessions be it technical or any other soft skill / career development talks and hence we can proudly be the partaker in having contributed knowledge base to the future outgoing graduates of Mechanical Engineering. The team of Students Committee indeed put in a lot of hard work.

In today's ever evolving times Mechanical Engineering and the methodical rise to **Industry 4.0**, has conceptualized rapid change to technology, industries, and societal patterns and processes in the 21st century it is indeed an apt topic of discussion.

The magazine shall also have a short report on AARUSH '22. It was indeed a pleasure to see esteemed personalities from a plethora of technical domains with some of the talks delivered by PCCE Alumni thus invigorating a much robust sense of faith from the student participants and thus challenging their horizons once they embark on their journey after PCCE.

- Prof. Flasio Colaco

- Prof. Saeesh Verenkar

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ABOUT COSME

CONSORTIUM OF MECHANICAL ENGINEERS popularly called as COSME is a collegiate organization which relates the activities under Mechanical Engineering Department. COSME is among the most active student bodies in the institute which actively takes part in the TECHYON event and works under the banner of TURBULENCE thus gathering and forming students from the department of mechanical engineering leading to a more holistic approach in the undergraduate years. Mentored by experienced faculty members of the Mechanical Engineering department, students take upon many initiatives that prepare them to face the challenges of the future. COSME aims to create opportunities for the students to enhance their knowledge about the latest developments in the technological world by organizing various events.

Functions of COSME:

- Promoting the interests of students in various technical areas pertaining to mechanical engineering.
- To promote interaction between academia and industry by organizing industrial visits, special lectures and intellectual talks.
- Interacting with other technical societies, within and outside the institute to promote flow of knowledge and interest.
- To allow students to learn and focus on the cutting-edge technology by presenting it to the students in interesting manner through seminars and workshop.

What is Industry 4.0 ? How does it Really Work ?

Akash Panchal , Mech -IV

Introduction

The **Fourth Industrial Revolution, 4IR**, or **Industry 4.0**, conceptualises rapid change to technology, industries, and societal patterns and processes in the 21st century due to increasing interconnectivity and smart automation. The term was popularised in 2016 by Klaus Schwab, the World Economic Forum founder and executive chairman, and has since been used in numerous economic, political, and scientific articles in reference to the current era of emerging high technology. Schwab asserts that the changes seen are more than just improvements to efficiency, but express a significant shift in industrial capitalism.

A part of this phase of industrial change is the joining of technologies like artificial intelligence, gene editing, to advanced robotics that blur the lines between the physical, digital, and biological worlds.

Throughout this, fundamental shifts are taking place in how the global production and supply network operates through ongoing automation of traditional manufacturing and industrial practices, using modern smart technology, large-scale machine-to-machine communication (M2M), and the Internet of things (IoT). This integration results in increasing automation, improving communication and self-monitoring, and the use of smart machines that can analyse and diagnose issues without the need for human intervention.

It also represents a social, political, and economic shift from the digital age of the late 1990s and early 2000s to an era of embedded connectivity distinguished by the omni-use and commonness of technological use throughout society (e.g. a metaverse) that changes the ways humans experience and know the world around them. It posits that we have created and are entering an augmented social reality compared to just the natural senses and industrial ability of humans alone.

History

The phrase *Fourth Industrial Revolution* was first introduced by a team of scientists developing a high-tech strategy for the German government. Klaus Schwab, executive chairman of the World Economic Forum (WEF), introduced the phrase to a wider audience in a 2015 article published by *Foreign Affairs*. "Mastering the Fourth Industrial Revolution" was the 2016 theme of the World Economic Forum Annual Meeting, in Davos-Klosters, Switzerland.

On 10 October 2016, the Forum announced the opening of its Centre for the Fourth Industrial

Revolution in San Francisco. This was also subject and title of Schwab's 2016 book. Schwab includes in this fourth era technologies that combine hardware, software, and biology (cyber-physical systems), and emphasises advances in communication and connectivity. Schwab expects this era to be marked by breakthroughs in emerging technologies in fields such as robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the internet of things, the industrial internet of things, decentralised consensus, fifth-generation wireless technologies, 3D printing, and fully autonomous vehicles.

In *The Great Reset* proposal by the WEF, *The Fourth Industrial Revolution* is included as a strategic intelligence in the solution to rebuild the economy sustainably following the COVID-19 pandemic

Primary Drivers

- ❖ Digitization and integration of vertical and horizontal value chains

Industry 4.0 integrates processes vertically, across the entire organisation, including processes in product development, manufacturing, structuring, and service; horizontally, Industry 4.0 includes internal operations from suppliers to customers as well as all key value chain partners.

- ❖ Digitization of product and services

Integrating new methods of data collection and analysis—such as through the expansion of existing products or creation of new digitized products—helps companies to generate data on product use to refine products

- ❖ Digital business models and customer access

Customer satisfaction is a perpetual, multi-stage process that requires modification in real-time to adapt to the changing needs of consumers.

Trends

- ❖ Smart factory

Smart Factory is the vision of a production environment in which production facilities and logistics systems are organised without human intervention.

The Smart Factory is no longer a vision. While different model factories represent the feasible, many enterprises already clarify with examples practically, how the Smart Factory functions.

The technical foundations on which the Smart Factory – the intelligent factory – is based are cyber-physical systems that communicate with each other using the Internet of Things and Services. An important part of this process is the exchange of data between the product and the production line. This enables a much more efficient connection of the Supply Chain and better organisation within any production environment.

The Fourth Industrial Revolution fosters what has been called a "smart factory". Within modular structured smart factories, cyber-physical systems monitor physical processes, create a virtual copy of the physical world and make decentralised decisions. Over the internet of things, cyber-physical systems communicate and cooperate with each other and with humans in synchronic time both internally and across organizational services offered and used by participants of the value chain.

❖ Predictive maintenance

Industry 4.0 can also provide predictive maintenance, due to the use of technology and the IoT sensors. Predictive maintenance – which can identify maintenance issues in real time – allows machine owners to perform cost-effective maintenance and determine it ahead of time before the machinery fails or gets damaged. For example, a company in Los Angeles could understand if a piece of equipment in Singapore is running at an abnormal speed or temperature. They could then decide whether or not it needs to be repaired.

❖ 3D printing

The Fourth Industrial Revolution is said to have extensive dependency on 3D printing technology. Some advantages of 3D printing for industry are that 3D printing can print many geometric structures, as well as simplify the product design process. It is also relatively environmentally friendly. In low-volume production, it can also decrease lead times and total production costs. Moreover, it can increase flexibility, reduce warehousing costs and help the company towards the adoption of a mass customisation business strategy. In addition, 3D printing can be very useful for printing spare parts and installing it locally, therefore reducing supplier dependence and reducing the supply lead time.

The determining factor is the pace of change. The correlation of the speed of technological development and, as a result, socio-economic and infrastructural transformations with human life allows one to state a qualitative leap in the speed of development, which marks a transition to a new time era.

❖ Smart sensors

Sensors and instrumentation drive the central forces of innovation, not only for Industry 4.0 but also for other "smart" megatrends, such as smart production, smart mobility, smart homes, smart cities, and smart factories.

Smart sensors are devices, which generate the data and allow further functionality from self-monitoring and self-configuration to condition monitoring of complex processes. With the capability of wireless communication, they reduce installation effort to a great extent and help realise a dense array of sensors.

The importance of sensors, measurement science, and smart evaluation for Industry 4.0 has been recognised and acknowledged by various experts and has already led to the statement "Industry 4.0: nothing goes without sensor systems."

However, there are a few issues, such as time synchronisation error, data loss, and dealing with large amounts of harvested data, which all limit the implementation of full-fledged systems. Moreover, additional limits on these functionalities represents the battery power. One example of the integration of smart sensors in the electronic devices, is the case of smart watches, where sensors receive the data from the movement of the user, process the data and as a result, provide the user with the information about how many steps they have walked in a day and also converts the data into calories burned.

❖ Agriculture and food industries



Hydroponic vertical farming

Smart sensors in these two fields are still in the testing stage. These innovative connected sensors collect, interpret and communicate the information available in the plots (leaf area, vegetation index, chlorophyll, hygrometry, temperature, water potential, radiation). Based on this scientific data, the objective is to enable real-time monitoring via a smartphone with a range of advice that optimizes plot management in terms of results, time and costs. On the farm, these sensors can be used to detect crop stages and recommend inputs and treatments at the right time. As well as controlling the level of

irrigation.

The food industry requires more and more security and transparency and full documentation is required. This new technology is used as a tracking system as well as the collection of human data and product data.

Industry applications

The aerospace industry has sometimes been characterised as "too low volume for extensive automation"; however, Industry 4.0 principles have been investigated by several aerospace companies, and technologies have been developed to improve productivity where the upfront cost of automation cannot be justified. One example of this is the aerospace parts manufacturer Meggitt PLC's M4 project.

The increasing use of the industrial internet of things is referred to as Industry 4.0 at Bosch, and generally in Germany. Applications include machines that can predict failures and trigger maintenance processes autonomously or self-organised coordination that react to unexpected changes in production. In 2017, Bosch launched the Connector, a Chicago, Illinois based innovation incubator that specializes in IoT, including Industry 4.0.

Industry 4.0 inspired Innovation 4.0, a move toward digitisation for academia and research and development. In 2017, the £81M Materials Innovation Factory (MIF) at the University of Liverpool opened as a center for computer aided materials science, where robotic formulation, data capture and modelling are being integrated into development practices.

Criticism

With the consistent development of automation of everyday tasks, some saw the benefit in the exact opposite of automation where self-made products are valued more than those that involved automation. This valuation is named the IKEA effect, a term coined by Michael I. Norton of Harvard Business School, Daniel Mochon of Yale, and Dan Ariely of Duke. Another problem that is expected to accelerate with the growth of IR4 is the prevalence of mental disorders. The world has already experienced such problems in hi-tech industries.

How Industry 4.0 will affect the Life of Engineers

David Marcelo, Mech -VI

The term Industry 4.0 is used to describe the modern approach to manufacturing by using the Internet of Things, robotics, and automation. It's a practice that differs from traditional mechanical engineering as it requires engineers to devise new methods in product design and manufacturing.

With the right digital tools and advanced AI solutions, engineers can create higher-quality products faster, make changes according to consumer demands, and conquer the markets more efficiently. Brands taking this approach have 50% higher loyalty rates as customers prefer customizable products. Learn more about Industry 4.0 and engineering in this article.

The Latest Industrial Revolution

The first industrial revolution took place in the late 18th century. It completely changed the way manufacturing works as more and more machines started replacing humans. The revolution changed how humans live and work, and it set a trend that keeps evolving up to this day.

The second industrial revolution happened in the late 19th and early 20th centuries. It improved existing technologies and helped connect them into one ecosystem. The so-called third industrial revolution happened when computers and automation took over most manufacturing processes. It wasn't as revolutionary as the first two revolutions, but it brought changes that improved precision and product quality.

That brings us to Industry 4.0, also known as the fourth industrial revolution that focuses on the benefits of digital technology. Manufacturers today use advanced technologies such as bionics, IoT, AI, and data analytics to improve product design, production, and quality. Let's break it down and see how exactly it's changing the world around us.

Technologies behind Industry 4.0

Industry 4.0 and engineering rest on the following technologies:

1. Internet of Things

IoT is a technology that uses sensors to connect all individual elements in a manufacturing system with a single computer that provides real-time monitoring and collects data. It offers complete

operational performance monitoring, allowing companies to identify weak spots in their operations and find solutions to improve their efforts.

The Internet of Things can also help improve all aspects of the supply chain, by using tiny sensors. That way, manufacturing companies, and their engineers have more control over the process of product design and manufacturing. All of the decisions they make are based on high-quality information generated by the sensors. Once the bigger picture is in place, engineers can recreate the entire manufacturing process in a digital environment.

Of course, some processes are still manual and require the right people to complete. However, those involved have a much better idea of what's going on at all times due to improved transparency across all manufacturing processes.

2. Big Data Analytics

Big data is a massive source of information that can be used to improve manufacturing and entire business operations. Advanced AI and data analytics tools allow organizations to find, analyze, and store data across all production stages. The data can improve product design, increase employee efficiency, and find better solutions to all kinds of problems.

Industry 4.0 and engineering success today largely depend on big data, as most practices are 100% data-driven. Data is the only real thing that can help companies optimize performance on every production stage. However, big data can also be used to analyze consumer trends, generating insights that can help engineers create the perfect product.

Big data can also help smaller companies that want to improve the customer experience. Once manufacturers gather and analyze the data from all channels ranging from product data to customer data, location data, and so on, they will be able to improve the quality of products and grow sales.

3. Engineering Simulation

VR and AR are now used to recreate realistic situations allowing engineers to test ideas and solutions in a virtual environment. They can also use 3D images and holograms to pinpoint potential product flaws, improve design, reduce errors, and reduce overall time to market. When compared to traditional CAD engineering, modern technologies are used to create realistic organic shapes with highly complex structures. These technologies offer a cost-effective way of testing potential products in a virtual environment to validate design solutions. Once the final product is flawless, it can enter

manufacturing immediately without the risk of failure or the need for extra testing.

4. Additive Manufacturing

3D and 4D printing technologies are quickly finding their application among many different industries. They can help engineers design and manufacture products that can't be made using traditional techniques. Moreover, AM promotes the use of new materials that make it to the final production phase easier.

While improving the quality of the product, AM also uses consolidation to simplify the overall design. Additive manufacturing has application in the aerospace and automotive industries as well as healthcare. For example, 3D printing can help create custom medical implants and other devices that drastically improve the patient's quality of life. The technology allows engineers to take a different approach to problems and provide unique solutions.

The real value of Industry 4.0 and engineering advances can be achieved only when the four elements work together. For example, once a company gathers enough data and finds the best solution, they can program robots or use AI to improve product design and increase productivity. Manufacturing doesn't rely only on the employees anymore. It's now a fully automated process that almost doesn't require human intervention at all.

Engineering On a Different Level

From an engineer's standing point, the latest industrial revolution requires a different approach. Engineers now have to combine elements from physical, biological, and digital elements during product development. However, even if they have the necessary skills to get things done, the fast evolution of technology makes it hard to keep up with everything in real-time. The current challenges are making engineers take a different approach to their work. Here are the three main challenges they face every day:

1. Engineers have to be Diligent and More Attentive

Most of the industrial workforce has to focus on the task at hand, but with so many new technologies taking over, that's easier said than done. Engineers have to know how to integrate new technologies into existing manufacturing lines without long downtimes and disruptions. It's a challenge all industries will face in the following years, so engineers have to be one step ahead of all other employees. They have to master new technologies, learn new skills, and develop talents to make the

final transition easier for everyone involved.

2. Keeping Up With New Technologies

New technologies are being released all the time, making it harder for engineers to keep up with the latest trends. Things will only speed up in the future, which presents a serious problem for engineers and product development. New technological breakthroughs happen daily, so engineers have to stay informed about the latest upgrades and learn how to apply them in practice.

3. Heavily Relying On Communication

Communication reached a point where it affects how we live every day. Everyone has a smartphone these days, so it's easy to exchange thoughts with partners and fellow engineers. However, communication today allows engineers to reach out to experts all over the globe instantaneously.

Industry 4.0 and engineering are bringing communication to an even bigger scale by making knowledge available for every person on the planet. The challenge now is to create enough storage and boost processing speeds to accommodate the rising needs. Engineers have to master using devices and communication apps of today to prepare themselves for what's coming next.

Final Words

The latest industrial revolution uses all available technologies and intertwines them into one complex system that presents all kinds of challenges. Successful engineers can't just focus on their area of expertise to survive in this new world. They have to branch out and develop all kinds of skills to stay competitive.

That includes everything from mastering data analytics, to using advanced communication tools, and even using virtual reality as a platform for product development. Technologies like IoT help engineers get the most out of existing systems, but they still have to consider many more variables than ever before. So, if you're looking to become a successful engineer, you should be ready to learn something new every day for the rest of your life. Industry 4.0 and engineering require this approach, and there's no way around

COSME INSTALLATION



Rev Fr. Agnelo Gomes, Director, PCCE(Seated Centre) and Dr. Mahesh Parappagoudar with The Guest Speaker Mr. Suryakant Gawde , Level 3 Vibration Analyst and The Cosme Team for – A.Y 2022 – 23

The new Council for the A.Y 2022 -23 happened with a bit of delay , but nevertheless the newly appointed members were as follows , President – Hasit Gad, Secretary – Jasim Shaikh , Treasurer – Shreyas Athalye, Members – from S.E & T. E [Mechanical].

The 11th of November 2022 witnessed by some of the Mechanical Engineering Staff and Students marked the inducting of the New Council of COSME – 22 -23 ; and it was indeed a ceremoniously done.

There was talk on Condition Monitoring delivered by Mr. Suryakant Gawde, Founder & Proprietor of – M Insight Services and a Level 3 Vibration Analyst, from the Vibration Institute , USA. , and his Associate Engineer Mr.Sanket Prabhudesai who looks into the Condition Monitoring & Reliability aspect at the M Insight organization. The Students indeed had a hearty experience as both the Speakers gave a noteworthy talk about Case studies in Vibration at Industry and how they overcome such hiccups in the Systems at large. The Session was indeed knowledge based and carved a way for students interested in the domain of Preventive maintenance.

STUDENT ACHIEVEMENTS

TECHNICAL

[2022 - 2023]

The Below mentioned are a few of Our Mechanical Students who had outstanding performance at various intra and inter state events :

Sr.No.	Date	Participant	Event and Venue	Award/Participation
1.	24 th April' 2023	Cifert Jacques, Dhananjay Shingare, Jonathan Sequeira, Gopesh Naik	GCCI , Big Idea Project Competition.	1 st Place
2.	December 2022	Devendra Sawant, Naman Singh.	“The Fantastic World of Chemical Elements”, Christopher Brett. & “Advances in Aerospace Technologies”, Dr Tessy Thomas “Making Technology with Atomic Layers”, Aridham Ghosh. – MANOHAR PARRIKAR VIDGYAN , DBCE, Fatorda – Goa.	Participation
3.	6 th June 2023	TEAM - BHP	ROBOSOCCER , SPARX 2023, Goa College of Engineering	1 st Place
4.	16 th -17 th May 2023		ROBOSOCCER , TECHURJA 2023, A.I.T.D , Assagao , Goa.	1 st Place
5.	24 th -26 th March 2023		15 KG category (ATHENA) “QUARZK 2023” @ BITS GOA in	Semifinalists
6.	16 th -17 th February 2023		15 KG category (KRATOS), PROJECTIONS 2023 PARUL UNIVERSITY Gujrat in at in PARUL UNIVERSITY Gujarat	Semifinalist
7.	16 th -17 th March 2023		ROBOSUMO , “RESONANCE 2023” , G.E.C Goa	1 st place
8.	16 th -18 th Dec' 2022		15KG Category (KRATOS & ATHENA) “TECHFEST 2023” @IIT BOMBAY.	Semifinalists
9.	21 st – 23 rd October 2022		15 KG Category “TATHVA 2022” in N.I.T , CALICUT.	Semifinalists
10.	30 th Sept - 2nd October 2022		15KG with “KRATOS” , GRAVITAS ROBOVITICS V.I.T , Vellore.	1 st place

Some Glimpses of The Students – Participation of PCCE Students Pan-India !



Students of T.E Mech : (L to R) - Dhananjay Shingare , Cifert Jacques, Gopesh Naik , Jonathan Sequeira.



Winning Team Members with Dignitaries at GCCI.



Team BHP , Winners @ GRAVITAS, V.I.T, Vellore.



Team BHP in 15KG Category (KRATOS & ATHENA) “TECHFEST 2023” @ IIT BOMBAY.

SPORTS & CULTURAL

[2022 - 2023]

The Below mentioned are a few of Our Mechanical Students who had outstanding performance at various intra and inter state events :

S.No.	Date	Participant	Event and Venue	Award / Participation
1	March ' 2023	Cifert Jaques, Prajwal Naik	Inter Collegiate Championship, Goa University [Badminton]	Participation

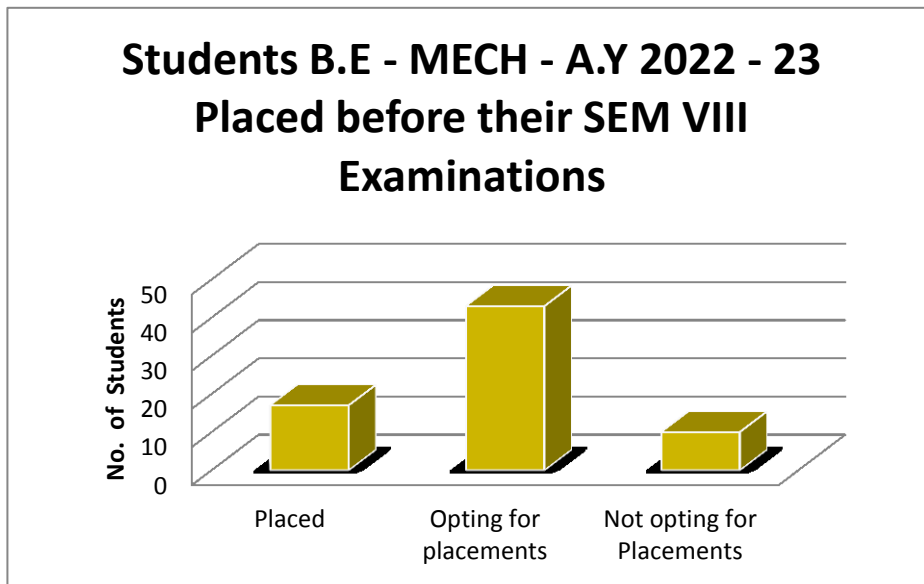


T.E – [MECH] Students Prajwal Naik & Cifert Jacques at the Inter Collegiate Championship held @ Goa University.

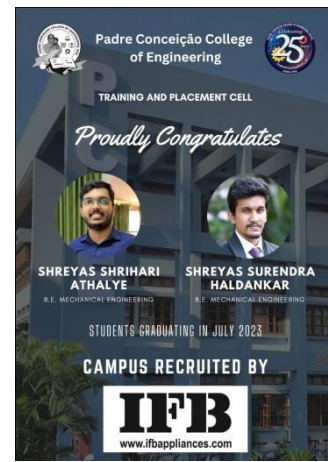
STUDENT PLACEMENTS

The Academic year 2022 – 23 [B.E Mechanical] comprised of 53 Students out of which 43 opted for Campus Placements ; and the Students certainly got a reward for their hard work even before their VIII semester Examinations by getting recruited from very noteworthy and esteemed organizations.

Below is a summary of the Same.

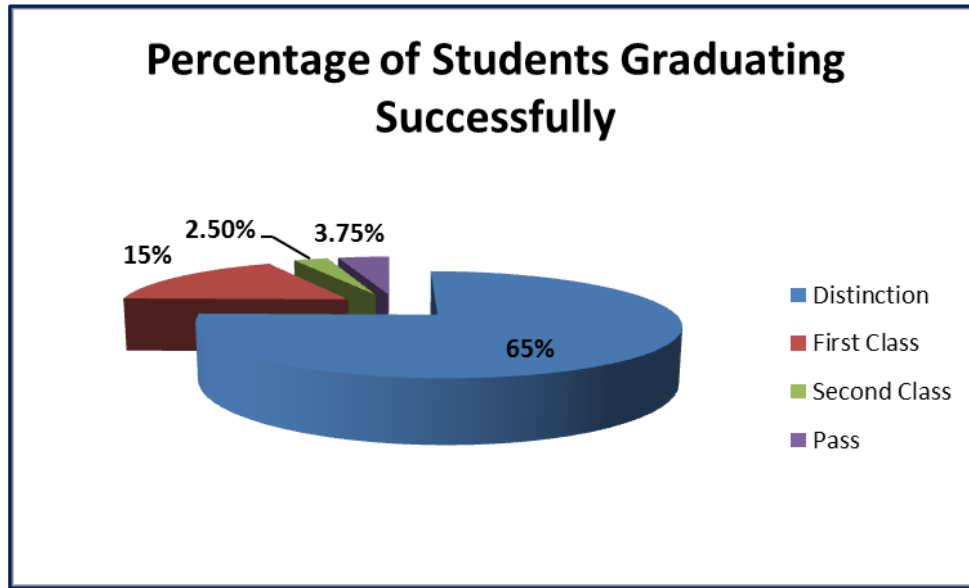


Some of the MECH students who are Recruited via Campus Placements !



July ' 2022 Examinations

Eighty Students from the 2018- 2022 Batch, answered the B.E – Mechanical (Semester VIII) Examination.



Toppers in Semester VIII	
Rank	Name
1	RODRIGUES DENVER BOSCO
2	REGO ROYCE RONY
3	DA COSTA REAGAN FELIX
Toppers in Semester VI	
Rank	Name
1	ATHALYE SHREYAS SHRIHARI
2	MOKAL KAUSTUBH RAMESH
3	MAHADESHWAR SWAPNIL EKNATH
Toppers in Semester IV	
Rank	Name
1	SEQUEIRA JONATHAN LEONARD
2	SHINGARE DHANANJAY PRAVIN
3	YELADI DINESH SATYANARAYAN

January ' 2023 Examinations

Toppers in Semester VII	
Rank	Name
1	ATHALYE SHREYAS SHRIHARI
2	MOKAL KAUSTUBH RAMESH
3	FERNANDES VELEAN
Toppers in Semester V	
Rank	Name
1	SHINGARE DHANANJAY PRAVIN
2	KHATEEB SHAIL M. K
3	TELI DILESH CHANDRAKANT
Toppers in Semester III	
Rank	Name
1	FERNANDES LEANDER DENZIL
2	KUDCHODKAR BHASKAR MOHAN
3	PANCHAL AKASH HARSHAD

COSME ACTIVITIES FOR A.Y [2022 – 23]

1. Career Orientation: Shaping and Steering your Career Path - [GUEST LECTURE]

Guest Speaker : Mr Pratish Prabhudesai (Senior Products Manager, Axis Bank.)
Audience : Students of TE Mechanical
Date : 5th May 2023
Location : L03, Classroom

On 5th May 2023, a guest talk was delivered by Mr. Pratish Prabhudesai, on the topic of “Career Orientation: Shaping and Steering your Career Path” organized by the Consortium of Students of Mechanical Engineering (COSME). This talk was organized for the third year students of Mechanical Engineering.

Our guest speaker was introduced by Mr. David Marcelo, student, TE Mechanical Engineering, while also elaborating about the journey and experience of Mr. Pratish Prabhudesai.



*Dr. Rahul Ribeiro. Head – Dept. Of Mech Engg ,
presenting Mr. Pratish Prabhudesai with a token
of Appreciation*



*Mr. Pratish interacting with Students of T.E &
B.E - Mechanical*

Mr. Pratish started off by explaining what MBA/PGDM is. He also explained the difference between a MBA and an M.Tech. interns in what they target and what job profiles are available. The students were given a brief information about career opportunities in MBA. Mr. Pratish then also discussed about top MBA colleges in India, entrance exams required to get into these colleges, and the preparation strategy to crack these exams. He then discussed about GIM (Goa Institute of Management) admission process, selection criteria and the various scholarships available to Goan students. He ended the session by sharing

his journey and experiences preparing for MBA and later on pursuing it. This was followed by vote of thanks by Joshua Pereira, student of TE Mechanical.



The Department of Mechanical Engineering, PCCE, heartily thanks, Mr Pratish Prabhudessai, Senior Products Manager, Axis Bank for his knowledge packed and informative session on Shaping and Steering Career Path.

2. Solar Photovoltaics - [GUEST LECTURE]

Guest Speaker : Mr. Sahil kerkar (Solar PV Operation Engineer , Home-Scape by Amplus Solar)

Audience : Students of TE Mechanical

Date : 19th May 2023

Location : L03, Classroom

On 19th May 2023, a guest talk was delivered by Mr. Sahil Kerkar, on the topic of “Solar Photovoltaics” organized by the Consortium of Students of Mechanical Engineering (COSME). This talk was organized for the third year students of Mechanical Engineering. The guest speaker was introduced by Mr. Gaurak Phaldessai, Assistant professor, Department of Mechanical Engineering.



Mr. Sahil started off by explaining ‘What is Solar Energy?’ and what are the ways to harness it. He then spoke on the annual consumption of electricity and how has the demand increased in the recent years using Graphs and Statistical Data. Later he gave a general idea on how the electricity is

generated and transmitted through grids. He also spoke about the various type of PV panels available in market the once which are under development and he informed about the battery system that is going to be added and which will store power during off hours.



The Department of Mechanical Engineering, PCCE, heartily thanks Mr. Sahil kerkar, Solar PV operations engineer for his knowledge packed and interesting lecture on the present scenario of power generation and future of solar technology.

3. Introduction to FUSION - 360 - [Workshop]

Speaker	:Mr. Aaron Fernandes (Mechanical engineer Turbocam International)
Audience	: Students of SE Mechanical
Date	: 4 th May 2023
Location	: L03, Classroom

On 4th May 2023 a Workshop was conducted by Mr. Aaron Fernandes, on the topic “Introduction to Fusion 360” organized by the consortium of students of Mechanical Engineering (COSME). The workshop was intended for the students of Second year of Mechanical Engineering.



Mr. Aaron began the workshop by talking about CAD Software and their various use cases. He then went on to give a brief introduction to Fusion 360 and what makes it different from other such software. The students were then introduced to basic functions and various other features available in the software. Following this, the students were guided into sketching and extruding various shapes while also utilising other functionalities in the software. Mr. Aaron carried with him complex models that were designed using Fusion 360 and then went on to demonstrate how these complex designs and geometries can be modelled using the software.

The Department of Mechanical Engineering, PCCE, Heartily thanks Mr. Aaron Fernandes for his knowledge packed and interesting workshop on Fusion 360 software.

4. Advancements in Space Domain & Careers in Space - [A Talk]



ACREX' 2023 @ Mumbai

The students of Mechanical Engineering of Padre Conceicao College of Engineering which were part of - **ISHRAE PCCE** Chapter had attended ACREX held on 14th- 16th March in Bombay exhibition centre, Mumbai. ACREX is an annual international exhibition on air conditioning, refrigeration, and building services held in India. The exhibition serves as a platform for manufacturers, distributors, consultants, contractors, architects, and builders to showcase their products, exchange ideas, and explore business opportunities in the HVAC&R (heating, ventilation, air conditioning, and refrigeration) sector. The students had interacted with many companies as per their interest and latest technology in the HVAC field. A total of 10 Final year Mechanical Engineering Students participated in the expo and were accompanied by Marvin Fernandes.



Kirloskar Stall @ ACREX ' 2023



B.E Mechanical Students @ ACREX' 2023 in Mumbai

[A REPORT ON AARUSH ' 2022](#)

Padre Conceicao College of Engineering held its annual flagship industry-institution interaction, “AARUSH 2022,” on 24th and 25th June 2022. Conceived to enable interaction of the students with industry, alumni, and start-up/entrepreneurship personnel, AARUSH 2022 had an array of prominent speakers in the technical, management, and entrepreneurship domain. AARUSH 2022, held in collaboration with the Centre for Incubation and Business Acceleration (CIBA) and Visteon Corporation, had four keynote speakers, twelve alumni technical sessions, eight workshops, five entrepreneurship sessions, a project competition, and a panel discussion.



The event was inaugurated by Rev. Fr. Agnelo Gomes, Director, Agnel Technical Education Complex, who welcomed the audience for the industry-institution interaction and implored the students to make the best use of the event to enhance their knowledge. Dr. Mahesh Parappagoudar, Principal, PCCE, encouraged the students to network with the alumni and learn from their experiences. Dr. Pramod Maurya, Principal Scientist, National Institute of Oceanography, spoke about the work done by his team at NIO in the underwater domain and recalled his interaction with PCCE and students who worked with him on his projects. The Chief Guest, Karthik Shanmugam, Senior Manager, Visteon Corporation, congratulated PCCE on its silver jubilee and reiterated the commitment of Visteon Corporation to collaborate with the faculty and students of PCCE.

Karthik Shanmugam delivered the first keynote address on Trends in Automotive Technology, where he spoke about the exciting development in the domain of automotive technology. He also interacted with the students who will intern at Visteon in the subsequent semester. Dr. Pramod Maurya delivered the second keynote on the fundamentals of Marine Robotics and leveraging the concepts to develop efficient, autonomous, underwater vehicles. Hana Onderkova, IP Head, European Technology and Business Centre, New Delhi, delivered the third keynote session on the importance of Intellectual Property Rights in the context of start-ups and entrepreneurship. Dr. Nihar Amoncar, Assistant Professor, Institute of

Management Technology, Ghaziabad, and alumni of the Information Technology Department of PCCE, delivered the fourth keynote session on the journey from idealization to commercialization of the start-up.

AARUSH 2022 invited twelve prominent alumni of PCCE from the industry to conduct an “Alumni Technical Session.” Yadnesh Sanzgiry, Project Manager, Optel Group, Nikita Aroskar, Senior Research, and Development Manager, Siemens India, and Divya Shettigar, Consultant, Zinov Management Consulting, were invited to deliver a technical session for the students of Electronics and Telecommunication Engineering. John Paul, Senior Creative Manager, Dassault Systemes, Donovan Vaz, Senior Engineer, Optel Group, and Domnic Paes, Chief Engineer, Anglo-Eastern, conducted alumni technical sessions for the Mechanical Engineering department. Leon Mesquita, Head of Professional Services, Open Destination Pvt. Ltd., Joshua Fernandes, Senior Systems Engineer, Axelerant, and Vernon Cabral, Senior Systems Engineer, Infosys, delivered alumni technical sessions for the Information Technology department. Soham Banerjee, Sales Lead, GoToMarket, Watermelon, Rajas Kakodkar, Software Engineer, VMware, and Aaron Gracias, Consultant, Cognizant, delivered the alumni technical session for the Computer Engineering department.

A number of hands-on workshops by industry personnel were held. Shubneet Kaur, Digital Marketing Win Home Inspection, Maverick Cardozo, Database developer, Trellisoft; Siddharth Prabhu Shirodkar, Team Lead, SJ Innovation; Pooja Raghmode, Software Engineer, Persistent Systems; Zarina Caeiro, RPA, and AI Engineer, Siemens, Nathan Moniz, Senior QA Engineer, E-Dot Solutions Pvt. Ltd., Celso Fernandes conducted workshops for the students of PCCE.

The Entrepreneurship Cell of PCCE invited Anandkumar Lotlikar, Proprietor, Deviant Strokes, Zain Khwaja, Fin-crime Manager, Revolut Pvt. Ltd, Karl Fernandes, Product Design Lead, Brandwatch, Dave Paiva, Numadic, Kennan Collaco, Vinit Sarode, and Averal Lourenco from Bluelearn to conduct sessions on Canvas Business Model, Role of Engineers in FinTech, Digital Product Design, Building a Minimum Viable Product, and Ideation.

Project competition was held for the Final year Engineering students to enable them to showcase their innovative work. Reena Fernandes, HOD, Agnel Polytechnic. Enrich Braz, Numadic, Subodh Borkar, Senior Manager, Infuse Computing, Agraj Nayak, Founder and CEO, ImagineWorks; Anup Barve, Senior Engineer, Siemens. Shruti Nadagouda, Senior Manager, Sun360, Madhav Ranganekar, COO and Manager, SJ Innovation, and Presley Dias, Client Group Director, Software Services at Creative Capsule were the judges for the project competition.

The event concluded with a panel discussion on “**Future Skills for Employability**”. The panel discussion was moderated by Dr. Stephen Barreto, Registrar, PCCE, and included Karthik Shanmugam, Senior Manager, Visteon Corporation, Dr. Joe Kurian, Associate Professor, Mechanical Engineering Dept. of

PCCE, Amit Tamba, CTO, FreeThink LLP, Atrinjay Kossambe, Senior Manager, Rosenberger, and Zain Khwaja, Fin-crime Manager, Revolut Pvt. Ltd .

AARUSH 2022 was coordinated by Shailesh Khanolkar, Research Development and Consultancy Centre, Dr. Joe Kurian, Associate Professor, Mechanical Engineering, Razia Sardinha, Training and Placement Officer and Louella Mesquita, Assistant Professor, Computer Engineering Department. They were assisted by Professors Saish Verekar, Flasio Colaco, Gaurak Phaldessai, Alzira Xavier, Sanjeet Kanekar, Siddesh Sawant, Sharlaine Nicole Monteiro, Marvin Fernandes, Lance De Melo, Mahi Itagi, Cynara Silveira, Nadia Fernandes, Pushparaj Pingulkar, Sonia Fernandes, Sulana Rebelo, Andrea D'Souza, Sneha Mhalsekar, and Shivani Lotlikar.

SILVER JUBILEE CELEBRATIONS



(LtoR) : Rev.Fr. Agnelo Gomes, Director, ATEC, Verna; Mr. Aleixo Sequeira, MLA Nuvem Constituency; Rev.Fr. Bento Rodrigues, Regional Superior ; Rev. Fr. Nazareth Fernandes, Superior General , Society of St. Francis Xavier , Pilar; Dr. Harilal Menon, Vice- Chancellor Goa University.

Padre Conceição College of Engineering, Verna, Goa Celebrates 25 Years of Engineering Excellence
Padre Conceição College of Engineering (PCCE), Verna, Goa, concluded its silver jubilee celebrations with a closing ceremony on 2nd December, 2022. The highlight of the day was an exhibition of a project competition called ‘PCCE’s IDEAS’ - a Social Innovation Challenge by the students of PCCE. The word ‘IDEAS’ represents Innovate, Design, Evaluate and Apply Solutions. This was a 25-day engineering challenge designed to test the ingenuity of the students. They were required to develop creative solutions to real world social and environmental problems. This challenge begun with the participation of over 50 teams that included over 250 students. The top 16 teams that executed best solutions were on display at the closing ceremony. The project competition encapsulated a broad spectrum of domains ranging from agriculture to education to recycling to health and assistive technologies. The Chief Guest, Prof. Harilal B. Menon, Vice Chancellor of the Goa University in his address congratulated the management and staff for reaching this milestone. He also stressed on the importance of carrying out cutting edge research for the benefit of society at large. The Guest of Honor, Shri Aleixo Sequeira, MLA, Nuvem Constituency, praised the work of the Agnel (Ashram) Region fathers and their pioneering work in Goa in the field of technical

education. At the event the other special guests who spoke were Rev. Fr. Nazareth Fernandes, Superior General, Society of Pilar, and Rev. Fr. Bento Rodrigues, Regional Superior, Agnel Region. Speaking to the media later, Rev. Fr. Agnelo Gomes, Director, PCCE, said, “PCCE being the first private engineering college has been an engine of progress in the state of Goa and elsewhere. It has produced engineers who have made a mark in India and around the world”. He further added that PCCE will continue to strive for excellence and push the boundaries of innovative quality education. The winner of the ‘PCCE’s IDEAS’ was a project named ‘Needy Paws’. The team comprised of Mr. Rounak Naik, Ms. Sakshi Kamble and Mr. Pritesh Shivalingkar created an APP for the rescue and rehabilitation of stray animals. The second and third prizes were won respectively by ‘Smart shoes for the blind’ and ‘Upcycling Plastic’. The guests were enthralled by all the projects for their originality and ingenuity. Later in the evening, PCCE drew down the curtains of their silver jubilee celebrations with a cultural event organized by students mainly for the students, alumni and staff of PCCE.

FACULTY ACHIEVEMENTS [2022 – 2023]

Appointments – Mechanical Department

- ❖ Dr. Rahul Ribeiro is appointed as the Head - Department of Mechanical Engineering.
- ❖ Dr. Joe Kurian is appointed as Workshop Superintendent

Journal Publications /Book Chapter

Sr. No	Name of the Authors	Title of the Paper	Name of the Journal
1.	Chitrakara Hegde , Dr. Rahul Ribeiro	Preparation and Characterization of Hydrophobic Membranes & Their Seawater Desalination Performance Study by Direct Contact Membrane Distillation.	Nature Environment and Pollution Technology, 2022. [e-ISSN: 2395 - 3454]
2.	Prof.Prasad Pawar	Design and Fabrication of a Semi-Automatic Wheel Changer for LMV	International Journal of Innovative Science and Research Technology , Vol I , Issue 01, June 2023.

Conference Publications

1.	Prof. Mohnish Borker , David Marcelo, Dhananjay Shingare, Shawn Travasso, Cifert Jacques.	Pyrolytic Fuel Generation From Waste Plastic	Progress & Research in Mechanical Engg., SDM College Dharwad, October 2022
2.	Prof. Mohnish Borker	Comparitive Analysis of Power Density in Plant MFC System using Various Grass Species	International Conference on Research Innovations & Challenges, 19 – 21 Jan' 2023, Coimbatore, TamilNadu.

Participation at Workshops / Seminars & Courses Completed

SR.NO	NAME OF FACULTY	DATE	FDP / Training Activities / STTPs	ORGANISED BY
1.	Prof. Saesh Verenkar	20 th – 24 th Feb' 2023	Augmented and Virtual Reality	Bansilal Ramnath Agrawal Charitable Trust's Vishwakarma Inst. of Information Tech, Kondhawa, Pune.
		12 th – 17 th Dec' 2022	Innovations in CAD Simulations	ATAL , Academy.
		12 th March ' 2023	Foundations : Data, Data, Everywhere	COURSERA
2	Prof. Prasad Pawar	24 th to 28 th July 2023	Advancement in Green Energy Technologies and it's significance in sustainable development	ISTE, STTP.

FACULTY PROFILE

Dr. Mahesh Parappagoudar	Phd – (IIT – Kharagpur) – Mechanical Engineering Professor & Principal (Industry Exp.– 2 Years,Teaching Exp.– 29 Years) Area of Interest – Manufacturing science, Soft computing
Dr. Rahul Ribeiro	PhD – (Texas A&M University) Materials Science and Engineering, M. Tech (Texas A&M University) Mechanical Engineering Professor (Industry Exp. – 5 Years, Teaching Exp.– 16 Years) Areas of Interest - Biomaterials, Biomechanics, Tribology
Dr. Joe Kurian	Phd – (Goa University) - Management M.Tech (IIT-Madras) – Maintenance Engg. & Management. Professor (Industry exp. – 5 Years, Teaching Exp.– 23 Years) Area of Interest – Mechanical vibrations, Industrial automation , Six sigma management
Prof. Saeesh Verenkar	M.Tech (SRM University) – Computer Aided Design Assistant Professor (Industry Exp - 01 Year, Teaching Exp. – 09 Years) Area of Interest – FEM, Mechanical vibrations, Composites
Prof. Dattaprakash Vernekar	M.Tech (V.J.T.I, Mumbai University) – Automobile Engg. Assistant Professor (Industry Exp - 01 Year, Teaching Exp. – 08 Years) Area of Research – I.C engines, Energy conversion
Prof. Marvin Fernandes	M.E (Mumbai University) – Machine Design Assistant Professor (Industry Exp - 01 Year, Teaching Exp. – 08 Years) Area of Interest – Engg. Mechanics, Hydraulic machinery
Prof. Prasad Pawar	M.Tech (M.G.University, Kerala) – Thermal Power Engg. Assistant Professor (Teaching Exp. – 5.5 Years) Area of Interest – Fluid mechanics, Heat transfer
Prof. Pushparaj Pingulkar	M.Tech (N.I.E, VTU) – Machine Design Assistant Professor (Industry Exp. – 2 Years, Teaching Exp. – 06 Years) Area of Interest – Kinematics, Dynamics of Machinery, FEA
Prof. Mohnish Borker	M.Tech (NIT, Calicut) – Energy Engg. & Management Assistant Professor (Teaching Exp. – 06 Years) Area of Interest –Thermodynamics, Renewable Energy

<p>Prof. Ramdas Pandit</p>	<p>M.Tech (VIT, Bangalore) – CAD-CAM Assistant Professor (Industry Exp. – 04 Years ; Teaching Exp–06 Years) Area of Interest – FEA, Vibrations, SCM</p>
<p>Prof. Gaurak Phaldessai</p>	<p>M.Tech (NIT, Jamshedpur) – Thermal Engineering Assistant Professor (Industry -01 Year, Teaching – 5.5 Years) Area of Interest –Thermal Engg., CFD, Phase change material, Solar technology</p>
<p>Prof. Flasio Coalco</p>	<p>M.Tech (Manipal University) - Thermal Science and Energy Systems Industry:1 Year 5 Months Teaching:7 Years Areas of Interest: Thermal design, Solar technology, Engine research, LCA, Engineering Graphics.</p>
<p>Prof. Pundalik Salkar</p>	<p>M.E (Goa University) – Industrial Engineering LLM (Goa University) - Criminal Law Assistant Professor (Teaching - 05 Years) Area of Interest – Machine Design, Manufacturing Technology, Workstation Design.</p>