SITAMS

Technical Magazine

ISSUE
02

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MECHZINE

DEC-2020

MECHANICAL ENGINEERING

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Department Vision

TO BECOME A CENTRE OF EXCELLENCE IN MECHANICAL ENGINEERING STUDIES AND RESEARCH.

DEPARTMENT MISSION

M1: Provide congenial academic ambience with necessary infrastructure and learning resources.
M2: Inculcate confidence to face and experience new challenges from industry and society.
M3: Ignite the students to acquire self-reliance in State-of-the-Art Technologies.
M4: Foster Enterprising spirit among students.

Message FROM HOD

I feel ecstatic to introduce you to Department of Mechanical Engineering, which is the foundation of Engineers. Department of Mechanical Engineering strives for increasing the knowledge, enhancing the critical thinking, ability to change information into knowledge and power of analyzing the things technically of each and every individual of ever changing society through students.

We always intend to impart knowledge through a closed knit family of highly competent faculty. Department of Mechanical Engineering plays a vital role in an engineering college catering to the teaching of Mechanical and Humanities courses for engineering students.

Our Laboratories have been very well established not only to cover complete syllabus but to motivate students to learn beyond the syllabus which definitely develops complete knowledge of the subject (both the practical and theoretical depth of knowledge) and develop skill sets of students to become promising engineers in future.

I would like to conclude with the words of Thomas Friedman who has rightly opined “World is flat opportunities are immense. It’s just a question of identifying opportunities and making the best of them”. I wish a very best of luck to the students.

Message FROM EDITOR

The Magazine “MECHZINE” team works to bring out the annual official student-publication of department of Mechanical Engineering. Each year, our team works extensively to bring out the technical report writing skills of the students. The final publication reflects and encompasses the creative technical presentation skills inherent to the academic and upcoming areas in the field of Mechanical Engineering.

The magazine’s primary focus has been geared at covering articles reflecting the student’s knowledge and associations with latest and leading edge-technologies.

The magazine continues to expand its reach to achieve its vision of being a truly representative student publication.

I am thankful to all the staff and students of MECH department for their contributions in making of “MECHZINE” and I hope to build on this ethos just as much during the upcoming academic years.

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DIGITAL MANUFACTURING

Ms. Jothsna
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Digital manufacturing is the application of computer systems to manufacturing services, supply chains, products and processes. Digital manufacturing technologies link systems and processes across all areas of production to create an integrated approach to manufacturing, from design to production and on to the servicing of the final products.

By modelling and simulating processes it is possible to improve the quality of manufacturing decision making, while improving the processes to create cost savings, reduce time to market, and create a joined up manufacturing process that unites digital tools with the physical execution of manufacturing.

By using a process that is centred around a computer, manufacturers can create a digital thread through the manufacturing process to analyse data across the product lifecycle and create actionable processes. Digital manufacturing systems also allow for customer data to be sent to product managers in order to anticipate demand and any ongoing maintenance requirements to deliver products via manufacturing that is centred on customer needs.

THE THREE ASPECTS OF DIGITAL MANUFACTURING

It can be broken down into three main areas; product life cycle, smart factory, and value chain management.
Each of these relates to a different aspect of manufacturing execution, from design and product innovation to the enhancement of production lines and the optimisation of resources for better products and customer satisfaction.
The product life cycle begins with engineering design before moving on to encompass sourcing, production and service life. Each step uses digital data to allow for revisions to design specifications during the manufacturing process.

The smart factory involves the use of smart machines, sensors and tooling to provide real time feedback about the processes and manufacturing technology. By uniting operations technology and information technology, this digital transformation allows for greater visibility of factory processes, control, and optimisation to improve performance.
The value chain management focuses on reducing resources to create an optimal process with decreased inventories while
maintaining product quality and customer satisfaction.

ADVANTAGES

There are a number of benefits by uniting manufacturing processes across different departments while reducing the potential for errors by creating an automated exchange of data.

Increased efficiency is accomplished by a joined-up manufacturing process which eliminates errors due to lost or misinterpreted data which is common for paper-based processes.

With a quicker turnaround across all levels of the value chain, digital manufacturing offers reduced costs, while allowing for design changes to be implemented in real time and also lowering maintenance costs.

The real-time manufacturing visibility afforded by digital technologies provides improved insights for critical decisions and a faster pace of innovation.

Furthermore, it allows an entire manufacturing process to be created virtually so that designers can test the process before investing time and money into the physical implementation.

Cloud-based manufacturing can be used for this modelling, taking open access information from a number of sources to develop reconfigurable production lines and thereby improve efficiency.

SUSTAINABLE DESIGN

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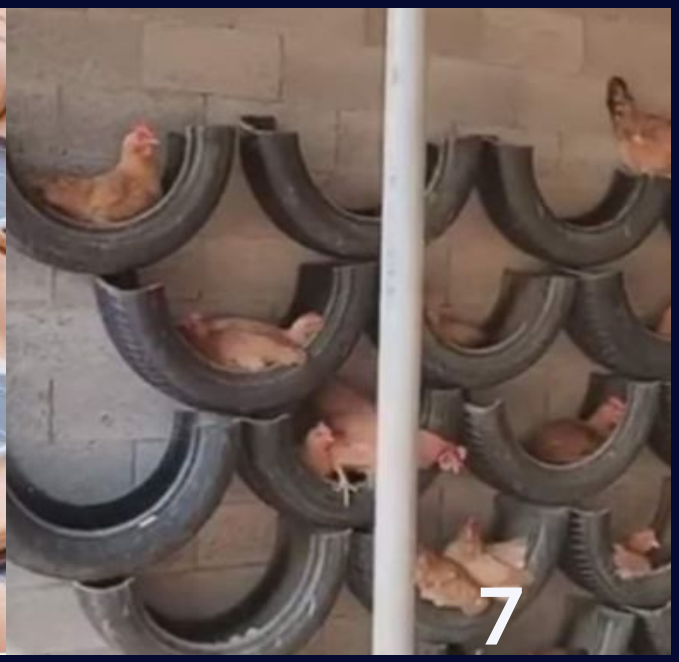
Sustainable design deals with the philosophy of having built and designed objects, buildings, environments and services that conforms with the many principles of ecological sustainability.
This includes maintaining change in a homeostatic environment where the use of resources, inclination of investments, and the direction of development are balanced and meet the current and future needs of humanity. Simply put, sustainable design represents development that not only meets the needs of the present but does so without compromising the ability of future generations to meet their own needs. Ways to approach sustainable design include utilizing sustainable chemical engineering, responsible resource management, and holistic environmental protection.
Decisions that relate to design and sustainability happen everywhere daily, and these decisions impact sustainable development and provisioning for the needs of future generations.



Sustainable Design Principles

Some common sustainable design principles are as follows:

Choosing Low-Impact Materials: Materiality is a big factor in sustainable design and choosing the right material to use is integral in responsible design. Using low-impact materials means choosing materials that are non-toxic, sourced sustainably, and preferably getting recycled materials.

Efficient Energy Use: In the sourcing, processing, and transport of the products required for sustainable design, you have to take into consideration the efficient and minimal use of energy.

Emotional Durability in Design: Using design, aim to reduce the amount of waste and excess by strengthening the relationships between people and designed products.

Aim for Reuse and Recycling: Having a commercial product "afterlife" should be something to aim for when managing products, systems, and production processes.

Durability as a Goal: Be mindful about aiming for a durable, long-lasting design and not aim for the unattainable goal of immortality.

Design Simplicity: For products and designs with multiple components, material diversity should be at a minimum. Fewer parts mean less disassembly and greater retention of the product's value.

Renewable Sources of Materials: The three factors that determine whether the source of the material is sustainable are its location and vicinity to its intended delivery area, the materials' compostable properties, and the manageability of the source of the materials.

Robust Pollution Sources: With inevitable sources of potential pollution, design measures should be done to make them robust and manageable.