

PANIMALAR ENGINEERING COLLEGE



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DEPARTMENT OF MECHANICAL ENGINEERING

NEWSLETTER – THE TORQUE

.... Ready to be driven

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FROM THE PRINCIPAL'S DESK

I congratulate the Department of Mechanical Engineering for taking the initiative to bring out this Department newsletter in a fashionable manner. I hope this newsletter will provide the platform and opportunity to all the students and staff members of Mechanical Engineering to share and update the information on recent developments taking place in the field of Mechanical Engineering. I wish all the best for bringing out many volumes successfully.

FROM THE HOD'S DESK

I am very happy that our Mechanical Engineering Department is releasing this newsletter as a fore runner of the department activities for this semester. It is of upmost importance that students know things apart from the fundamentals in all fields to help them in their future. This newsletter in general will help the faculty and students to learn the latest developments. It will surely be of help to the students to advance their skills set.



Inside this issue:

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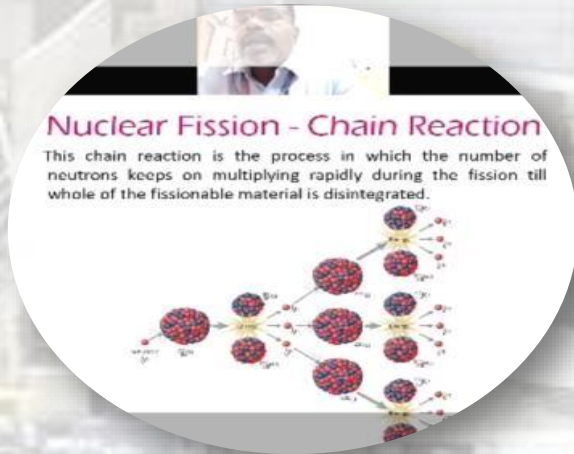
5S (METHODOLOGY)...

*For more updates and
articles visit*

www.panimplalar.ac.in/mech

Expert Lecture

Professor Dr.T.Mayavan delivered an expert talk on "Role of Nuclear Technology towards a Stronger India" at a National Webinar hosted by the Department of Mechanical Engineering at Panimalar Engineering College in Chennai on June 15, 2020.



The speaker elaborated on energy conservation, fossil fuels and its environmental consequences, and necessity for nuclear technology for a stronger and wealthier India. We had an avalanche of registrations, with 150 people signed up, including students from various institutions across the country.



Thank You
Stay Home Stay Safe

For Queries: mayavant@gmail.com

The students asked the speaker questions and debated the topic. The webinar's attendees gave it a positive review.

5 TECHNOLOGIES THAT MAKE IC ENGINES BETTER

Fuel-Saving Technologies:

In the long run, the internal combustion engine (ICE) is on the way out and electric motors are on the way in, but ICEs have been around for so long that we should be careful about announcing their demise. They're going to stick around a while longer, and so it's very important to make them as efficient and clean as possible.

Car and Driver looks at 5 fuel-saving technologies that are keeping the ICE relevant (if far from ideal). As they say, they still work on basically the same principle as they ever did, but old 4-cylinder engines produced about 20 horsepower while modern ones can generate up to 250 hp while being cleaner and burning less gas. Read on for more details on the 5 fuel-saving technologies:

Clean diesel,

Direct injection,

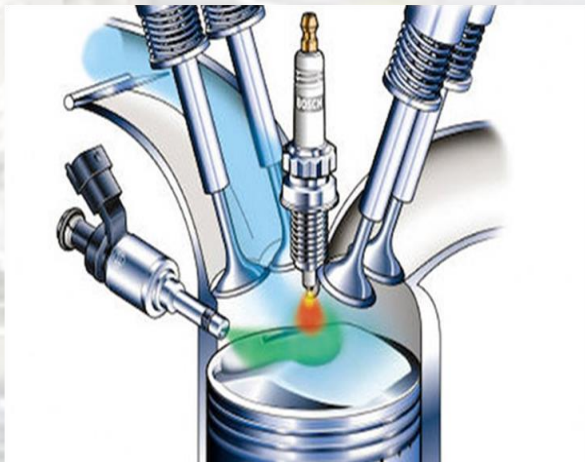
Cylinder deactivation,

Turbochargers, and

Variable valve timings & lift.

"Don't put all your eggs in one basket."

Diesel engines are certainly far from perfect, but they have inherently better thermal efficiency than gasoline engines, and they are usually more durable (if also more expensive and heavier). Another benefit is that they can run on biodiesel, which if you can find fuel made from waste cooking oil or (in the next few years) from algae can be very green.



One Big Problem with All of This

The problem is that most of the gains from these technological breakthroughs have been used to increase power instead of reducing fuel consumption. At best, fuel economy stayed the same while power increased.

Now that environmental awareness is increasing, that global warming is on everybody's mind and that oil is very expensive, we can hope that carmakers will end the horsepower arms race and finally use these technologies to truly make more efficient cars.

"One man's trash is another man's treasure."

GLOBAL WARMING

Global warming is the unequivocal and continuing rise in the average temperature of Earth's climate system. Since 1971, 90% of the warming has occurred in the oceans. Despite the oceans' dominant role in energy storage, the term "global warming" is used to refer to increases in average temperature of the air & sea at Earth's surface.

Since the early 20th century, the global air & sea surface temperature has increased about 0.8 °C (1.4 °F), with about two-thirds of the increase occurring since 1980. Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850.

Scientific understanding of the cause of global warming has been increasing. In its fourth assessment (AR4 2007) of the relevant scientific literature, the Intergovernmental Panel on Climate Change (IPCC) reported that scientists were more than 90% certain that most of global warming was being caused by increasing concentrations of greenhouse gases. In 2010 that finding was recognized by the national science academies of all major industrialized nations. Affirming these findings in 2013, the IPCC stated that the largest driver of global warming is CO₂ emissions from fossil fuel combustion, cement production, and land use changes such as deforestation.

"There's no time like the present."

Top 10 Things to Reduce Global Warming

1. Reduce, Reuse, Recycle
2. Use Less Heat and Air Conditioning
3. Change a Light Bulb
4. Drive Less and Drive Smart
5. Buy Energy-Efficient Products
6. Use Less Hot Water
7. Use the "Off" Switch
8. Plant a Tree
9. Use mass transit
10. Encourage Others to Conserve



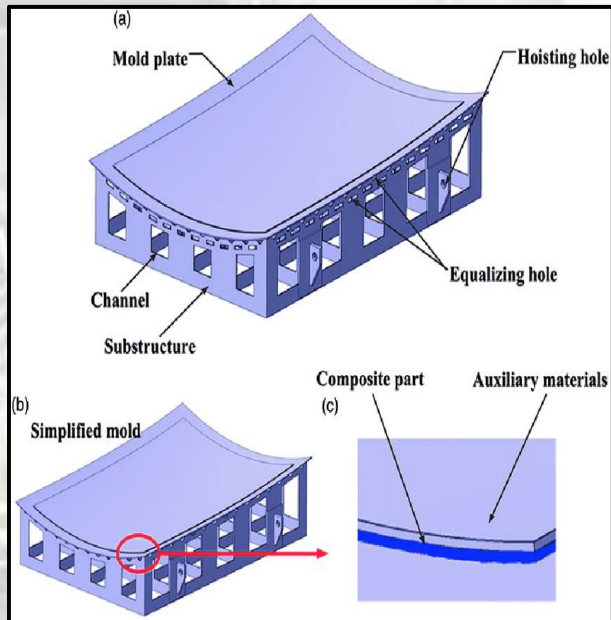
AUTOCLAVE MOULDING (ACM)

A process using a two-sided mould set that forms both surfaces of the panel. On the lower side is a stiff mould and on the upper side is a flexible membrane created from silicone or an extruded polymer film such as nylon. Reinforcement materials can be put manually or robotically.

They contain continuous fibre shapes fashioned into textile designs. Most usually, they are pre-impregnated with the resin in the form of prepreg textiles or unidirectional tapes.

"Don't bite the hand that feeds you."

In some instances, a resin film is placed upon the lower mould & dry reinforcement is placed above. The upper mould is installed and vacuum is applied to the mould cavity.



Typical mold for autoclave process

The assembly is placed into an autoclave. This process is generally performed at both elevated pressure and elevated temperature. The use of elevated pressure enables a high fiber volume fraction & low void content for maximum structural efficiency.

"People who live in glass houses should not throw stones."

RESIN TRANSFER MOULDING (RTM)

RTM is a process using a rigid two-sided mould set that forms both surfaces of the panel. The mould is constructed from aluminum or steel, but composite molds are sometimes used. The two sides fit together to produce a mould cavity. The distinguishing feature of resin transfer moulding process is that the reinforcement materials are placed into this cavity & mould set is closed prior to the introduction of matrix material.

Resin transfer moulding includes numerous varieties which differ in the mechanics of how the resin is introduced to the reinforcement in the mould cavity. These variations include everything from the RTM methods used in out of autoclave composite manufacturing for high-tech aerospace components to vacuum infusion (for resin infusion see also boat building) to Vacuum Assisted Resin Transfer Moulding (VARTM). This process can be performed at ambient or elevated temperature.

"Discretion is the greater part of valor."

5S (METHODOLOGY)

5S is the name of a workplace organization method that uses a list of five Japanese words:

Seiri, Seiton, Seiso, Seiketsu, and Shitsuke.

Transliterated or translated into English, they all start with the letter "S".

The list explains how to organize a work space for efficiency & effectiveness by identifying & storing the items used, maintaining area & items & sustaining the new order. The decision-making process usually comes from a dialogue about standardization, which builds understanding among employees of how they should do the work.



The 5 S's

There are five primary 5S phases: They can be translated from the Japanese as Sort, Systematize, Shine, Standardize and Self-Discipline.

"Beggars can't be choosers."

SHIP WITH WIND MILLS

The Ship with Wind Mills Mechanical Engineering Seminar aims at building Ship with Wind Mill to use its energy and generate power out of it at a very economical price.

Wind energy, one of the non-conventional sources of energy can be utilized to run wind mills to produce electricity. The latest technologies of wind mills say that the offshore wind mills have high output. This is because offshore is free from obstacles and full of non-stop high speed winds. The power developed by the wind mills is said to be depend on the cube of velocity of air that passes through the turbine. Offshore wind mills have only for the 97% of time, which means the technology is yet to develop to be more efficient.

This is the ship which will carry wind mills into the open sea and add its velocity component to the wind so as to get wind for 100% of time.