



DEPARTMENT OF MECHANICAL ENGINEERING  
ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Shobhavana Campus, Mijar, Moodbidri-574 225.

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**Technical talks organized by the Department of Mechanical Engg.in the even semester– 2015**

Sl.No	Date	Technical Talk/Seminar Title	Name of Resource Person
01.	10/02/15	Lightweight Structures & their Applications	<b>Dr. Manujesh B J</b> Associate Professor, Dept. of Mechanical Engg, Head- Entrepreneurship Development Cell K V G College of Engineering, Sullia
02	19/02/15	Hydro power plants and small scale industry	<b>Mr. Narayan Bhide</b> Director, Netra Hydel Power Plant, CharmadyGhat
03	24/02/15	Technology up gradation in foundries	<b>Mr. A. Balakrishna Shetty</b> Managing Director (Production &Projects), Lamina foundry, Nitte
04	03/03/15	Design of experiments (DOE): From fisher to shainin	<b>Dr. Rathanraj K J</b> Professor, Dept.of Industrial Engineering & Management, BMS College of Engineering, Bengaluru -560 019, Karnataka, India
05	10/03/15	Cryogenics and their application	<b>Dr.G.B Krishnappa</b> Professor and Head Department of Mechanical Engineering VidyaVardhaka College Of Engineering P.B. No.206, Gokulam III Stage, Mysore - 570 002



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## Lightweight Structures & their applications

**Dr. Manujesh B J**

*Associate Professor & PG Coordinator*

*Department of Mechanical Engineering*

*KVG College of Engineering*



### Talk by **Dr. Manujesh B J**

A technical talk on the topic “**Lightweight Structures & their applications**” was delivered by *Dr. Manujesh B J*, Associate Professor & PG Coordinator Department of Mechanical Engineering, KVG College of Engineering on 25<sup>th</sup> February 2015.



He said, *the use of lightweight materials will significantly grow across the industries.* All lightweight materials offer weight reduction potential at higher cost. He also explained about the overall use of lightweight materials in all three industrial scope – automotive, aviation/Marine and wind and use of lightweight materials will increase significantly in volume over the next two decades,

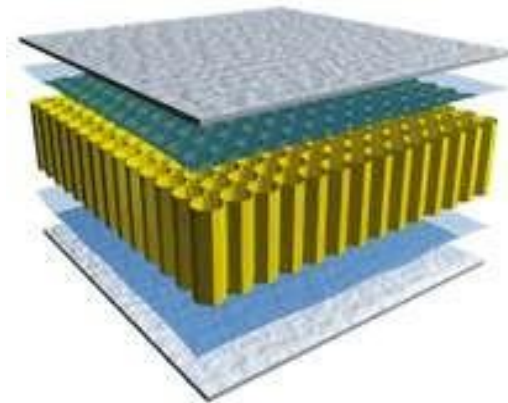


Fig : Lightweight material

### **Need for Lightweight Materials**

Lightweight materials and design have always been an important topic in product design across several industries. The concept has been most important in aviation, Space, Marine but also in industries where large rotating parts (e.g., rotor blades of wind turbines) are key elements of product design and in automotive, where driving dynamics are a major consideration.

Global trends toward Carbon Dioxide reduction and resource efficiency have significantly increased the importance of this topic over the last years. Electrons are emitted from the specimen by the action of the scanning beam and collected by a suitably-positioned detector. Then image can be seen on a screen.



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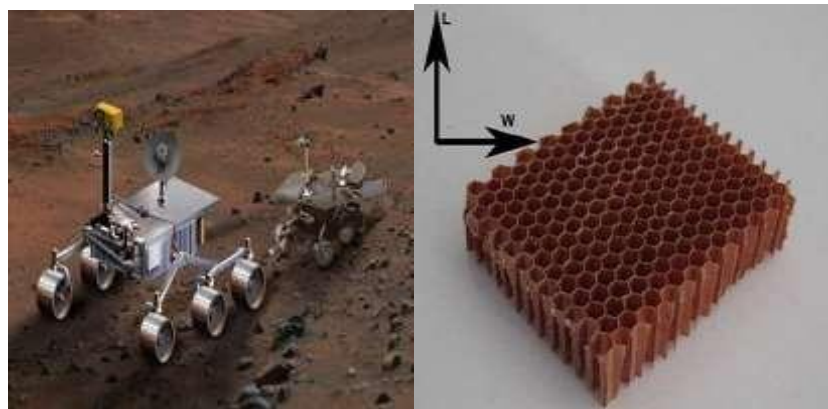


Fig : Critical applications of Lightweight Materials

The main benefits of this talk are, students (U.G and P.G sections) and faculty members of the department got exposure to understanding critical applications of Lightweight Materials. The talk was appreciated by faculty members. In conclusion the talk was benefited for U.G, P.G and faculty members of the department.





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## Hydro power plants and small scale industry

**Mr. Narayan Bhide**

**Director, Netra Hydel Power Plant, CharmadyGhat**



### Talk by **Mr. Narayan Bhide**

A technical talk on the topic “*Hydro power plants and small scale industry*” was delivered by *Narayan Bhide*, Director, Netra Hydel Power Plant, CharmadyGhat, on 19<sup>th</sup> February 2015.

He said, water resources are valued for sustaining human health and food production, the energy contained in moving water such as *rivers* or *tides* can also be harnessed to create energy through hydropower or mechanical uses.



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Hydropower schemes can either be small scale or large-scale, depending on the local conditions and the energy demand. Bhide expressed that, globally, 1.4 billion people lack access to electricity, with an additional 1 billion having only intermittent access. Where water resources permit, large-scale hydropower is an option to produce large quantities of renewable, inexpensive energy to meet growing energy demands in the face of rising costs of fossil fuels. Today, it is a widely used technology that is applied to produce power in many different ways.

In his talk he said that, I am the Independent Power Producer and came forward to set up a new mini hydroelectric project called Netra Hydrel Power Plant, CharmadyGhat, in Belthangady taluk in Dakshina Kannada, in addition to the existing four projects. He expressed that he found very hard to built the hydrel plant.

Mr. Bhide said that the Charmadi project by the Trinetra Energy Conversion Inc., in which he is a promoter, produced 4.5 MW energy. The installed capacity of other hydrel projects in the taluk at Aniyoor, Nidle and Dondole stood at 6 MW, 9 MW and 13.5 MW, respectively.



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Fig : Mr. Narayan Bhide at the site of a hydel project at Charmadi

The talk was concluded by clearly indicating that, it is possible for new Independent Power Producers (IPPs) to use existing power corridors to supply energy to the grid. Hydel projects reduce demand from coal power in rainy season. Thus burning of coal could be saved. The IPPs are bound to plant saplings for trees they have cut, he said. It is a sustainable way of producing green energy, he said.



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Fig: Mr. Vivek, Managing trustee is presenting memento to Mr. Bhunde





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## Technology Upgradation In Foundries

**A. Balakrishna Shetty**

General manager

Lamina Foundries Ltd. Nitte



A. Balakrishna Shetty in R & D lab, Lamina Foundries Ltd. Nitte

A technical talk on the topic “*Technology Upgradation in Foundries*” was delivered by **Balakrishna Shetty**, General Manager, Lamina Foundries Ltd. Nitte on 24<sup>th</sup> February 2015.

He said, *technology upgradation* in foundry is required to meet the customer expectation, to improve the productivity, to improve the product quality, to reduce the product cycle time, to reduce the manpower, to reduce the energy consumption,



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to reduce the operating and maintenance cost of equipments, to improve the working environment, to reduce the down time of equipment, to reduce the cost of production and improving the profitability.

He said, Cupola, main frequency induction furnace and medium frequency induction furnaces etc are widely used in foundries.



Fig : Cupola furnace, Lamina Foundries Ltd. Nitte



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Fig: Medium frequency furnace, Lamina Foundries Ltd. Nitte

In his presentation he showed advanced moulding machines which are currently used in lamina foundries such as Jolt-squeez moulding machine, simultaneous Jolt squeez molding machine, high pressure molding machine etc .







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Fig: Jolt squeez machine, Lamina Foundries Ltd. Nitte



Fig: High pressure moulding machine –savelli italy,  
Lamina Foundries Ltd. Nitte

The talk was concluded by clearly indicating that, the technology upgradation in all kind of industries is must for the development and growth of country.

The main benefits of this talk was both U.G and P.G students of the department got exposure to understanding and the use of automated machine foundries and also how upgradation in foundries is very important.





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## Design of experiments (DOE): From fisher to shainin

**Dr. Rathanraj K J**

Professor, Dept. Of Industrial Engineering & Management,  
BMS College of Engineering, Bengaluru



Dr. Rathanraj with Prof. K V Suresh, HOD, ME before technical talk

A technical talk on the topic “*Design of experiments*” was delivered by **Dr. Rathanraj K J**, Professor, Dept.of Industrial Engineering & Management, BMS College of Engineering, Bengaluru on 3<sup>rd</sup> March 2015.



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He said, Design of Experiment is a technique to obtain and organise the maximum amount of conclusive information from the minimum amount of work, time, energy, money, or other limited resources.

Objectives of experimentation are improving efficiency or yield, finding optimum process settings, locating sources of variability, correlating process variables with product characteristics, comparing different processes, machines, materials etc, designing new processes and products.

He expressed that, as we think about the experiment, a number of important questions come to mind:

- a) Are these two materials the only materials of potential interest?
- b) Are there any other factors that might affect life that should be investigated or controlled in this experiment?
- c) How many specimens of Bush should be tested with each other material?
- d) How should the specimens be made with different materials and in what order should the data be collected?
- e) What method of data analysis should be used?
- f) What difference in average observed life between the two materials will be considered important?

All of these questions and perhaps many others will have to be satisfactorily answered before the experiment is performed.

After having selected the area for experimentation we have to ensure that the problem is of 'Break through' or 'Improvement' nature and not a problem of 'control' nature. For this purpose past data should be suitably analyzed and plotted



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on some process control chart to check whether the process is within statistical control or not. If the analysis shows lack of control or statistical instability, then it is a problem of 'control' nature and experimentation may not be needed. He stressed that, before deciding to carry out experimentation the need for experimentation must be established.

In his presentation Dr. Rathanraj also spoke about, terminology used in D.O.E, steps in designing and analyzing, planning for experimentation, Requisites of DOE etc

The talk was concluded that exposure to DOE is a prerequisite, but not enough Learning by doing: practice. Since, the talk was full of mathematics and unique compared to other talks. So, both U.G and P.G students of the department got exposure to DOE.



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## Cryogenics and their application

**Dr. G.B Krishnappa**

Professor and Head

Department of Mechanical Engineering  
VidyaVardhaka College Of Engineering, Mysore



Talk by Dr. G.B Krishnappa

A technical talk on the topic “*Cryogenics and their application*” was delivered by **Dr. G.B Krishnappa**, Professor and Head, Department of Mechanical Engineering, VidyaVardhaka College Of Engineering, Mysore on 10<sup>th</sup> March 2015.

He said, Cryogenics is the study of very low temperature and its application on different materials including biological products. Cryogenics has numerous





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applications Gas Industry - production of different gases, Space research – As rocket propellants & space simulation, Biology & Medicine - Storage of specimens, Cryosurgery, Food industry – for storage & processing, Electronics - Semiconductor & superconductor, electronics Basic research - High-energy physics & Chemical processes. Cryogenic Treatment - Tool life improvement Metal fabrication, Power generation - SC generators.

Other applications, cryo-grinding, Shrink fitting, Freezing pipelines for repairs, Magnetic Resonance Imaging (MRI), Magnetoencephalography (MEG) etc

Several cryogenic fluids available are Oxygen, Argon, Nitrogen, Air, Hydrogen and Helium for a variety of applications.

Dr. Krishnappa also spoke about, physics of liquefaction, Induced Evaporation, Isenthalpic Expansion (JT Expansion), Adiabatic (Isentropic) Expansion, Liquefaction Cycles and storage of cryogenic fluids. He mainly focused on cryocoolers. A Cryocooler or Cryorefrigerator is a device which produces the



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required cold or refrigeration at a given low temperature.



Fig: cryocooler

Several types of cryocoolers are Stirling, Gifford McMahon, Pulse Tube and JT systems

The talk was specially appreciated by M. Tech students since the talk was specific to their subject. In conclusion the talk was benefited for U.G, P.G and faculty members of the department.