Department of Mechanical Engineering

The following technical talks were organized for the benefits of U.G and Faculty members of the department for the **Even** semester 2017 - 2018

2018.

Sl. No	Date	Title of the technical talk	Name of Invited speaker
1	27-02-2018	Application of hydraulics and pneumatics in automation	**Mr. Venugopal** Managing Director, Venjay Institute of Automation, Jayanagar, Bangalore
2	16/03/2018	Corporate Expectations from Students	**Mr. Santosh Rao** General Manager, Toyoto Industries, Bangalore
3	19/03/2018	Application of CFD for heat transfer	**Dr. Chandrakant Kini** Professor, Dept. of Aeronautical Engg, MIT Manipal
4	11-04-2018	Advancement of Mechanical engineering through Innovations in Materials	**Dr. C.D. Madhusoodana** Additional General Manager Ceramic Technological Institute, BHEL, Bangalore
5	17-04-2018	Aircraft Materials	**Dr. Raghavendra R. Bhat** Deputy General Manager, F & F Division, HAL, Bangalore

Application of hydraulics and pneumatics in automation

Mr. Venugopal
Managing Director,
Venjay Institute of Automation,
Jayanagar, Bangalore

Mr. Venugopal addressing the students

A technical talk on the topic "Application of hydraulics and pneumatics in automation" by Mr.Venugopal, Managing Director, Venjay Institute of Automation, was organized by the Department of mechanical Engineering on 27th Feb. 2018 in the Engineering Seminar hall.

Mr.Venugopal explained the significance of automation in today's industrial scenario and emphasized about how the automation makes the day-to-day work simpler. He demonstrated through videos, multiple number of projects that are carried out and successfully implemented by Venjay industies in many reputed industries involved in manufacturing of cement bricks pavement blocks and steel plants.

Mr.Venugopal, also described about various components of industrial

automation such as **P**rogrammable **L**ogic **C**ontrollers (PLCs) and SCADA that are easy to implement in the industries and can be also understood without any difficulty by anybody operating the controllers. In addition he also exhibited some modern sensors used in controllers which he carried along with to the students for better understanding of the concept.

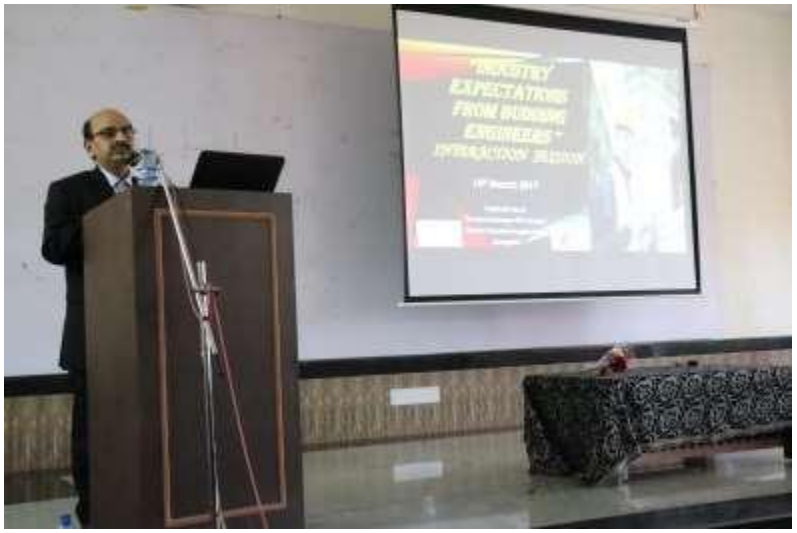
Modern controller kit exhibited by Mr.Venugopal

He also highlighted about the role of safety in automation and the safety measures taken into account while designing any automation system. This was further demonstrated through video clips to the audience.

The session was appreciated by Final year students since the talk was specific to their subject. In conclusion the session created awareness in the students about automation and has made them to plan their career in the area of industrial automation. Most of the faculty from the department also participated in the session and was appreciated by everybody.

Corporate Expectations from Students

Mr. Santosh Rao
General Manager, Toyoto Industries, Bangalore



Talk by **Mr. Santosh Rao**

A talk on the topic "Corporate Expectations from Students" was delivered by ***Mr.* Santosh Rao, General Manager, Toyoto Industries, Bangalore** *on* 16/03/2018.

Speaker said, Engineering employers are discovering that their workforce requires certain skills which seem to be in short supply. Rapid technological change, participative management and employee empowerment, global competition, and other workplace innovations have created a demand for a higher skill level for engineering graduates. Identifying industry expectations for engineering graduates are an important step in developing university curricula which are responsive to the needs of the profession.

He said, at current scenario company identifies specific industry expectations for new engineering graduates and provides practical recommendations for strategically aligning engineering curricula with the professional community. By identifying specific skills requisite for career success, universities can provide an improved service for their graduates and the engineering industry.

In the presentation he said, every year, Toyota brings all the personnel managers together from the main affiliates all over the world, including the Head Office. They hold discussions on how to build a work environment in which employees can trust the company, how to build a framework that promotes constant and voluntary improvement, how to develop human resources and how to work on nurturing teamwork. The content of those discussions is used for each affiliate to make policy the following year in order to implement policy to realize Personnel and Labor Toyota Way consistently.

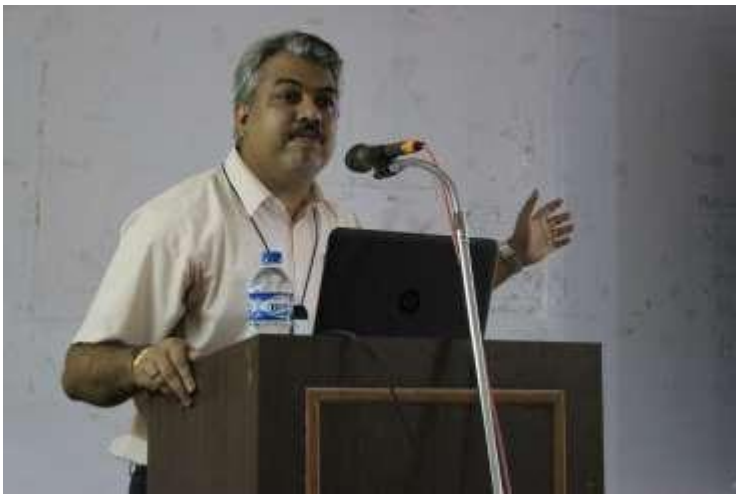
He also said that, Toyota aims to enable its employees to exercise their abilities to think, be creative, and utilize their strengths to the maximum extent possible by providing them with opportunities to make social contributions and achieve self-actualization through work. Toyota conducts an employee satisfaction survey every other year to provide an index for measuring the results of these efforts and utilizes the analysis results for planning and implementing measures that will enable employees to work without worry.

The main benefits of this talk are students and faculty members of the department got exposure to Corporate Expectations from Students. The talk was specially appreciated by students and faculty members.

Presentation of memento *to Mr. Santosh Rao* from Prof. K V Suresh

Application of CFD for heat transfer

Dr. Chandrakant Kini
Professor, Dept. of Aeronautical Engg, **MIT Manipal**



Talk by **Dr. Chandrakant Kini**

A talk on the topic "Application of CFD to heat transfer" was delivered by **Dr. Chandrakant Kini, Professor, Dept. of Aeronautical Engg, MIT Manipal** on 19/03/2018.

Speaker said, Computational fluid dynamics (CFD) is used to compute the flow. Sometimes CFD can also be used to compute the convection of heat and sometimes those temperatures are coupled into and modify the fluid properties (such as viscosity). But CFD is mostly for computing the flow field. CFD can estimate heating or cooling effects in heat transfer studies, for example, cooling of CPU, heating in a furnace, heat generation in combustion and many more.

He said, Benefits of using CFD are Quick low-cost method for design iterations, quick low-cost method to determine cause of performance issues, and analysis possibilities where measurements are not possible.

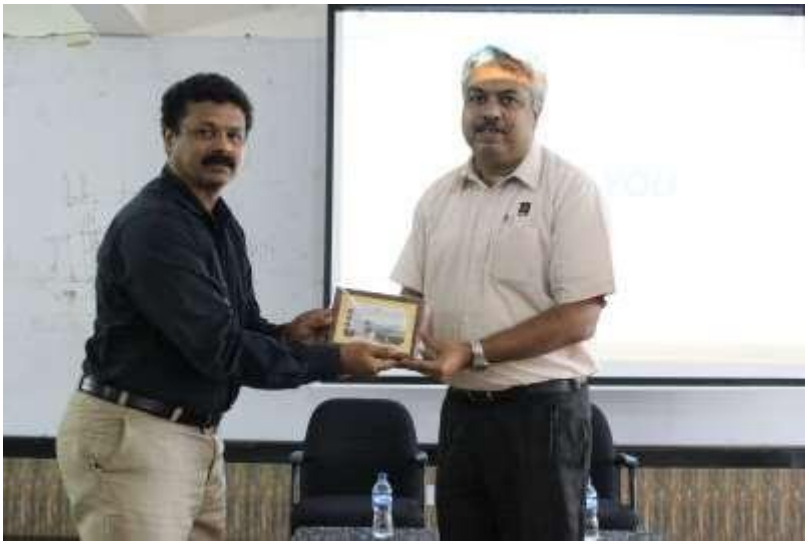
Key applications are Optimizing design to improve performance, Validating initial design performance, Determining cause of performance issues, Feasibility study of new configurations, e.g. closely spaced filters or pumps.

Combination with structural analysis

In the presentation he talked about case studies related CFD, such as life assessment of valve component subjected to internal pressure loading, CFD simulation of exhaust gas dispersion into atmosphere from industrial stack, Visualizing Fluid Flow Inside the Modified Inlet Duct and CFD Simulation of Exhaust Gas Dispersion into Atmosphere from Industrial Stack.

He also said, Exhaust gas analysis can be performed to investigate the SO_2 dispersion in the atmosphere from the industrial stack. A wind profile can be developed using UDF (user defined functions) to replicate actual atmospheric conditions. The simulation results can be exhibited the dispersion of the SO_2 along with other species in to the atmosphere within the 500m radius from the stack.

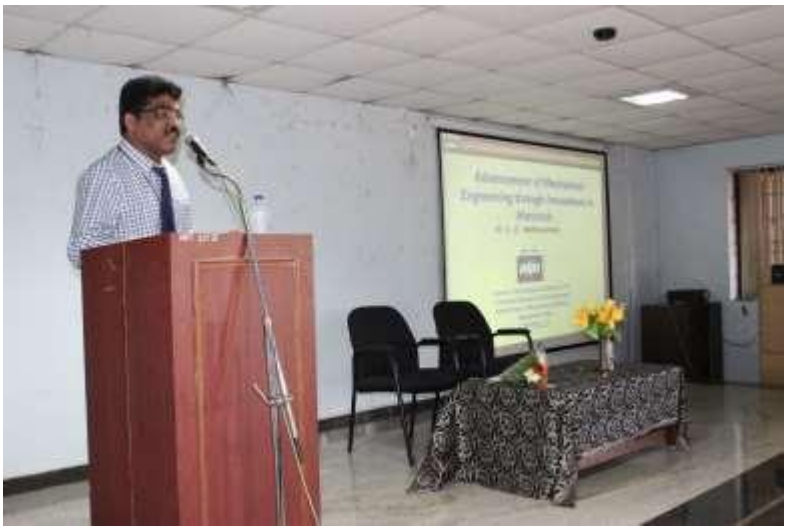
The main benefits of this talk are students and faculty members of the department got exposure to CFD. The talk was specially appreciated by faculty members who are pursuing their Ph.D in the area of CFD.



Presentation of memento *to Dr. Chandrakant Kini* from Dr. Harishanand K S

Advancement of Mechanical engineering through Innovations in Materials

Dr. C.D. Madhusoodana
Additional General Manager
Ceramic Technological Institute, BHEL, Bangalore



Talk by **Dr. C.D. Madhusoodana**

A talk on the topic "Advancement of Mechanical engineering through Innovations in Materials" was delivered by ***Dr. C.D. Madhusoodana, Additional General Manager, Ceramic Technological Institute, BHE Ltd, Bangalore*** *on* 11/04/2018.

Speaker highlighted the following topics,

- Introduction of BHEL and their day to day work.
- Innovation in Engineering such as RO drinking water, Transport, Clean air, Health and sanitation and infrastructure.
- Up-scaling of technology from lab to pilot plan.
- Areas of research: Ceramic for wear, abrasion and high temperature application in plants.
- Vehicular pollution control.
- Quality of Bangalore air and its content.
- Cause of pollution.

- Importance of pollution norms and its effect on lifestyle.
- Need of fuel quality improvement.
- After treatment devices.
- Exhaust treatment devices.
- Catalytic converters for petrol vehicles

Speaker mainly spoke on, Hot Gas Filters. He said, Hot Gas Filter is the best option for an effective high temperature gas cleaning, while capturing the sensible heat of the gas in an optimum way. The ceramic filter material has ideal characteristics for the dedusting of off-gases from closed electric reduction furnace.

The filter elements are suspended in the main cylindrical housing with conical lower dust collection section. The dirty gas enters centrally from the top and turns through 180° in the upper conical section. With the induced forces the larger dust particles are removed and fall into the cone. The gas with the residual dust passes through the candle shaped filter elements from the outside to the inside, thereby removing the dust from the gas. The clean gas leaves via the compartmentalised top of the filter housing. The cleaned gas still has the same temperature at outlet as it has at inlet.

Students and faculty members of the department benefited from the talk.

Presentation of memento *to Dr. C.D. Madhusoodana* from Prof. Ravindran K

Aircraft Materials

Dr. Raghavendra R. Bhat
Deputy General Manager, F & F Division, HAL, Bangalore

Talk by **Dr. Raghavendra R. Bhat**

A talk on the topic "A Aircraft Materials" was delivered by ***Dr. C.D. Madhusoodana, Dr. Raghavendra R. Bhat, Deputy General Manager, F & F Division, HAL, Bangalore*** *on* 17/04/2018.

Speaker highlighted the following topics,

- Introduction of HAL and their day to day work.
- Advanced foundries located in HAL.
- Fundamental of Materials.
- Selection criteria of materials for aircraft applications.
- Areas of research: Alloy development, production of alloys, heat treatment of alloys
- Internship opportunities at HAL

Students and faculty members of the department benefited talk.

Presentation of memento *to Dr. C.D. Madhusoodana* from Dr. Satyanarayan