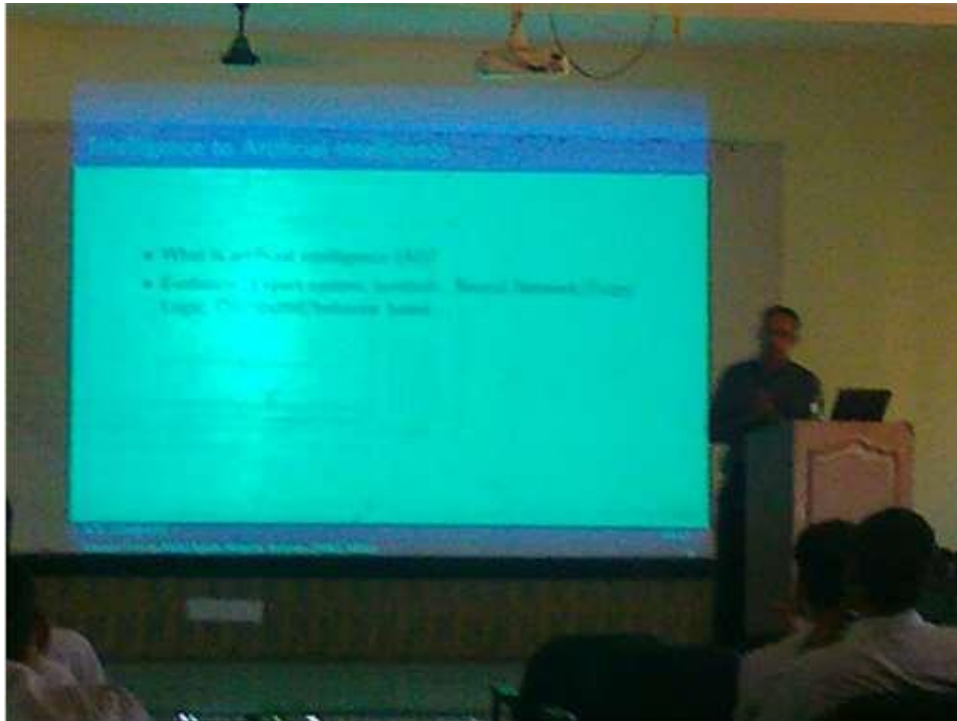


Technical talks organized by the Department of Mechanical Engg. in the even semester – 2014

Sl.No	Date	Technical Talk/Seminar Title	Name of Resource Person
01.	11/02/14	Introduction to multi-agent/multi-robotic systems	Dr. K.R. Guruprasad, Asst. Professor, Dept of MechEngg, NITK Surathkal
02	18/02/14	Mechanical systems an experiential learning	Dr. K V Gangadharan Professor, Dept of MechEngg, NITK Surathkal
03	25/02/14	Engine exhaust emission control technologies and devices	Dr. P Mohanan Professor, Dept of MechEngg, NITK Surathkal
04	11/03/2014	Vegetable oil based cutting fluids and environmental issues in manufacturing	Dr. Thomas Pinto Professor & HOD of Mechanical Engineering S.I.T, Valachil Mangalore
05	18/03/2014	Composite Materials	Dr. Thirumaleshwar Bhat, Professor & HOD of Mechanical Engineering St. Joseph Engineering College, Mangalore

Introduction to multi-agent multi-robotic systems

Dr. K.R. Guruprasad,
Asst. Professor, Dept of Mech Engg, NITK Surathkal



A technical talk on the topic “Introduction to multi-agent multi-robotic systems” was delivered by *Dr. K.R. Guruprasad*, Assistant Professor, Dept of Mechanical Engg, NITK Surathkal on 11th February 2014. The talk “Introduction to multi-agent multi-robotic systems” specifically focused on the advanced robotics in engineering field. He spoke about evolution of robots and their applications in engineering field. Most famous emerging technology of Robotics and their applications-Micro fly in military intelligence, Humanoid robot as human duplicate, Pollen-Robo in weather forecasting, Robert

Spencer for underwater use, Medical robotics, robotic suit, robots in planetary explore missions were discussed.



Figure: Robots in engineering applications

Mechanical systems - an experiential learning

Dr. K V Gangadharan
Professor, Dept of Mech Engg, NITK Surathkal



A technical talk on the topic “Mechanical systems - an experiential learning” was delivered by *Dr. K V Gangadharan*, Professor, Dept of Mechanical Engg, NITK Surathkal on 18th February 2014. The talk “Mechanical systems - an experiential learning” specifically focused on enriching the learning experience through experimental learning of science and technology in a virtual learning environment on preferred location at any time. He spoke about the remote laboratory (also called virtual lab) which was designed and published in internet by NITK students. In which the authorized students can log into the laboratory using the internet connection and use the experimental setup in the allotted time slot. Professor also talked about how remote laboratory is realized using LabVIEW (Virtual Instrumentation Engineering Workbench) and NI hardware for data acquisition. NI’s LabVIEW is one of the most widely used integrated development environments for instrumentation, control and digital signal processing development.



Figure: Communication through the web interface

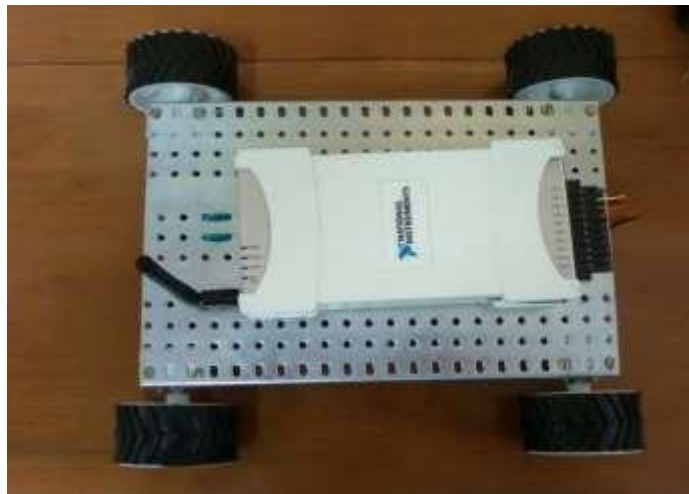


Figure: Mobile Robot with NI WLS 9163

The main benefits of this program are: students having better problem solving skills, students build on experiences in previous courses. Students have a stronger understanding of modeling concepts. Students have the tools that enable them to solve more difficult problems and more actively engaged in the learning process both inside out outside the classroom.

Engine Exhaust Emission Control: Technologies and Devices

Dr. P Mohanan

Professor, Dept of Mech Engg, NITK Surathkal



A technical talk on the topic “*Engine Exhaust Emission Control: Technologies and Devices*”, was delivered by *Dr. P Mohanan*, Professor, Dept of Mech Engg, NITK Surathkal on 25th February 2014. The talk was specifically focused on motor vehicle emissions, common causes of high hydrocarbons, CO, No_x, emission norms for heavy diesel vehicles, gasoline and also advanced technologies in IC engines to control emission. The topic concluded that “*Homogeneous Charge Compression Ignition (or HCCI)*”, is a relatively new combustion technology to control emission in IC engines. In an HCCI engine, a dilute, premixed fuel/air charge auto ignites and burns volumetrically as

a result of being compressed by the piston. In HCCI, combustion start is dependent only on the thermo-chemical conditions inside the cylinder.

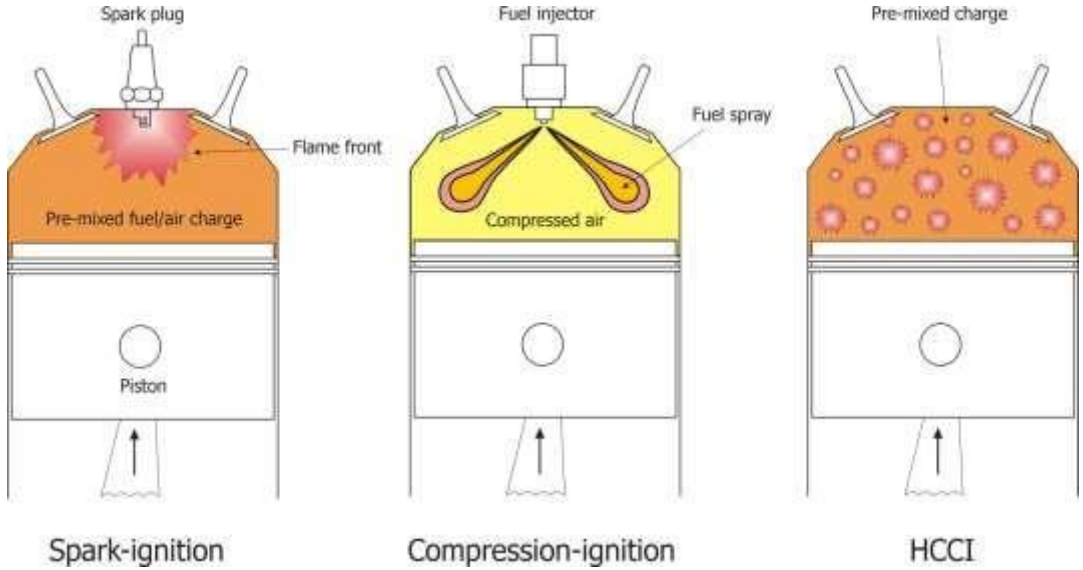


Fig 1: Homogeneous Charge Compression Ignition (or HCCI) system

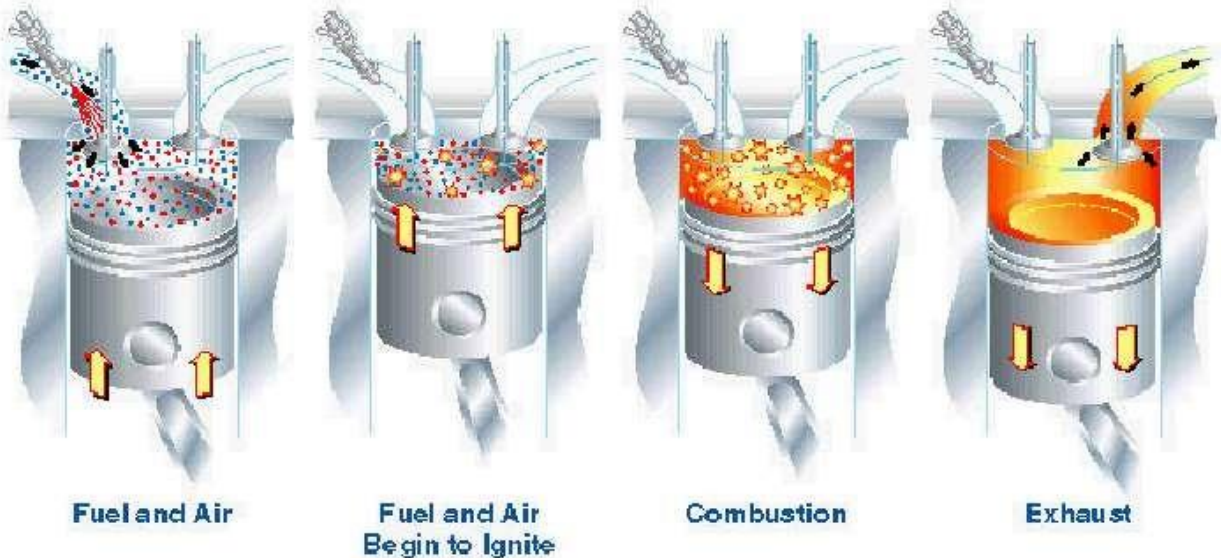


Fig 2 : No flame, combustion due to compression heating in HCCI

Adopting HCCI technology, thermal efficiency of an engine can increase upto 20%, Average NO_x reduction will be 24%, and smoke capacity can reduce upto 45%. Finally students and faculty of the department enjoyed and got best benefit the session.

Vegetable Oil Based Cutting Fluids And Environmental Issues In Manufacturing

Dr. Thomas Pinto
Professor & HOD, Dept. of Mechanical Engg.
Dean(Administration), S.I.T., Mangalore



A technical talk on the topic “Vegetable Oil Based Cutting Fluids And Environmental Issues In Manufacturing” was delivered by *Dr. Thomas Pinto, Professor & HOD, Dept. of Mechanical Engg. Dean(Administration), S.I.T., Mangalore* on 11th March 2014. The talk “Vegetable Oil Based Cutting Fluids and Environmental issues in Manufacturing” specifically focused on role of cutting fluids in machining operations by cooling the machining zone and impact shop productivity, tool life and quality of work. He said that, the growing demand for biodegradable materials has opened an avenue for using bio-resources as an alternative to petroleum based materials.

He spoke about recent advances in cutting fluids like Cryogenic cooling (liquid nitrogen at -190°C), Solid Lubricants, mainly on vegetable oil based coolants (ex: palm oil, groundnut oil, castor oil, soybean oil and rapeseed oil based coolants. Mainly machining of steels, Cu, Al by WC(coated and uncoated), CBN and PCD tools.)



Figure: Vegetable oil as a cutting fluid

He presented seminar mainly on a case study in which, Mahua oil, honge oil, gingelly oil and cottonseed oil were used as cutting fluids. Mineral oil and synthetic fluids were also used for comparison. Throwaway WC tips-CNMG 120404 FM TN 8135, P20 (ISO) grade, Widia Make and HSS Bits-Miranda S400 (10% Co) Size $\frac{1}{2}$ “ square x 6” length were used as cutting tools.

He concluded that, surface finish improved by 20-50% with bio-coolants, tool life increased by 30-35% with bio-based coolants, cutting forces (F_c and F_t) are lesser by 20-50%., reduction of μ by 10-15%, chip

reduction co-efficient decreased with bio-based coolants, tool temperatures are somewhat lesser with the proposed coolants with both HSS and WC tools, proposed coolants are much cheaper than the commercial coolants, physical and chemical properties of proposed coolants are found suitable. test reports indicate the proposed coolants are environmental friendly.

**Occupational Safety, Health and Environment
(O.S.H.E)**

**Thirumaleshwara Bhat
Professor and Head
Department of Mechanical Engineering
St. Joseph Engineering College
Vamanjoor, Mangalore.**



A technical talk on the topic “Occupational Safety, Health and Environment(O.S.H.E)” was delivered by *Thirumaleshwara Bhat Professor and Head, Department of Mechanical Engineering St. Joseph Engineering College Vamanjoor, Mangalore.* on 18th March 2014. The talk “Occupational Safety, Health and Environment” specifically focused on Human Behavior towards Safety in working environment with all fields. Occupational safety and health (OSH) is an area concerned with protecting the Safety, Health and Welfare of people engaged in Work or Employment.” The goals of occupational safety and health programs include promoting a safe and healthy work environment. OSH may involve interactions among subject areas, like

- occupational medicine,
- occupational hygiene,

- public health,
- safety engineering,
- industrial engineering,
- health physics,
- industrial and organizational psychology,
- ergonomics
- occupational health psychology.

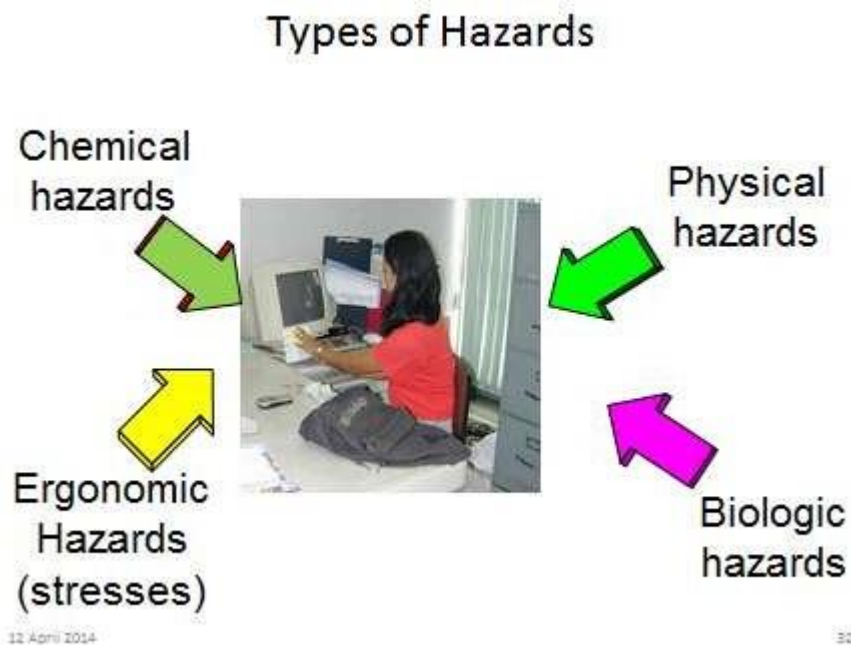


Figure: Types of hazards

He said that, the majority of the working population belongs to the unorganized sector, which is not in the purview of current legislation in occupational health. The working population being largely illiterate is unaware of the hazards associated with their occupation. Awareness and health education programme should be carried out for the workers, supervisors and owners/ management of the factories/mines engaged in hazardous process.