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PANDIT DEENDAYAL PETROLEUM UNIVERSITY

A Grade NACC Accreditation | Recognised by UGC | ISO 9001:2008
NIRF Ranking 55th in INDIA, 1st in Gujarat

SOT

SCHOOL OF
TECHNOLOGY

LIQUID ENGINEERING LABORATORY



OBJECTIVES



INDUSTRY

- Applied Research
- Industry Proprietary Projects
- Consortium (JIP)



GOVERNMENT

- Skill Development
- World Class R&D Center
- Policy Making and Regulatory Facilitation:
 - Energy Security
 - Environmental Sustainability



ACADEMIC

- University Collaboration
- Fundamental (Basic) Research
- Teaching



Techno games

It is an interactive tool to simplify learning on lubricant technology. Technogames contain the following parts:

1. The Formulator
2. Viscosity Guru
3. Synth Racer

Diesel Particulate Filter

The rig demonstrates the advantages of using low SAPs (Sulphated Ash, Phosphorous, and Sulphur) oils in a DPF equipped vehicle.



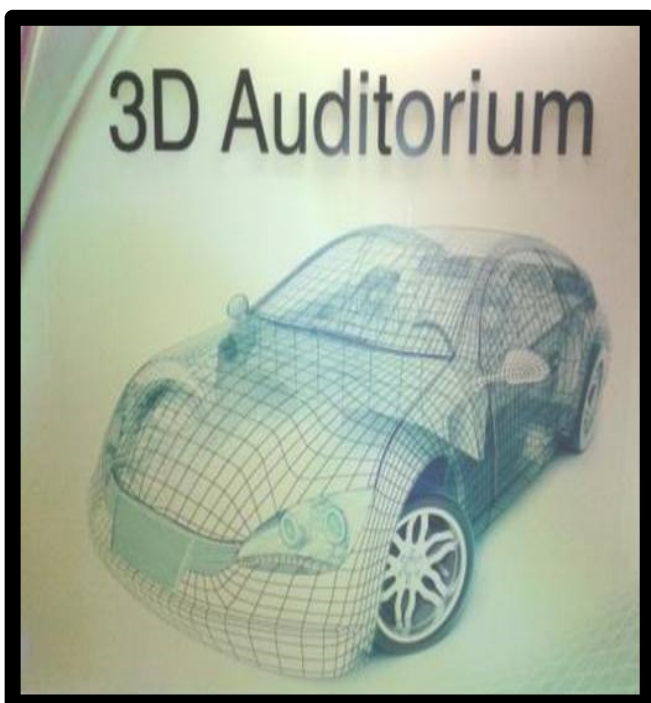
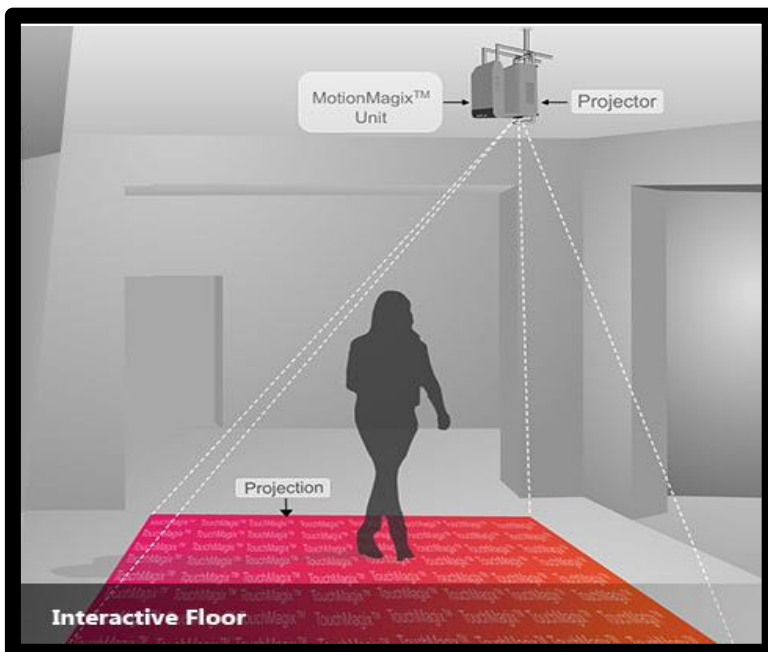


CAR ENGINE - Transaxle cut section

It is a cut section of an engine-transaxle used for demonstrating different components & oil properties required at each part in an interactive manner by using magnetic darts.

Motion Sensor

Demo used for creating VOV factor and also explaining product technologies and propositions in a simple manner by using interactive software which responds to the users movements on the floor



3D Auditorium

It is an auditorium wherein Castrol's technology, product development & blending capabilities are shown in the form of 3D videos.

Videos played are:

- 1) Oil drop in a engine
- 2) Tour to Castrol Silvassa blending plant
- 3) Detergency property of S3 Molecule of Castrol.

Technology Pod

POD is a Multipurpose Portable unit used for mini demonstrations

The demonstrations placed on the POD are:

- 1) Feel the difference: Highlights the advantages of synthetic oil over mineral oil using a mini demo.
- 2) Failures & Remedies: It is a 3 stage Android interactive game played using a tablet, involves Identifying different engine components, their failure modes & remedies associated with oil properties.
- 3) Lube Zone : The Demo displays different samples of raw materials used for formulating lubricants . The demo also consists of a game which provides detailed explanation of ingredients used in a lubricant. The game is played on android tablet.
- 4) Different Engine oil filters: Shows oil filters used in motor cycles, cars & trucks and explains how they are different.



Feel The Difference

The demonstration highlights the difference between synthetic & mineral oil in terms of viscosity. More the viscosity, more viscous losses resulting in less power & fuel economy.



Diesel Particulate Filter

The rig demonstrates the advantages of using low SAPs (Sulphated Ash, Phosphorous, and Sulphur) oils in a DPF equipped vehicle.





Capillary tube Manual Viscometer

1. kinematic viscosity is the measure of a fluid's inherent resistance to flow when no external force.
2. It Can measure the viscosity of three samples at a time.
3. Application : Engine Oil, gear Oil, hydraulic oils economy.



Pour Point

- 1 It is the minimum temperature at which a lubricants turns into semi-solid and almost losses its flow characteristics.
2. Fluid with a low pour point reduces viscosity ensuring greater pumpability and cooling and heat-transfer characteristics which is advantageous.
3. Can test four samples at a time(till -80°)
4. Application : Engine Oil, Gear Oil.



Color Comparator

1. This instrument is used for visual determination of the colour of oils and petroleum waxes.
2. Application: Engine Oil, Gear Oil, hydraulic oils

Copper strip corrosion test

It is useful for determining the presence of sulfur compounds in solvents. Sulfur compounds are disadvantageous because they impart odor and corrode the equipment.

Application : Engine Oil, Gear Oil, hydraulic oils



Karl Fischer method

It is used to determine trace amounts of water (moisture) in a sample and also for the sample with water contents in the ppm range.

Grease Penetrometer

1. It is a test apparatus which measures **penetration** which reflects the **consistency of grease**.
2. **Grease Penetration number** is the depth in tenth of millimeter to which prescribed weighted cone sinks into the grease sample.
3. Higher the penetration number, softer the grease and lower the penetration number, harder the grease.



Grease - Oil separation

This is useful for determination of the tendency of lubricating grease to separate oil at an elevated temperature.



Grease worker- Single cup

This instrument helps in preparing the grease for testing and to determine consistency of lubricating greases.

Grease drop point

1. The dropping point of a soap-thickened lubricating grease is the temperature at which it passes from a semi-solid to a liquid state under specific test conditions.
2. Dropping point is used in combination with other testable properties to determine the suitability of greases for specific applications.



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