



**Gujarat Technological University and
GIDC Degree Engineering College**



A one day seminar on
**“Fundamentals of Tribology at GIDC Engineering College
Abrama, Navsari”**

A curtain-raiser program for
**GTU’s International Conference on Advances
in Tribology
of 15 – 17 October 2013 at Ahmedabad**

Objective of the Seminar

The word tribology derives from the Greek root. It was coined by the British physicist David Tabor, and also by Peter Jost in 1964, a lubrication expert who noticed the problems with increasing friction on machines, and started the new discipline of tribology. Tribology is the science and technology of interacting surfaces in relative motion. Tribology tries to describe everything that happens when things rub together. One of research paper has reported that only 26 % engineers are available with tribological skills in India. Inadequacy of trained tribologists is a major bottleneck constraining operational excellence & challenging further growth of Indian industries. This issue directly results from inferior and inadequate tribological education and/or training infrastructure in the country, which are mostly inter-related.

One day seminar on ‘Fundamentals of Tribology’ was organized at GIDC Degree Engineering College, Abrama, Navsari on 4th October 2013. The objective of the seminar was to provide a meeting place for engineers coming from both, the industry and the academia to share fundamentals, last trends and challenges in different applications where tribology is involved.

This seminar was preconference part “International conference on Advances in Tribology and Engineering Sysyem” to be held on 15-17 October 2013 at Gujarat Technological University and L. D. College of Engineering Ahmedabad.

Steering Committee:

- Dr. Akshai Aggarwal, (Patron) Vice Chancellor, Gujarat Technological University, Ahmedabad.
- Dr. M. N. Patel, (Chairman) Principal, L. D. College of Engineering, Ahmedabad.
- Dr. H. C. Patel, (Coordinator) Associate Professor, L. D. College of Engineering, Ahmedabad.

- Dr. K. N. Mistry, (Co- coordinator) Principal GIDC Degree Engineering College, Abrama, Navsari.
- Dr. H. S. Patil, (Co- coordinator) Associate Professor (Mechanical) GIDC Degree Engineering College, Abrama, Navsari.

Programme Schedule:

10:00 to 10:30	<p>Inauguration Function</p> <p>Welcome address by Dr. K N Mistry, Principal</p> <p>Address by Dr. Dinkarbhai G Naik – Member, GES</p> <p>Address by Vinodbhai Desai – Member, GES</p> <p>Address by Shri. Mahadevbhai Desai – MD, SDCPL</p> <p>Address by Guest of Honour Shri. Ashok Shukla –Ex- President, VIA</p> <p>Address by Chief Guest Shri. A K Patel –, Member - GES</p> <p>Shri. M P Chavda – XEN. GIDC, Vapi</p> <p>Shri. Harishbhai Patel: Dy. Ex. Engg, GIDC, Valsad</p> <p>Shri. Maheshbhai Pandya</p> <p>Shri Pankajsingh Thakor, President, Chamber of Commerce-Navsari</p> <p>Shri Devang Desai, EM-Tech Fabricators GIDC Navsari</p> <p>Vote of Thanks by Dr. H. S. Patil</p>
10:30 to 10:45	Tea Break
10:45 to 1:00	<p>Shri. Janmesh Pandya</p> <p>Deputy General Manager</p> <p>Essar Steel India Ltd.</p> <p>(Speaker on Oil Analysis in Industry)</p>
1:00 to 1:30	Lunch Break
1:30 to 2:30	<p>Dr. H. C. Patel</p> <p>Associate Professo, L.D. College of Engineering, Ahmedabad.</p> <p>(Speaker on the topic of iCATES2013)</p>
2:30 to 3:30	<p>Dr. K. N. Mistry</p> <p>Principal, GIDC Degree Engineering College Abrama, Navsari, and</p> <p>Dean, GTU Ahmadabad,</p> <p>(Speaker on Fundamentals of Tribology)</p>
3:30 to 4: 00	<p>Shri. Devesh Patel</p> <p>Owner of Hundai Showroom, Navsari</p>
4:00 to 4: 30	Discussion & Valedictory



Chief Guest, Guest of Honour and Invitees on the dais



Welcome of Chief Guest Shri A. K. Patel by Dr. H. S. Patil



Welcome of Invited Guest Shri Vinodbhai Desai by Archana Naik



Welcome address by Principal Dr. K. N. Mistry



Shri A. K. Patel, Chief Guest of the function delivering the inaugural address



Shri Ashokbhai Shukala, Guest of Honour, addressing the participants



Address by Shri Mahadevbhai Desai



Address by Shri Mahadevbhai Desai



Vote of Thanks by Dr.H.S.Patil



Eminent gathering of the function

**Shri. Janmesh Pandya, Deputy General Manager, Essar Steel India Ltd.
(Speaker on Oil Analysis in Industry)**



**Discuss basic about Oil Analysis:
What is oil analysis and why should you do it?**

When you go for a medical checkup, a blood sample is usually taken and the results help the doctor determine if there are any problems with vital organs. Similarly, because oil is the lifeblood of machinery, analysis can help detect a developing problem in the oil-wetted path of a machine

Oil analysis has been used for at least fifty years for measuring the wear condition of machinery. The railroad industry discovered that the metals found in a sample of used oil revealed the condition of the wearing parts in the diesel engine. Likewise, oil analysis has been a mainstay in the military for monitoring the wear condition of aircraft jet engines and gearboxes. Heavy industry, however, was slower to appreciate the valuable insights that only oil analysis could bring to the predictive maintenance field.

Today, oil analysis is beginning to take its place alongside vibration monitoring as an indispensable and valuable element of industrial predictive maintenance.

- Examine the three facets of oil analysis.
- Explore how oil analysis complements vibration monitoring.
- Discuss the steps for establishing an oil analysis program.
- Provide advice on oil sampling.
- Offer thoughts on using your senses, postmortems, and quality

Discuss about the three Facets of Oil Analysis

There are three dimensions to lubricant analysis:

LUBRICANT , CONTAMINATION , MACHINE

Also Discuss about There are five main tests that are employed in oil analysis process, depending on the application: Viscosity, Oxidation, Water Content, Particle Count and Machine Wear Analysis



**Dr. H. C. Patel, Associate Professor, L.D. College of Engineering, Ahmedabad
(Speaker on the topic of iCATES2013)**

Our Speaker shares the knowledge about International Conference on Advances in Tribology and Engineering Systems i.e. ICATES 2013 helds on 15-17 October, 2013 at L. D. Engineering College.

During the last decade the industrial development has moved on fast putting which has witnessed progressed in various dimensions in the Gujarat State and worldwide. The things stand today tribology – a branch of science and technology of rubbing surfaces has become an integral part of day to day life. It is not surprising to see that in the human body the blood works as a lubricant. This means the bio tribology has been in existence since the inception of the human being. Therefore it was deemed appropriate to bring academicians and engineers under one platform to interact with one another. Thus, this conference has been designed to serve the purpose up to some extent in this direction. Very well this mutual sharing of knowledge may lead to solution of some tribological problems, ultimately leading to it using industrial design. Persons from industry and academic have been craving for the experimental aspects and theoretical aspects. So this conference may provide a platform to share their views which may concretize in the long run.

Fundamentals of Tribology



**Dr. K. N. Mistry, Principal, GIDC Degree Engineering College Abrama, Navsari, and Dean, GTU, Ahmadabad
(Speaker on Fundamentals of Tribology)**

Our Principal discusses the basic knowledge about Tribology. The scientific definition of Tribology can be derived, as “It is the science and technology of interacting surfaces in relative motion and applications related to such interactions during relative motion.

Also given us the example of tribology in day-to-day life. Shares with us the brief Fundamental about Tribology and also shares knowledge about current research topics in Tribological Process

- Tribological process in Engine components: mainly
- Piston Ring assembly and Valve Train system.
- Lubrication mechanisms.
- Lubricant formulations and its compatibility.
- Cylinder liner and follower shims materials and coatings.
- Tribo-chemistry, surface analysis and evaluation of friction, wear and molecule/elements transfer using Tribometers, Taly-Surf, Wyko white light interferometer, FEG-SEM, SEM-EDX, AFM, Raman spectroscopy, mini SIMS, Nano-Indenters and Optical Microscope.