



RECRUITMENT BROCHURE 2019-2020

Centre for Automotive Research and Tribology (CART)
(Formerly ITMMEC)



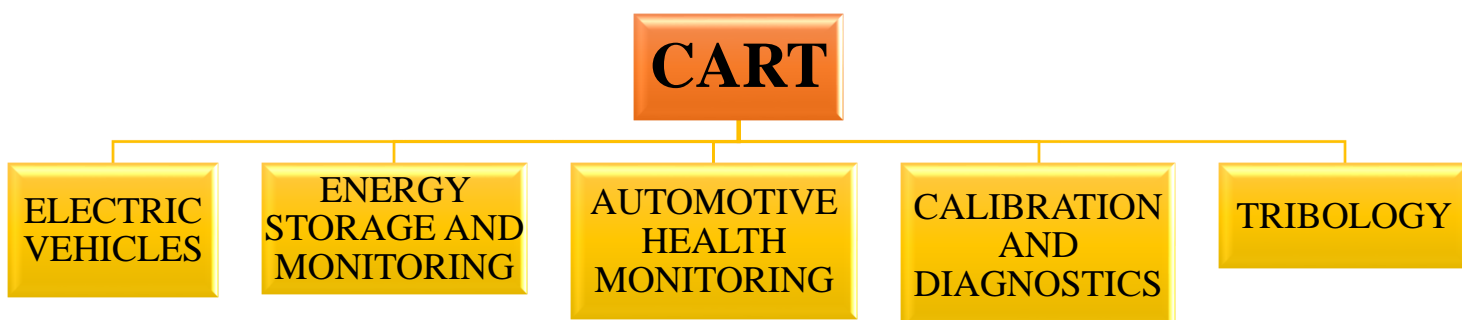
**INDIAN INSTITUTE OF TECHNOLOGY
DELHI**

ABOUT CART

Formerly known as ITMMEC, Centre for Automotive Research and Tribology (CART) envisages strong networking and collaboration among various industries, research labs and universities in India and abroad to carry out cutting edge research in the area of automotive research and tribology

Being an industry-oriented Centre, a strong emphasis is given on industrial problems which needs a deep understanding of alongside courses. The Centre introduces postgraduates to topics that are highly selective yet extremely important to any organization.

Coursework with focus on maintenance diagnostics tribology, lubrication, reliability etc. give students insight into areas which find great importance in working of any industry. Since students mainly have mechanical engineering background, with this additional knowledge they have an advantage over their peers in finding a niche in industry.



COURSES OFFERED

- ✚ Fundamentals of tribology
- ✚ Material for tribological application
- ✚ Noise monitoring and control
- ✚ RAM engineering
- ✚ Maintenance planning and control
- ✚ Diagnostic maintenance and condition monitoring
- ✚ Failure analysis and repair
- ✚ Bulk material handling
- ✚ Finite element analysis
- ✚ Vibration and noise engineering
- ✚ Fracture mechanics
- ✚ Lubricants
- ✚ Corrosion and its control
- ✚ Other electives

LAB FACILITIES

- ✚ Universal Tribometer
- ✚ Scanning Electron Microscope (SEM)
- ✚ Transmission Electron Microscope
- ✚ Pin-on-Disc Test Rig
- ✚ Ferrography
- ✚ Laser Particle Counter
- ✚ FFT Analyser
- ✚ Lubricant Testing
- ✚ 3D Profilometer
- ✚ Noise Measurement
- ✚ Acoustic Emission Measurement System
- ✚ Vibration Monitoring Equipment
- ✚ Gear Noise Analyser
- ✚ Ultrasonic Flaw Detector
- ✚ Magnetic Particle Inspection Unit
- ✚ Full Scale Inertia Brake Dynamometer
- ✚ Goniometer
- ✚ Elasto-Hydrodynamic Rig



UNIVERSAL TRIBOMETER



FULL SCALE INERTIA BRAKE DYNAMOMETER

PREVIOUS MTECH PROJECTS

- ✦ Condition monitoring of Pump.
- ✦ Exploring the cellular compatibilities of ceramic coatings on AZ91 alloy.
- ✦ Investigation of brake squeal using material,
- ✦ Noise and vibration characterization of the braking system.
- ✦ Development of green composite material.
- ✦ Pressure die casting of Mg alloys.
- ✦ Condition monitoring of Roller bearings.
- ✦ Development and application of sound intensity measurement and analysis programme.
- ✦ Tribological studies of Mg-RE composites.
- ✦ Prognostic studies of machinery components.
- ✦ Polymer composite for dry bearings.
- ✦ Fabrication and tribology of REO doped alumina-based composites.
- ✦ Exploring role of anion additives into green lubricants

CURRENT MTECH PROJECTS

- ✦ Cu-free brake pads for best tribo-properties and NV characteristics.
- ✦ Performance improvement of finished gear oils by inclusion of nano-particles.
- ✦ Oil based condition monitoring
- ✦ Tribology of adhesive joints.
- ✦ Lamb-wave based damage detection in composites.
- ✦ An investigation into the erosion resistance of bends in pneumatic conveying systems by flow modification.
- ✦ Application of motor current signature and vibration analysis for monitoring defects in vehicle/ball bearings.
- ✦ Comparison of acoustic emission, vibration and shock pulse monitoring for defect detection in slow speed thrust ball bearing.
- ✦ Study of noise control materials for electric vehicle application applications.
- ✦ Development of soft materials for damped tribological contact.
- ✦ Exploring the effect of graphene doping in high Silicon Al based alloy.
- ✦ Failure analysis of Army tank.
- ✦ Reliability analysis of mechanical system.
- ✦ Application of wireless condition monitoring for fault detection in rotating machines.

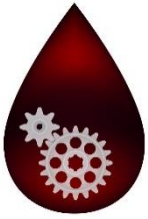
Focused Research Areas

- ✦ Development of tribo-materials, Tribo-dynamics, studies of Bulk material Handling, NVH, Condition monitoring, Reliability & Maintenance, Design And performance of tribological elements, Evaluation of brake material efficiencies – International project with IMERYYS (Switzerland).
- ✦ Development of nano oils (engines and Gears), nano greases – International project with TOTAL S.A (France).
- ✦ Ecofriendly materials for acoustical applications
- ✦ Multi-functional ceramic based coating sponsored by BARC
- ✦ Light metal alloys and composites
- ✦ Environmental friendly lubricants
- ✦ Development of dry bush bearing of high performance based on Polymer Composites
- ✦ Design, development and analysis of Electric Vehicle Motors and Drives.
- ✦ Automotive health monitoring and development of Battery management system.

PAST RECRUITERS

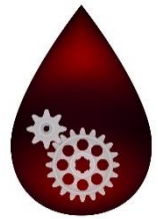


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