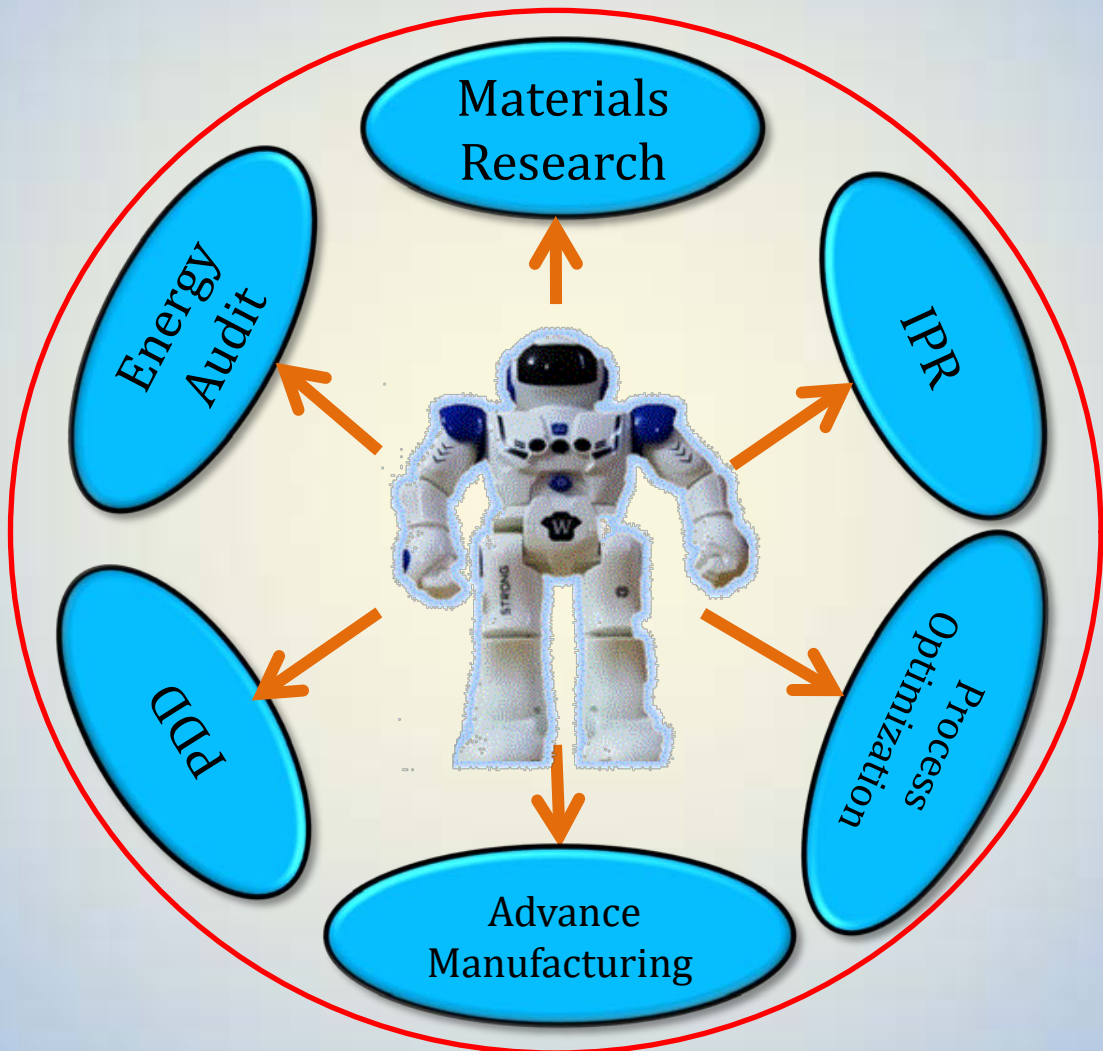




**DEPARTMENT
OF
MECHANICAL ENGINEERING**
(NBA Accredited UG Program)



RESEARCH & CONSULTANCY



College of Technology and Engineering
Maharana Pratap University of Agriculture and Technology
Udaipur - 313001 Rajasthan India
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MATERIAL TESTING



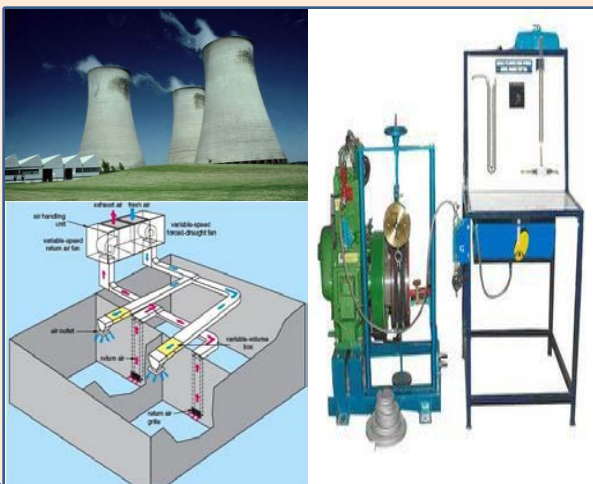
- ❑ Testing of mechanical strengths
- ❑ Microstructure evaluation for grain size, phase & inclusion detection
- ❑ Macro- and Micro- hardness evaluation & case hardening depth measurement
- ❑ End quench and Hardness testing of welds and castings
- ❑ Wear testing of ferrous and non-ferrous materials
- ❑ Coefficient of friction measurement
- ❑ Surface roughness testing with Mitutoyo Tester

ADVANCE MANUFACTURING

- ❑ NC Part programming training
- ❑ Hands on practice of CNC Lathe machine
- ❑ Programming and machining practice on CNC Milling
- ❑ Parametric study on Electric Discharge Machining (EDM)
- ❑ Die sinking and profile cutting
- ❑ Non-ferrous welding with TIG & MIG welding machines
- ❑ Ferrous and Aluminium Casting



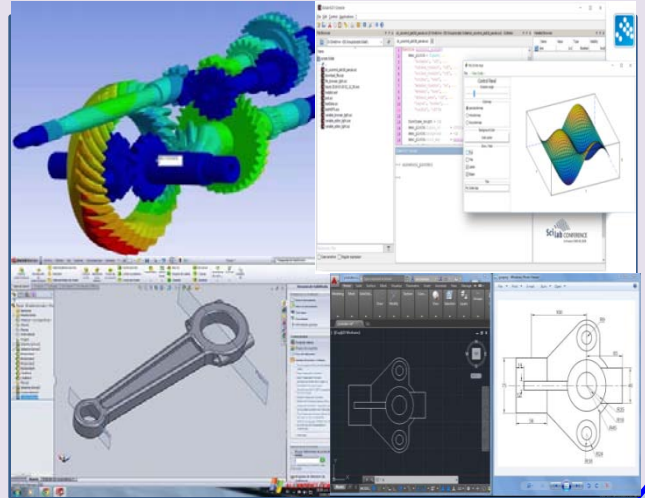
ENERGY AUDIT AND THERMAL ENGINEERING



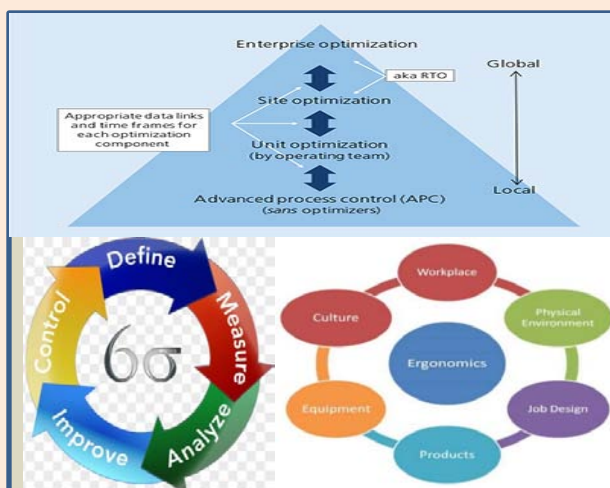
- ❑ Energy studies and audit for savings
- ❑ Alternate fuels for IC Engines
- ❑ Fuel property estimation as per ASTM/ BIS standards
- ❑ Emissions and performance analysis of IC Engines with computerized test rigs
- ❑ Thermal Analysis of cooling tower
- ❑ Geo-Thermal & Earth Tunnel studies
- ❑ Air conditioning design
- ❑ CFD analysis of Heat exchangers
- ❑ Fluid Engineering and Flow analysis

DESIGN AND COMPUTER AIDED ENGINEERING

- ❑ Exhaustive Training on AutoCAD software
- ❑ Solid modeling with Solidworks
- ❑ Finite Element Analysis with Abaqus and AnSYS software
- ❑ Numerical analysis and Simulation with SciLAB
- ❑ Development of new product
- ❑ Rapid Prototyping and 3-D Printing
- ❑ Use of MasterCAM software
- ❑ Fluid dynamics analysis (CFD)



PROCESS OPTIMIZATION AND PRODUCTIVITY TOOLS



- ❑ Productivity improvement studies
- ❑ Ergonomic analysis of work place & process
- ❑ Training on Lean Manufacturing tools (5S, Six-Sigma, etc.)
- ❑ Value Analysis and Engineering
- ❑ Process optimization
- ❑ Improvement in Work Methods
- ❑ Time Study for optimizing output
- ❑ Inventory Control and Optimization
- ❑ Operations Research Techniques

GUIDANCE ON INTELLECTUAL PROPERTY RIGHTS

- ❑ Prior Patent Search
- ❑ Drafting Patent Application
- ❑ Preparing Drawings and Illustrations for Design Protection
- ❑ Designing Trademarks
- ❑ Preparation of document for getting Copy Rights
- ❑ Support in filing Patent / Trademark / Design Protection / Copyrights Application with Indian Patents Office



RESEARCH EXPERIENCE

- ❑ Eight research grants from All India Council for Technical Education (AICTE) New Delhi worth INR 67.97 Lakh
- ❑ Four research project from Department of Science & Technology (DST) Rajasthan worth INR 2.19 Lakh
- ❑ Two research project from Petroleum Conservation & Research Association (PCRA) New Delhi worth INR 37.23 Lakh
- ❑ One research project from Ministry of New Energy Sources (MNES), New Delhi, worth INR 16.27 Lakh
- ❑ One research project from Science & Engineering Research Board (SERB), DST, New Delhi, worth INR 43.20 Lakh

CONSULTANCY & SERVICES OFFERED

- ❑ Surface roughness measurement for engineering and Bio-medical components
- ❑ Micro hardness testing for hardness depth post processing
- ❑ Microstructure evaluation for finding effects of heat treatment and material property evaluation
- ❑ Wear testing and friction analysis for life assessment of mating parts
- ❑ Product Design and Development with Solid Modeling and Rapid Prototyping using 3D Printer
- ❑ Condition Monitoring of machines through Vibration Signature to diagnose and prevent machine failure
- ❑ Energy audit as per Bureau of Energy Efficiency standards
- ❑ Assessment of Thermal Performance of machineries for Preventing Losses
- ❑ Study of existing processes for improving operational efficiency, productivity and cost reduction
- ❑ Design of machine components and FE analysis of designs
- ❑ Flow parameter study using Computational Fluid Dynamics (CFD)
- ❑ Mathematical modeling and simulation solution
- ❑ Hydraulic and Pneumatic actuation system designing
- ❑ Training on -
 - NC Part programming for students and machine operators
 - Stores and Inventory Management for Industry people
 - Number of vocational courses offered for skilling youth