

## *Mechanical Engineering Department (MED)*

Mechanical Engineering Department is well equipped with some modern machines and equipment in its 10 different shops & labs.

Trainees have the opportunity to get close interaction with these machines and equipment to get knowledge and hands on practice facility by learning in long session.

### **Basic Mechanical Training Lab**

Basic Mechanical Training Lab is well-appointed for the basic knowledge in core mechanical parts, machines & systems with the following units:

- Pump Training System
- Hydraulic Fundamentals Training System
- Mechanical Training System
- Laser Alignment Kit



### **Mechanical Drawing & Metrology Lab**

This laboratory is equipped with table model drawing board and different types of drawing equipment.

- Student practices here for the knowledge of vernier slide calipers, vernier depth gauge, vernier height gauge, vernier bevel protractor, cylinder gauge, micrometer, dial gauge etc.



## Mechanical Demonstration Lab

Construction and working principle of rotating machines are practiced with working model and cut-way model of pump, turbine, compressor etc. This lab is also equipped with different valves & pipe fittings, different types of bearing & seal system.



## Welding & Fabrication Shop

This shop is equipped with welding facilities which are commonly used nowadays e.g. Electric arc welding, Tungsten inert gas (TIG) welding, Metal inert gas (MIG) welding, Spot welding, Seam welding, Gas welding, Gas cutting, Plasma cutting, Brazing equipment etc. Toxic fumes are released to upper atmosphere by central exhaust system.



## Rotating Machinery Shop

This shop is equipped with various industrial type pumps, compressors, and gear boxes for assembly / disassembly practices. Overhead Crane facilities practice on handling of heavy dedicated machine parts also be done here.



## Mechanical Power Transmission & Alignment Shop

Different types of mechanical power transmission set-up and alignment benches facilitate the details study in mechanical power transmission and alignment practices. The laboratory is equipped with 7 different types of power transmission study benches fitted with driving and driven units which include rigid and flexible type straight coupling, spur gear coupling, fluid coupling and mechanical power transmission devices by belt and chain.



In this shop all methods of alignment technology are practiced i.e. gear alignment technique, both rigid & flexible coupling alignment, chain & sprocket, belt & pulley, machine train by precision & non-precision alignment methods.

## Mechanical Process Plant

The process plant is fitted with various valves operation, pump operation, by-pass lines along with main stream to introduce facilities for on-line troubleshooting practice. This plant is also used to correctness of pressure rating of seals and gaskets used in various joints and seal points.



Here have the facility for a single stream heat exchange plant incorporating centrifugal pump, reciprocating pump, gear pump, vane pump, diaphragm pump, vessels and heat exchangers, different types of pipes & pipe fittings.

## Non Destructive Testing (NDT) Lab

NDT Lab in TICI is one of the vital & practice oriented lab. All facilities of Non-Destructive Testing Methods (NDT) are available here.



This lab has the facilities for:

- Dye Penetration Testing (DPT)
- Magnetic Particle Testing (MT)
- Advanced Phased Array Ultrasonic Testing (UT)
- Eddy Current Testing (ET)
- Ultrasonic Thickness gauge
- Paint/Coating Thickness measurement (by Alcometer)
- Metal analyzer ( by Handheld XRF)

## Dynamic Mass Balancing & Machine Shop

In this shop a shop type dynamic mass balancing machine is extensively used for correction of dynamic mass unbalance of rotor of high speed rotating machines.



Highly sophisticated machine tools is also available here, such as – Precision Lathe machine, Universal Milling machine, Planomiller machine, Surface Grinding machine, Vertical Shaper machine, Horizontal Shaper machine, Colum/ Pillar Drilling Machine, Bench Drilling Machine , Radial Drilling Machine, etc.

## Valve testing and Repair bay

Valve testing and repair bay includes facilities for practice on repair and testing of different types of valves used in modern industries.



## Expert Service offered by Mechanical Engineering Department:

- Dynamic Mass Balancing of Rotating Machines both in shop & in site.
- Alignment of machines with highly qualified & experienced engineers.
- Calibration of Metrological Instruments.
- Vibration Analysis of high speed, highly sophisticated machines.



## List of Training in Mechanical Engineering Department:

### Some Up-gradation Training for Employee:

- Alignment Technology of Rotating Machines
- Inspection, Troubleshooting & Maintenance of Rotating Machines.
- Non – Destructive Testing (NDT) Methods
- Installation, Troubleshooting & Maintenance of Industrial Pumps
- Maintenance & Troubleshooting of Compressors and Turbines
- Bearing and Industrial Lubricants
- Welding Technology
- Mechanical Fabrication and Assembly
- Mechanical Maintenance
- Basic Mechanical Design by AutoCAD 2D & 3D

### Special Training for Universities:

- Industrial Technology on Mechanical Engineering

### Tailor Made Courses:

- As per clients requirements