



Mechanical Engineering Department

| Equipment Summary | | | |
|-------------------|------------------------|-------------------|-------------------------------|
| Sr. No. | Name of the Department | Total No. of Labs | Equipment Cost (Rs. in Lakhs) |
| 2 | Mechanical Engineering | 17 | 848.64 |

| Name of Laboratory | Cost (Rs in Lakhs) |
|--|--|
| Microsystems Engineering Lab | |
| <div style="display: flex; justify-content: space-around;">    </div> <ul style="list-style-type: none"> • 4-Axis CNC WEDM along with software • Nd: YAG pulse laser system along with 4 axis CNC gantry • 4- Axis CNC Milling Machine • microbalance • spot welding machine • stud welding machine • Mikrotol multi-purpose machining centre • Laser alignment system • Fiber laser system • Micro-Hardness tester • Laser Micrometer • Surface roughness measuring machine • XY Motorized Precision stage with controller • Digital Storage Oscilloscope • Metallographic Microscope make 'Nikon' LV150L • XYθ Motorized Precision stage with controller • 3 D profilometer | <p>19.97</p> <p>26.74</p> <p>7.63</p> <p>1.63</p> <p>1.36</p> <p>1.63</p> <p>55.24</p> <p>9.87</p> <p>19.68</p> <p>6.99</p> <p>4.11</p> <p>3.99</p> <p>1.74</p> <p>2.99</p> <p>10.96</p> <p>2.06</p> <p>9.00</p> |
| Total | 183.85 |

| Forbes Marshall Steam Technology Center | Cost (Rs in Lakhs) |
|---|--------------------|
| <div style="display: flex; justify-content: space-around;">    </div> <ul style="list-style-type: none"> • Packaged Boiler, 750 Kg/hr., 10 bar at 190oC • Thermocompressor, • Steam trap test rig • Effimax online efficiency monitoring system | <p>50.00</p> |
| Total | 50.00 |



| Fuels and Testing Lab | Cost (Rs in Lakhs) |
|---|--|
|  <p data-bbox="347 1115 1278 1400"> Computerized Multi-fuel Research Engine Test Rig PC based Computerized Multi cylinder Petrol Engine Test rig i) Wagon R Engine ii) Instrumentation iii) P-Theta software • Dynamometer VCR Component –I • VCR Component –II (D C Dynamometer) • 5 Gas Exhaust analyzer, Smoke meter • Computeries twin cylinder four stroke diesel engine with open ECU </p> | <p data-bbox="1442 1122 1481 1400"> 9.6 1.01 1.27 3.00 3.74 1.13 3.37 4.5 12.97 </p> <p data-bbox="1209 1462 1481 1489">Total 40.59</p> |

| Fluid Machinery Lab | Cost (Rs in Lakhs) |
|--|---|
|  <ul data-bbox="300 1883 655 2009" style="list-style-type: none"> • Francis Turbine • Pelton wheel • Kaplan Turbines • Electro Hydraulic trainer | <p data-bbox="1442 1883 1493 2009"> 3.10 2.98 3.28 1.45 </p> |



| | |
|--------------|--------------|
| Total | 10.81 |
|--------------|--------------|

| Eaton Fluid Power Lab | Cost (Rs in Lakhs) |
|---|---|
|  | |
| <ul style="list-style-type: none"> • Eaton fluid power simulator • Gear Pump Test rig • Hydraulic Press • Hydraulic Cut section | <p>27.00</p> <p>1.65</p> <p>1.00</p> <p>11.21</p> |
| Total | 40.86 |

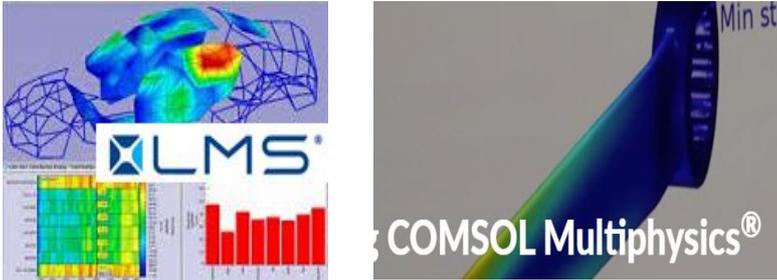
| I.C.Engine Lab | Cost (Rs in Lakhs) |
|--|---|
|  | |
| <ul style="list-style-type: none"> • 4 cylinder TCDE Test rig (a) Instrumentation and Dynamometer (b) Engine- Donated by TATA Motors • Horiba Gas Analyzer • Cooling Tower • 4 cylinder TCDE Test rig <li style="text-align: right;">Donated by Kirloskar Oil Engines, Pune • RICARDO Simulation Software (1-D and 3-D Engine Simulation) • AVL Boost Simulation Software (1-D and 3-D Engine Simulation) | <p>35.00</p> <p>35.00</p> <p>3.0</p> <p>3.5</p> <p>--</p> <p>--</p> |
| Total | 76.5 |

| | |
|--------------------------|-------------|
| Heat Transfer Lab | Cost |
|--------------------------|-------------|



| | | (Rs in Lakhs) |
|---|--|---------------|
|  <p>Air Flow Bench with Data Acquisition system. Flow Visualization using smoke technique. Thermal Imager, Attachment for experimentation on Single and Mutlijet impingement</p> <p>Emissivity Measurement Stefan Boltzmann Apparatus</p> <ul style="list-style-type: none"> • Pin fin apparatus, • Stefan Boltzmann apparatus, • Forced convection apparatus, • Emissivity measurement apparatus, • Thermal conductivity of insulating powder apparatus, • Thermal conductivity of liquid apparatus, • Heat exchanger apparatus, • Drop and film wise condensation apparatus, • Computerized Heat Exchanger test rig. | | 16.00 |
| Total | | 16.00 |

| Vibration and Acoustics lab | | Cost (in Rs. Lacs) |
|--|--|-----------------------|
|    | | |
| Electro-dynamic Vibration Shaker with Controller and Power Amplifier | | 12.15 |
| Modal Shaker | | 2.53 |
| 4-Channel Vibration Analyzer, Impulse Hammers, Miniature tri-axial accelerometers, Pressure field microphones | | 3.67 |
| Vibration analysis software, Modal analysis software, Non-contacting type tachometer | | 4.47 |
| Total | | 22.82 |

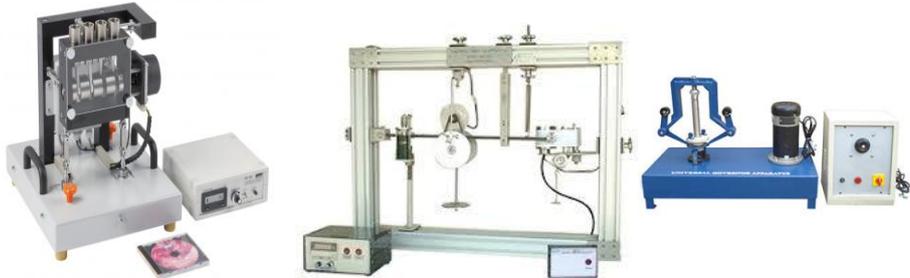
| Sound and Vibration Lab | | Cost (in Rs. Lacs) |
|--|--|-----------------------|
|  | | |



Estd-1854

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|------------------------------|-------------|
| LMS Virtual Lab Software CD | 6.75 |
| COMSOL version 4 Software CD | 1.3 |
| Total | 8.05 |

| Stress Analysis lab | | Cost (in Rs. Lacs) |
|---|---|---------------------------|
|  | | |
| <ul style="list-style-type: none"> • Universal Testing Machine (100 kN) • Computerized Axial Fatigue Testing Machine (40 kN) • Diffused Light Polariscope • Oscilloscope 4 Channel • Fatigue Testing Machine (Bending fatigue) | <p>9.76</p> <p>9.56</p> <p>1.33</p> <p>1.32</p> <p>4.72</p> | |
| Total | | 26.69 |

| Theory of Machines Lab | | Cost (Rs in Lakhs) |
|---|---|---------------------------|
|  | | |
| <ul style="list-style-type: none"> • Wear Test rig • Balancing Apparatus • Universal Vibration rig • Cam analysis apparatus • Universal Governor Apparatus | <p>10.00</p> <p>2.5</p> <p>10.00</p> <p>2.5</p> | |
| Total | | 25.00 |

| CAD-CAM Lab and Design Optimization | | Cost (Rs in Lakhs) |
|--|--|---------------------------|
|  | | |
| <ul style="list-style-type: none"> Auto CAD CATIA Ansys TK Solver Rel.5.0 Software Optistruct Hyperworks | <p>9.00</p> <p>8.94</p> <p>8.32</p> <p>4.95</p> <p>8.52</p> <p>23.16</p> | |



| | |
|----------------------|---------------|
| ProEngineers Creo | 8.33 17.00 |
| Total | 88.22 |

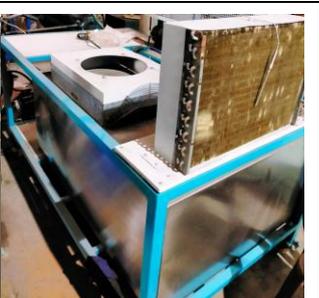
| ECM- Non Conventional Energy Lab | | Cost (Rs in Lakhs) |
|--|--|---|
|  <ul style="list-style-type: none"> • Ultrasonic Flow meter • Gas Chromatograph • 4 Heliostat Assembly • Trainer solar photovoltaic power generation • Solar flat plate collector • Trainer storage technology • Parabolic trough collector trainer • Test rig energy Audit 3 centrifugal Pumps • Test set up for evaluating performance of different solar photovoltaic panels | | <p>1.7</p> <p>4.77</p> <p>8.20</p> <p>3.3</p> <p>2.83</p> <p>6.3</p> <p>4.25</p> <p>1.4</p> <p>1.05</p> |
| Total | | 33.8 |

| Particle Image Velocimetry Laboratory | | Cost Rs. in Lakhs |
|---|--|------------------------------|
|  <ul style="list-style-type: none"> • Integrated Particle Image Velocimetry System • Experimental set up of flow visualization for flow around multiple bluff bodies | | <p>42.41</p> <p>1.5</p> |
| Total | | 43.91 Lakhs |

| PG Computational laboratory | Cost Rs. in Lakhs |
|------------------------------------|------------------------------|
| | |



| | | |
|---|---|---|
|  | <ul style="list-style-type: none"> • Computational Cluster • Workstations (12 Nos.) • Workstations (5 Nos.) • ANSYS | <p style="text-align: right;">22.83</p> <p style="text-align: right;">11.28</p> <p style="text-align: right;">5.625</p> <p style="text-align: right;">28.00</p> |
| Total | | 67.735 |

| Danfoss centre of Excellence Refrigeration and Air conditioning lab | Cost Rs. in Lakhs |
|--|--|
| <div style="display: flex;">    </div> <ul style="list-style-type: none"> • Vapour compression test rig • Air conditioning Test rig • Domestic refrigerator test rig • Water cooler test rig • Ice Plant • Test chamber • Condenser test rig | <p style="text-align: right;">45.00</p> <p style="text-align: right;">2.5</p> <p style="text-align: right;">0.5</p> <p style="text-align: right;">2.5</p> <p style="text-align: right;">5.6</p> <p style="text-align: right;">1.96</p> |
| Total | 58.06 |

| Laser and combustion Laboratory | Cost Rs. in Lakhs |
|--|------------------------------|
|--|------------------------------|



- Nd:YAG Laser
- i-SFEED 3 Camera
- Rigid Optical Table
- Constant volume combustion chamber
- Laser Energy Meter

55.75

Total

55.75