

DEPARTMENT OF MECHANICAL ENGINEERING

DETAILS OF THE INTERNAL COMBUSTION ENGINES LABORATORY

Name of the Laboratory	:	INTERNAL COMBUSTION ENGINES LAB
Name of the Lab In-charge	:	Dr. R. L. Krupakaran
Name of the Lab-Technician In-charge	:	Mr. P.Chiranjeevi
Area of the Lab	:	248 Sq.mts
Lab Occupancy	:	40 students
Description of the Lab	:	The Thermal Engineering Lab is installed in the hefty area with the latest equipment. Students have the hands-on training facility of assembly and disassembly of automobile components. The Lab is equipped with major equipments like 4-Stroke, 2-Stroke Petrol and Diesel Engines. Lab also consists most modern equipments like Multi Cylinder Engines, VCR Engine and Two Stage Reciprocating Compressor. The section models of engines and boilers etc. are extremely supportive for students to understand the concept.

LIST OF EXPERIMENTS

1.(a) Drawing Valve Timing Diagram using a model of 4 –S Diesel, CI engine (b) Drawing Port timing diagram of a model of 2-S , SI engine
2. Morse Test on 4-S, 4-C, Petrol Engine (Engine -1) using Hydraulic Loading
3. Retardation Test on 4-S, 1-C, Diesel Engine using Electrical Loading (Engine –II)
4. Performance Test on 2-S, 1-C, Petrol Engine using Electrical Loading (Engine III)
5. Determining Economic speed on 2-S, 1-C, Petrol Engine using Electrical Loading (Engine III)
6. Performance Test on 4-S, 1-C diesel Engine using Mechanical Loading (Engine IV)
7. Heat Balance Test on 4-S, 1-C diesel Engine using Mechanical Loading (Engine IV)
8. Performance Test on Variable Compression Ratio Engine (VCR Engine, Engine- V)
9. Motoring Test on VCR Engine (Engine-V)
10. Performance Test on 2-Stage Reciprocating Air compressor
11.(a) Determining Flash and Fire Point of Given Fuel (b) Study of boilers
12. Assemble and Disassemble of an IC engine

LIST OF EQUIPMENT		
S.NO	Name of the Major Equipment(Above Rs. 50,000)	Quantity
1	Single Cylinder, 4-stroke diesel Engine with heat balance facility	1
2	Single Cylinder, 2- Stroke petrol Engine	1
3	Multi Cylinder, 4-stroke Petrol engine with Morse test facility	1
4	4-Stroke Diesel Engine with retardation and motoring facility	1
5	Variable Compression Ratio (VCR) petrol engine test rig	1
6	Reciprocating air compressor unit	1
7	Bomb Calorimeter to determination of calorific values of solid and liquid fuels.	1
8	Orsat's apparatus for flue gas analysis and other latest electronic instruments.	1
9	Dead weight pressure gauge tester to calibrate the pressure gauge.	1
10	Vapour compression refrigeration unit	1
S.NO	Name of the Minor Equipment and Models(Below Rs. 50,000)	Quantity
1	De-Lavel Turbine (velocity compounded) Steam Turbine	1
2	De - Lavel Turbine with Transparent Window (Velocity Compounded) Steam Turbine	1
3	Pressure and Velocity compounded steam turbine	1
4	Air or steam pressure steam turbine(Pressure compound)	1
5	Pure Reaction Steam Turbine (Hero's)	1
6	Jet Condenser – Parallel Flow	1
7	jet condenser counter flow	1
8	Surface Condenser	1
9	Evaporative Condensor	1
10	Air preheater	1
11	Ejector Condensor	1
12	Model of Lancashire Boiler	1
13	Model of Cornish Boiler	1
14	Model of Babcock & Wilcox Boiler	1
15	Model of Locomotive Boiler	1
16	Model of Cochran Boiler	1
17	Model of vertical water tube boiler	1
18	Model of Lamont boiler	1
19	Model of Benson boiler	1
20	Model of Loeffler boiler	1
21	Model of Valox boiler	1
22	Model of Marcet Boiler	1
23	Model of stirling Boiler	1
24	Model of Nestler boiler	1
25	Lever Safety Valve	1
26	Spring Loaded Safety Valve	1
27	Dead Weight Safety Valve	1
28	Combined High Steam & Low Water Safety Valve	1
29	Water Gauge Model	1
30	Stop Valve Hopkinson Type	1
31	Feed Check Valve	1
32	Steam Injector	1
33	Pressure Gauge	1
34	Blow Off Cock	1
35	Reducing Valve	1

36	Fusible Plugs	1
37	Anti Priming Pipe	1
38	Expansion Steam Trap	1
39	Float Steam Trap	1
40	Green Economiser	1
41	Sudgen Super Heater	1
42	Sectional Working Model of 2 Stroke Petrol Engine	1
43	Sectional Working Model of 4 Stroke Petrol Engine	1
44	Sectional Working Model of 2 Stroke Petrol Engine	1
45	Sectional Working Model of 4 Stroke Petrol Engine	1
46	Gas Turbines or Turbojet Engine	1
47	Ram Jet Engine	1
48	Vankel Engine	1
49	Model of steam engine	1
50	steam engine model with a boiler	1
51	Steam Engine D Slide Valve	1
52	De-Level Turbine(velocity compounded) Steam Turbine	1
53	De - Lavel Turbine with Transparent Window (Velocity Compounded) Steam Turbine	1
54	Pressure and Velocity compounded steam turbine	1
55	Air or steam pressure steam turbine(Pressure compound)	1
56	Pure Reaction Steam Turbine (Hero's)	1
57	Jet Condensor – Parallel Flow	1
58	Sectional Model of 4-Stroke Diesel Engine for valve time diagram	1
59	Sectional Model of 2-Stroke Petrol Engine for Port time diagram	1
60	Abel's Apparatus for flash and fire point measurement	1
61	Pensky Martin's Apparatus for flash and fire point measurement	1
62	Cleveland's apparatus for flash and fire point measurement	1
63	Redwood and Say bolt Viscometers to determine viscosities	1
64	Conradson's Apparatus to determine carbon residue	1



INTERNAL COMBUSTION ENGINES LAB



4- STROKE MULTICYLINDER PETROL ENGINE



4-STROKE SIGLE CYLINDER DIESEL ENGINE TEST RIG



2- STROKE SINGLE CYLINDER PETROL ENGINE



VARIABLE COMPRESSION RATIO ENGINE TEST RIG



RECIPROCATING AIR COMPRESSOR TEST RIG



VARIOUS MODELS OF AUTOMOBILES AND THERMAL POWER PLANT