THERMAL ENGINEERING LABORATORY

LIST OF THE EUIPMENTS

1) OLD FIAT CAR ENGINE
2) TWO STAGE AIR COMPRESSOR
3) FOUR STROKE SINGLE CYLINDER DIESEL ENGINE
4) FOUR STROKE SINGLE CYLINDER PETROL ENGINE
5) FOUR STROKE MULTI CYLINDER PETROL ENGINE
6) VCR REFRIGERATION TEST RIG
7) (a)CUT SECTION MODEL OF 4 STROKE DIESEL ENGINE
   (b) CUT SECTION MODEL OF 2 STROKE PETROL ENGINE
8) SAYBOLT VISCOMETER APPARATUS
9) BOMB CALORIMETER

Name of the Equipment:	OLD FIAT CAR ENGINE

Specifications:

- **Engine:** 4 Stroke in line petrol engine of FIAT car
- **Cooling system:** Water cooling system
- **Fuel supply system:** Carburettor engine (type: Solex)
- **Lubrication system:** Full pressure lubrication system
- **Ignition system:** Spark ignition system
- **Working cycle:** 4 Stroke cycle
- **Thermodynamic cycle:** Otto cycle
- **Field of Application:** Automobiles
- **NO. of cylinder-** 4

Experiments that can be conducted:

1) To determine how to assemble and disassemble the engine components and observing the function of each component.

Name of the Equipment:	TWO STAGE AIR COMPRESSOR

Specifications:

- **Compressor Horse Power** : 3 H.P

	H.P	L.P
Bore (D):	63mm	87mm
Stroke (L):	82mm	82mm

Experiments that can be conducted:

1) To conduct performance test on reciprocating air compressor, to determine it's volumetric efficiency and Isothermal efficiency

Name of the Equipment:	FOUR STROKE SINGLE CYLINDER DIESEL ENGINE

FOUR STROKE SINGLE CYLINDER PETROL ENGINE

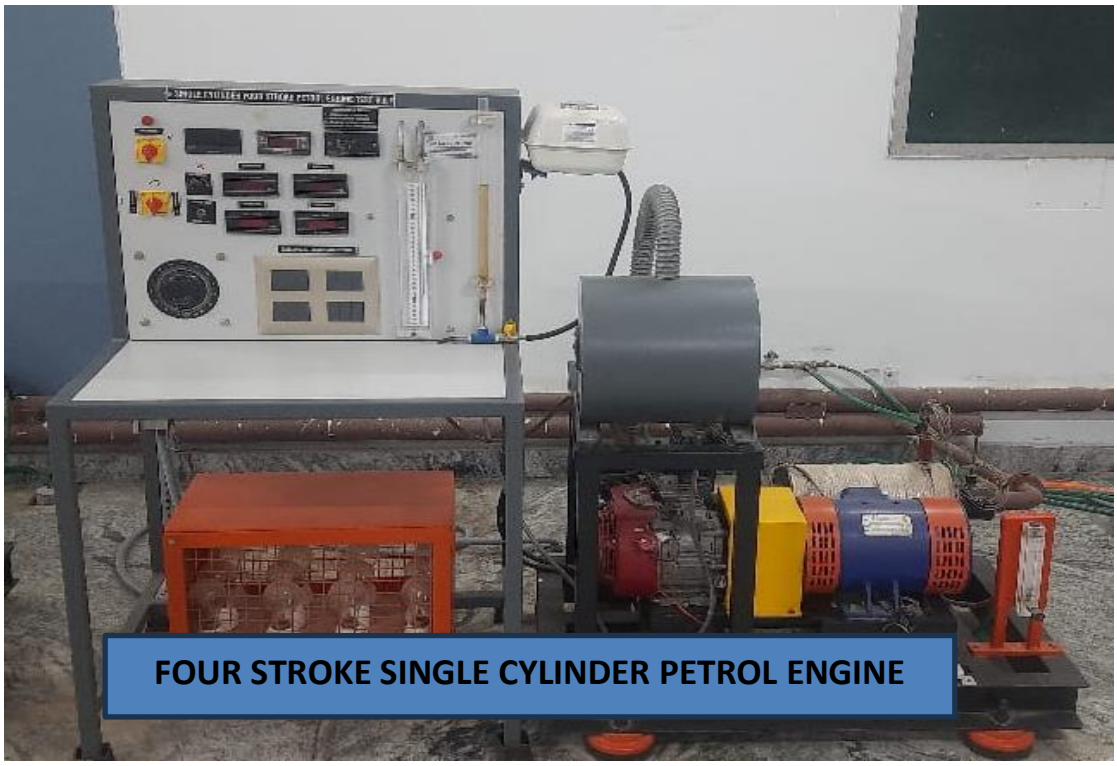
Specifications:

- **Make:** Kirloskar
- **BHP:** 5 HP
- **Speed**: 1500 rpm
- **No of cylinders**: one
- **Compression ratio**: 16.5:1
- **Bore:** 80 mm
- **Stroke**: 110mm
- **Orifice dia**: 20 mm
- **Type of ignition:** Compression ignition
- **Method of loading**: Rope brake
- **Method of starting**: Crank start
- **Method of cooling**: Water cooling

Experiments that can be conducted:

1) To conduct a load test on 4-stroke, single cylinder diesel engine, to study its performance under various loads.
2) To conduct a Heat Balance Test on a 4- stroke single cylinder vertical diesel engine at different loads and to draw up a heat balance sheet on minute basis.

Name of the Equipment:	FOUR STROKE SINGLE CYLINDER PETROL ENGINE



Specifications:

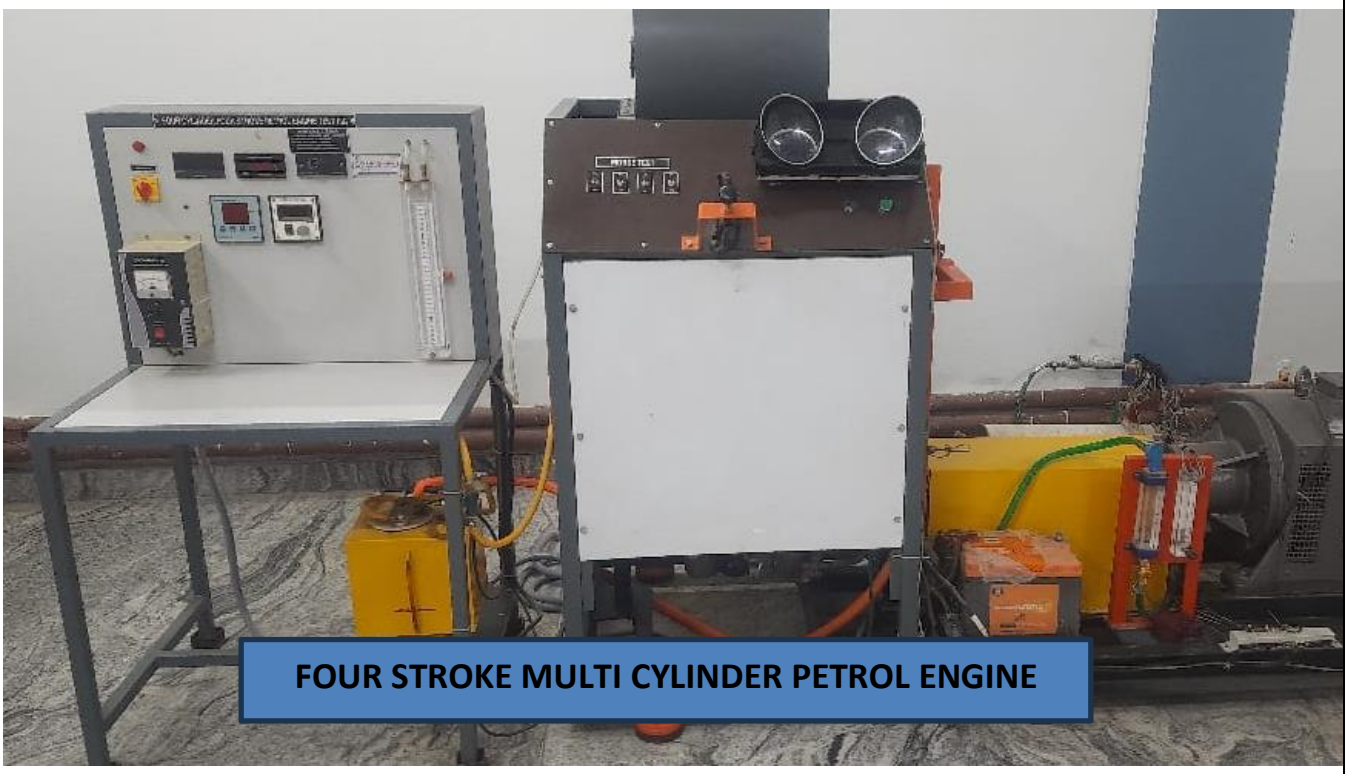
- **Engine :** Honda gx160
- **BP:** 2.9 KW
- **RPM:** 3000 RPM
- **Fuel:** Petrol
- **No of cylinders:** Single
- **Bore:** 68 mm
- **Stroke Length:** 45 mm
- **Starting:** Rope & pulley/motoring
- **Working Cycle:** Four stroke
- **Method of Cooling:** Air cooled
- **Method of ignition:** Spark ignition
- **Orifice diameter:** 20 mm
- **Compression ratio:** 4.67:1
- **Spark plug:** Mico w 16022

  Governor system: Mechanical

Experiments that can be conducted:

1) To conduct performance test on 4 stroke single cylinder petrol engine.
2) To conduct a Heat Balance Test on a 4- stroke single cylinder petrol engine at different loads and to draw up a heat balance sheet on minute basis.

Name of the Equipment:	FOUR STROKE MULTI CYLINDER PETROL ENGINE



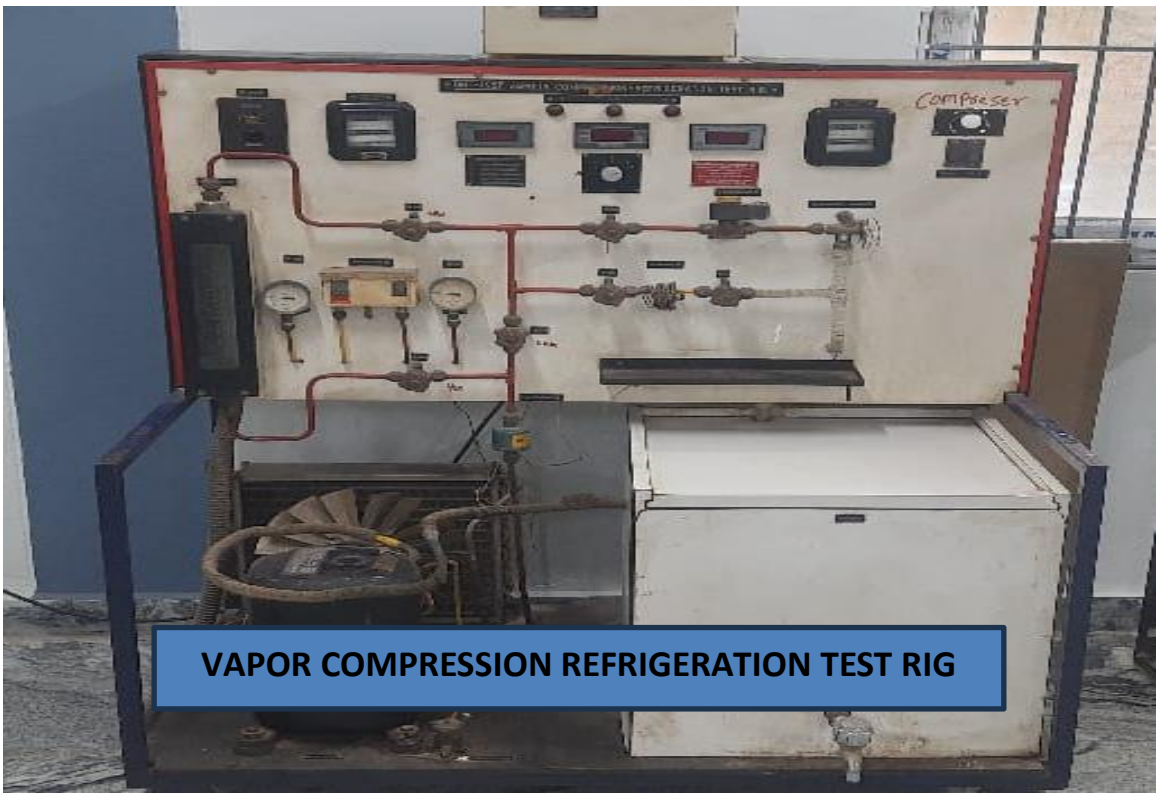
Specifications:

- **Engine Type:** Four Stroke Four Cylinder Engine
- **Engine Make:** Maruti swift
- **Rated Power output:** 81hp/62kw
- **Bore Diameter, D :** 73 mm.
- **Stroke Length, L :** 71.5 mm
- **Compression Ratio:** 13:0
- **Displacement:** 1197 cm^3
- **Starting:** Ignition
- **Cooling System:** Water Cooled
- **Loading:** Eddy current with torque controller
- **Speed Measurement:** Digital Speed Indicator with proximity sensor
  Air Flow Measurement: U-Tube Manometer

Experiments that can be conducted:

1) To conduct performance test on 4 stroke multi cylinder petrol engine.
2) To conduct a Heat Balance Test on a 4- stroke multi cylinder petrol engine at different loads and to draw up a heat balance sheet on minute basis.
3) To determine Mechanical Efficiency, Indicated power & Frictional power.

Name of the Equipment:	VAPOR COMPRESSION REFRIGERATION TEST RIG



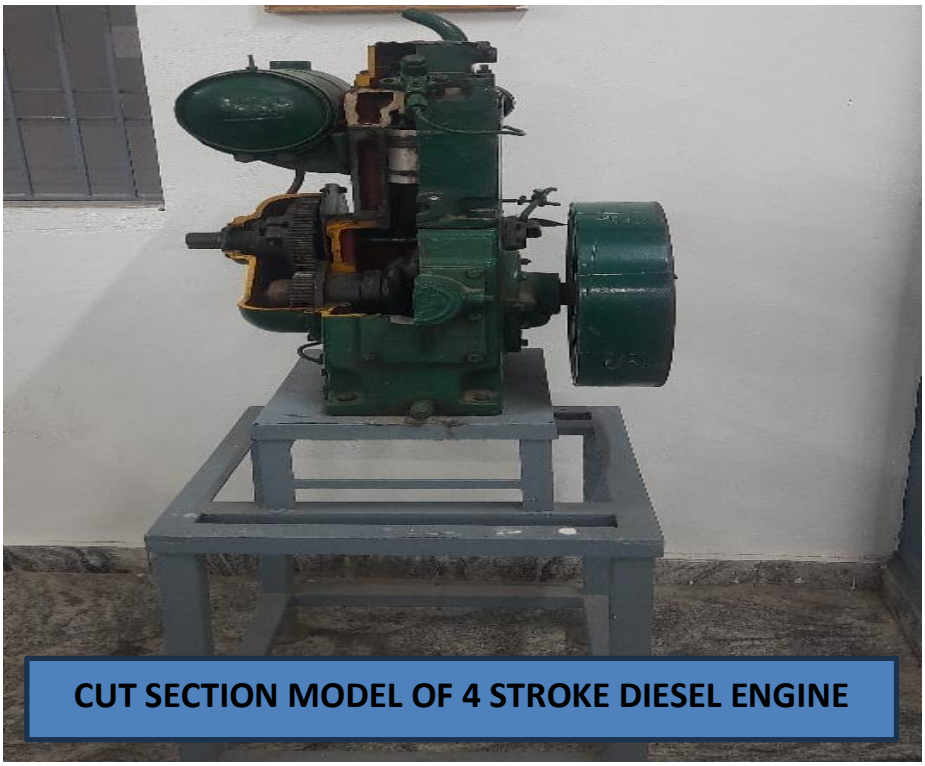
Specifications:

- **Tonnage Capacity**: 1.5 Ton
  Parts: Compressor, Condenser, 1-capillary tube and 1 thermostatic expansion valve, Evaporator

Experiments that can be conducted:

1) The aim of the experiment is to find COP (actual, theoretical, Carnot) using capillary tube as expansion device and solenoid valve as expansion device.

Name of the Equipment:	CUT SECTION MODEL OF 4 STROKE DIESEL ENGINE



Specifications:

- **Make:** kirloskar
- **BHP:** 5 HP
- **Speed**: 1500 rpm
- **No of cylinders**: one
- **Compression ratio**: 16.5:1
- **Bore:** 80 mm
- **Stroke**: 110mm
- **Orifice dia**: 20 mm

Type of ignition: Compression ignition

Experiments that can be conducted:

1) To analyze and plot the valve timing diagram for a four-stroke internal combustion engine, determining the precise opening and closing points of the intake and exhaust valves in relation to the crankshaft position.

Name of the Equipment:	CUT SECTION MODEL OF 2 STROKE PETROL ENGINE

Specifications:

- **Type:** 2-stroke, 2-stroke, air-cooled
- **Displacement:** 145 cc / 145.45 cc
- **Maximum Power:** 7.5 bhp (5.93 kW) @ 5500 rpm
- **Maximum Torque:** 10.8 Nm @ 3500 rpm

Ignition System: CDI electronic

Experiments that can be conducted:

1) To analyse and plot the Port Timing Diagram (PTD) for a two-stroke petrol engine, identifying the precise opening and closing points of the inlet, exhaust, and transfer ports relative to the crankshaft position.

Name of the Equipment:	SAYBOLT VISCOMETER APPARATUS

SAYBOLT VISCOMETER APPARATUS

Experiments that can be conducted:

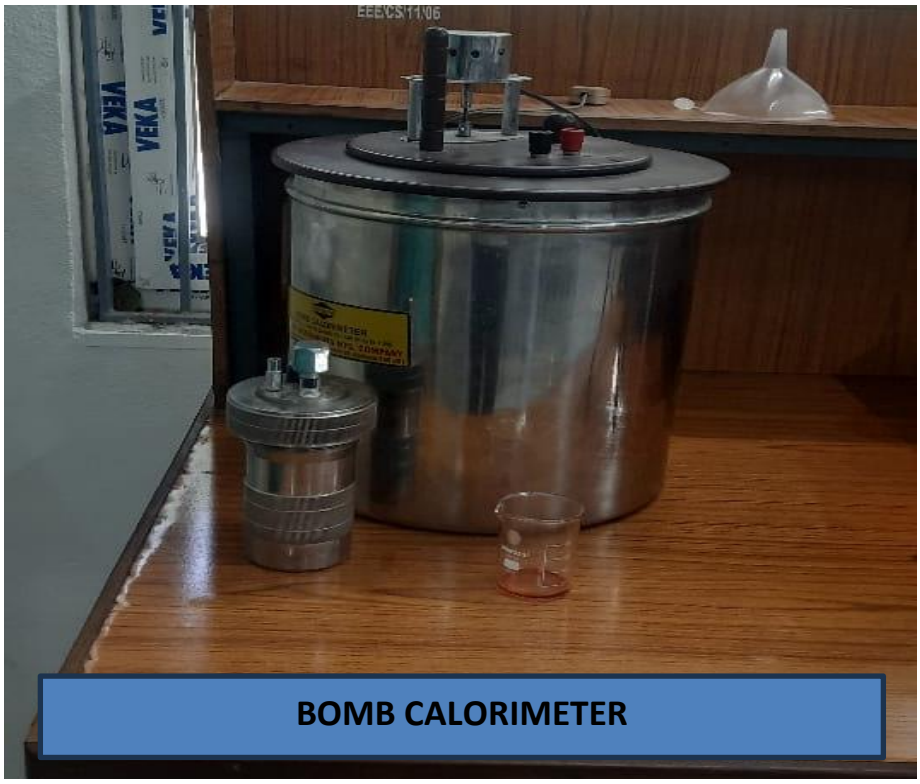
1) To determine the viscosity of a lubricating oil by using a saybolt viscometer.

Name of the Equipment:	CLEVELAND OPEN CUP APPARATUS

Experiments that can be conducted:

1) To determine the flash and power point temperatures of the given sample of lubricating oil using Cleveland open cup apparatus.

Name of the Equipment:	BOMB CALORIMETER



Experiments that can be conducted:

1) To determine the calorific value of the given fuel by bomb calorimeter.