Dr. D. Y. Patil Pratishthan's

DR. D. Y. PATIL INSTITUTE OF ENGINEERING, MANAGEMENT & RESEARCH AKURDI PUNE

DEPARTMENT OF MECHANICAL ENGINEERING

APPLIED THERMODYNAMICS LABORATORY

COURSE OBJECTIVES

- To get familiar with the fundamentals of I.C engines, construction and working principle of an engine, and testing of an engine for analyzing its performance.
- To study the combustion and its controlling factors in order to design efficient engine
- To study emissions from I.C. engines and its controlling methods, various emission norms.
- To understand theory and performance calculation of positive displacement compressors.

COURSE OUTCOMES

- Explain the basic components of IC engine and its working.
- Compare Air standard, Fuel Air and Actual cycle, and make out various losses in real cycles
- Explain the basic phases of combustion of SI and CI engines and knocking phenomenon.
- Explain the fuel feed system, starting system, ignition system, and turbo-charging.
- Carry out Testing of I. C. Engines and analyze its performance.
- Calculate the performance of compressors.

APPLIED THERMODYNAMICS IS THE SCIENCE OF THE RELATIONSHIP BETWEEN HEAT, WORK, AND SYSTEMS THAT ANALYZE ENERGY PROCESSES. THE ENERGY PROCESSES THAT CONVERT HEAT ENERGY FROM AVAILABLE SOURCES SUCH AS CHEMICAL FUELS INTO MECHANICAL WORK ARE THE MAJOR CONCERN OF THIS SCIENCE.

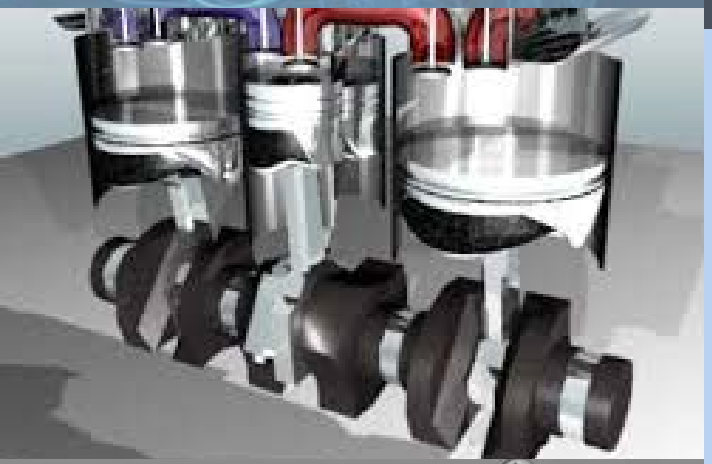
PREREQUISTITES

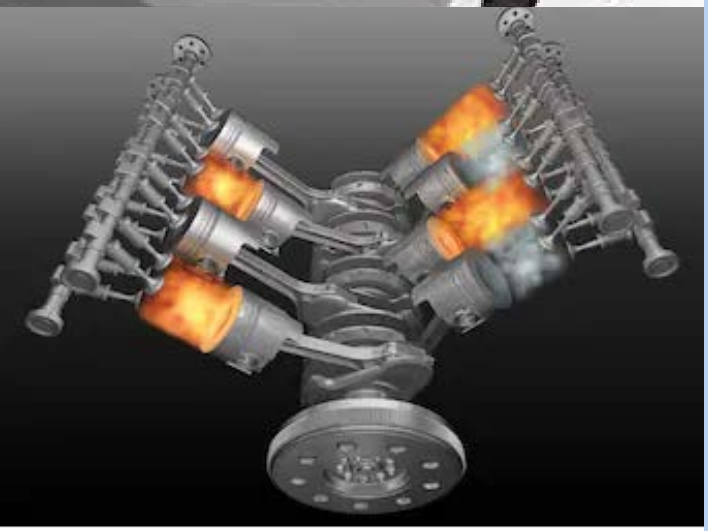
MATHEMATICS

ENGINEERING

THERMODYNAMICS

CHEMISTRY





APPLIED THERMODYNAMICSL APPLICATION AREAS

AUTOMOBILES

DESIGN & ANALYSIS OF DIFFERENT TYPES OF IC ENGINES.

DESIGN & ANALYSIS OF DIFFERENT TYPES OF ENGINES SYSTEMS SUCH AS STARTING, GOVERNING, COOLING, LUBRICATING ETC .

APPLIED THERMODYNAMICS ENGINEERING INDUSTRIES

BHARAT FORGE

TATA STEEL

Mahindra

Shipping Corporation of India

Cummins

SKF

JOHN DEERE

Kirloskar

Enriching Lives

APPLIED THERMODYNAMICS LAB FACILITIES

Computerized Single Cylinder Four Stroke Diesel Engine

Technical Specification

Make	Datacones Engg. Pvt. Ltd.
Model	Computerized Single Cylinder Vertical Diesel Engine Test Rig
Rated Speed	1500 Rpm
Rated Power	5 bhp/ 3.5 Kw
Starting By	Hand Cranking
Loading	Electric Loading
Bore Diameter	0.82 meters
Stroke length	0.11 meters
Compression ratio	16:1

APPLIED THERMODYNAMICS LAB FACILITIES

MULTI CYLINDER PETROL ENGINE TEST RIG

Technical Specification

No. of Cylinder of Engine	4
No. of Stroke of Engine	4
Dynamometer	Hydraulic Dynamometer
Bore Diameter	72 mm
Stroke Length	78 mm
Compression ratio	9.9:1
Calorific Value of Petrol	44000 KJ/Kg
Orifice Diameter	40 mm
Cooling Type	Water cooled engine

APPLIED THERMODYNAMICS LAB FACILITIES

TWO STAGE AIR COMPRESSOR TESTING

Technical Specification

No. of Cylinder of compressor	2
Bore Diameter	70 mm
Stroke Length	66 mm
Coefficient of Discharge	0.64
Orifice Diameter	12 mm
Maximum working pressure	12 Kg/cm2
Air receiver Capacity	160 liters
Motor	2 HP Phase, rpm induction motor with starter