

Engine Test Setup (Computerised) ...Code 224



Single cylinder, Four stroke, Diesel



Description

The setup consists of single cylinder, four stroke, Diesel engine connected to eddy current type dynamometer for loading. It is provided with necessary instruments for combustion pressure and crank-angle measurements. These signals are interfaced to computer through engine indicator for P θ –PV diagrams. Provision is also made for interfacing airflow, fuel flow, temperatures and load measurement. The set up has stand-alone panel box consisting of air box, fuel tank, manometer, fuel measuring unit, transmitters for air and fuel flow measurements, process indicator and engine indicator. Rotameters are provided for cooling water and calorimeter water flow measurement.

The setup enables study of engine performance for brake power, indicated power, frictional power, BMEP, IMEP, brake thermal efficiency, indicated thermal efficiency, Mechanical efficiency, volumetric efficiency, specific fuel consumption, A/F ratio and heat balance. Labview based Engine Performance Analysis software package “Enginesoft” is provided for on line performance evaluation.

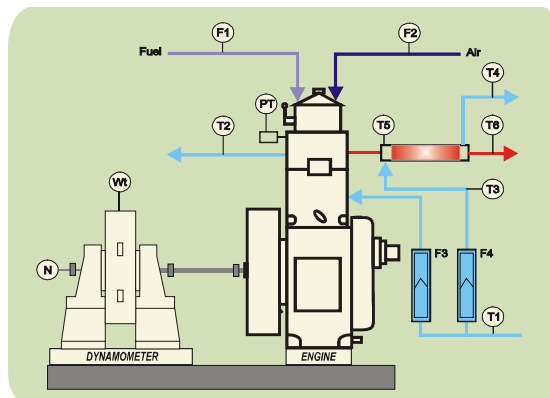
A computerized Diesel injection pressure measurement is optionally provided.

Features

- Online measurements and performance analysis
- P θ -PV plots, performance plots and tabulated results
- Data logging, editing, printing and export
- Configurable graphs
- IP, IMEP, FP indication
- Combustion analysis
- Valve timing diagram study

Range of Experiments

- Study of engine performance (Manual mode)
- Study of engine performance (Computerised mode)
- Study of pressure volume plot and indicated power
- Study of valve timing diagram



Utilities Required

Electric supply

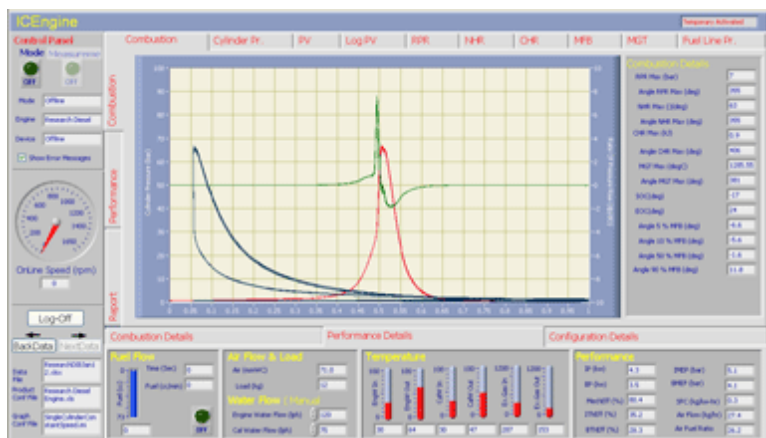
230 +/- 10 VAC, 50 Hz, 1 phase

Computer

IBM compatible with standard configuration

Water supply

Continuous, clean and soft water supply @ 1000 LPH, at 10 m. head. Provide tap with 1" BSP size connection



Software

EngineSoft is Labview based software package developed by Apex Innovations Pvt. Ltd. for engine performance monitoring system. EngineSoft can serve most of the engine testing application needs including monitoring, reporting, data entry, data logging. The software evaluates power, efficiencies, fuel consumption and heat release. It is configurable as per engine set up. Various graphs are obtained at

different operating condition. While on line testing of the engine in RUN mode necessary signals are scanned, stored and presented in graph. Stored data file is accessed to view the data graphical and tabular formats. The results and graphs can be printed. The data in excel format can be used for further analysis.

Specifications

Product	Engine test setup 1 cylinder, 4 stroke, Diesel (Computerized)
Product code	224
Engine	Make Kirloskar, Model TV1, Type 1 cylinder, 4 stroke Diesel, water cooled, power 5.2 kW at 1500 rpm, stroke 110 mm, bore 87.5 mm. 661 cc, CR 17.5
Dynamometer	Type eddy current, water cooled
Propeller shaft	With universal joints
Air box	M S fabricated with orifice meter and manometer
Fuel tank	Capacity 15 lit with glass fuel metering column
Calorimeter	Type Pipe in pipe
Piezo sensor	Range 5000 PSI, with low noise cable
Crank angle sensor	Resolution 1 Deg, Speed 5500 RPM with TDC pulse.
Data acquisition device	NI USB-6210, 16-bit, 250KS/s.
Piezo powering unit	Model AX-409.
Temperature sensor	Type RTD, PT100 and Thermocouple, Type K
Temperature transmitter	Type two wire, Input RTD PT100, Range 0–100 DegC, I/P Thermocouple, Range 0–1200 DegC, O/P 4–20mA
Load indicator	Digital, Range 0-50 Kg, Supply 230VAC
Load sensor	Load cell, type strain gauge, range 0-50 Kg
Fuel flow transmitter	DP transmitter, Range 0-500 mm WC
Air flow transmitter	Pressure transmitter, Range (-) 250 mm WC
Software	“Enginesoft” Engine performance analysis software
Rotameter	Engine cooling 40-400 LPH; Calorimeter 25-250 LPH
Pump	Type Monoblock
Overall dimensions	W 2000 x D 2500 x H 1500 mm
Optional	Computerized Diesel injection pressure measurement



Specifications subject to change without notice

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