

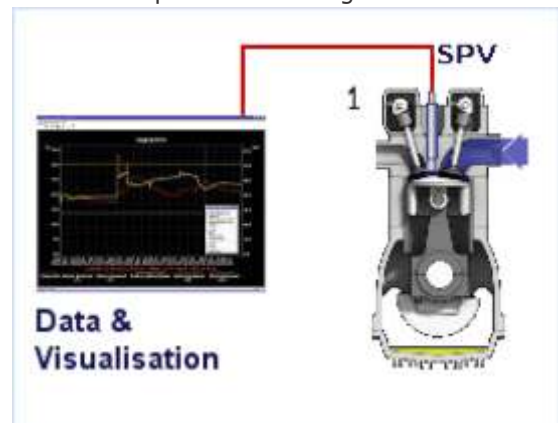


### Features

- Designed for comprehensive analysis of performance of different automobile engines.
- Digital Instruments for measurement of parameters like fuel consumption, air flow, temperature and RPM etc.
- Demonstration of performance of Petrol & Diesel; Engines at different throttle settings & Loads.
- SCADA based Data Acquisition system for performance monitoring.

Engine Test Bed Order Code : 32724 is designed to facilitate testing of different automobile engines. The test bed is complete with eddy current dynamometer and measuring instruments for measuring key engine parameters required for performance analysis of an engine. The test bed can be designed for testing of both petrol & diesel engines of passenger cars, rated up to 80 kW. The test bed consists of a water cooled eddy current dynamometer fixed on a heavy-duty steel frame. The test bed is designed in such a way that the engine to be tested can be quickly coupled to the dynamometer with minimum effort. The test bed is equipped with dynamometer control panel with necessary safety instruments. The Engines can be used for performance tests for different loads and speeds under various throttle opening conditions. The

eddy current dynamometer provides a variable load on the engine, allowing the characteristic power and torque curves to be reproduced in the laboratory. The system comes complete with extensive instrumentation, including rpm measurement, torque (from which power can be calculated), plus various temperatures, Fuel Consumption, Air Consumption. Different optional accessories are available to integrate with the Engine Test Bed for comprehensive engine performance analysis. These include the exhaust gas calorimeter (For Heat Balance Sheet), advance Data Acquisition System & P-V Diagram module for computerized testing.



Note: Specifications are subject to change.

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### Specifications

- Eddy Current Dynamometer: Capacity: 7.5 kW – 50KW/10BHP – 75BHP, Water Cooled
- Dynamometer Controller
- Engine: a. 200 cc to 2000cc, Air Cooled/Water cooled Spark ignited, Recoil Start Single to Four Cylinder Four Stroke Petrol Engine mounted on frame b. 400 cc to 2500cc, Air Cooled/ Water cooled Compression ignited Single to Four Cylinder Diesel Engine mounted on frame (Note: Additional and or other Engines can be supplied on request.)
- Air Box with Orifice plates for Air flow measurement.
- Coupling: Either Engines can be coupled at a time to the Eddy Current Dynamometer
- Fuel Tank: 1 Tank each for Petrol & Diesel.
- Propeller shaft with protective covering.
- Measuring Instruments, Sensors & Transmitters –
- Engine RPM Sensor & RPM transmitter
- Calorimeter
- Water Flow rate transmitter
- Pressure Transmitter Sensor (P-Theta & P-V arrangement)
- Encoder (P-Theta & P-V arrangement)
- Fuel Level Sensors
- Fuel Cell transmitters
- Temperature Sensors
- Torque Sensor
- Load Cell
- Load Cell transmitter
- Air Flow Sensors & Transmitters
- Data Interface Modules: a) Fast ADC b) Slow ADC
- Data Communication
- RS485 to USB Converter
- CD/DVD containing:
- NI based SCADA Software for engine data logging, single user license
- Driver for RS485 to USB Converter



### Accessories

- Battery for starting the engines
- Set of Anti Vibration Pads(Optional)
- Auxiliary cooling unit for engine
- Exhaust Gas Calorimeter (Optional)
- Cooling Water Flow Transmitter
- Pipe In pipe type heat exchanger
- Thermocouples for water & gas temperature.
- SCADA based & Software
- Signal Converters
- P-V Diagram Module
- Engine cylinder pressure
- Crank angle Encoder

### Experiments

- Investigate Engine Performance at different Throttle Settings & Load conditions.
- Calculation of Mechanical Efficiency & Plot brake power versus mechanical efficiency.
- Measurement & Calculation of Volumetric efficiency.
- Measurement & Calculation of specific fuel consumption
- Measurement & Calculation of brake thermal efficiency
- Determining air / fuel ratios
- Heat Balance Test (With Optional Exhaust Gas Calorimeter)
- Study of P- q & P – V Diagram for Engine (With optional P-V Module & Data Acquisition System).



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