

DYNASPEDE IC ENGINE TEST RIG

With decades of experience in building custom built test rigs, DYNASPEDE has come out with IC engine test rigs specially designed to cater to the education institute laboratory application. Complete engine test rig is offered in ready to use condition. Equipped with latest Dynamometers and DSP based software controlled electronic control system, the rig can be connected to the computer for operation and data storage with the help of user friendly software, designed for easy operation.

DYNASPEDE ENGINE TEST RIG is designed to conduct performance study on Water Cooled/Air Cooled Single/Multi Cylinder Diesel/Petrol Engine.

The test rig is designed to load the engine and record:

- Speed and Torque
- Fuel consumption in specified time at specified torque value
- Engine friction.
- Exhaust Gas Temperature
- Cooling water temperature

For evaluation of

- Engine Torque v/s Speed Characteristics
- Brake Horse Power (BHP)
- Frictional Horse Power (FHP)
- Indicated Horse Power (IHP)
- Fuel consumption at rated torque
- Mechanical efficiency
- Thermal Efficiency
- Air fuel ratio

The major system components shall include:

Base Plate :

All the test rig elements including the dynamometer, transducers for torque and speed, needed couplings and transmission elements, engine is mounted on a common MS Fabricated bed plate.

Engine : Engine of reputed make will be supplied and mounted on the common base plate.

Fuel quantity measurement : Gravimetric type fuel measurement is adopted for correct measurement of fuel consumption by the engine.

Temperature Measurements : Suitable temperature sensors with signal conditioners are provided to measure the exhaust gas and outlet water temperature.

Inlet Air Flow Measurement : A flow sensing device is adopted for measuring inlet air flow.

Inlet Cooling Water Quantity Measurement : A flow meter is employed to measure the inlet cooling water flow.

Coupling the engine to the Dynamometer A Cardan shaft with universal joints is used to couple the engine to the Dynamometer .

Engine Starting Arrangement (optional):

A starter motor with Battery and battery charging unit is supplied for easy starting of the engine.

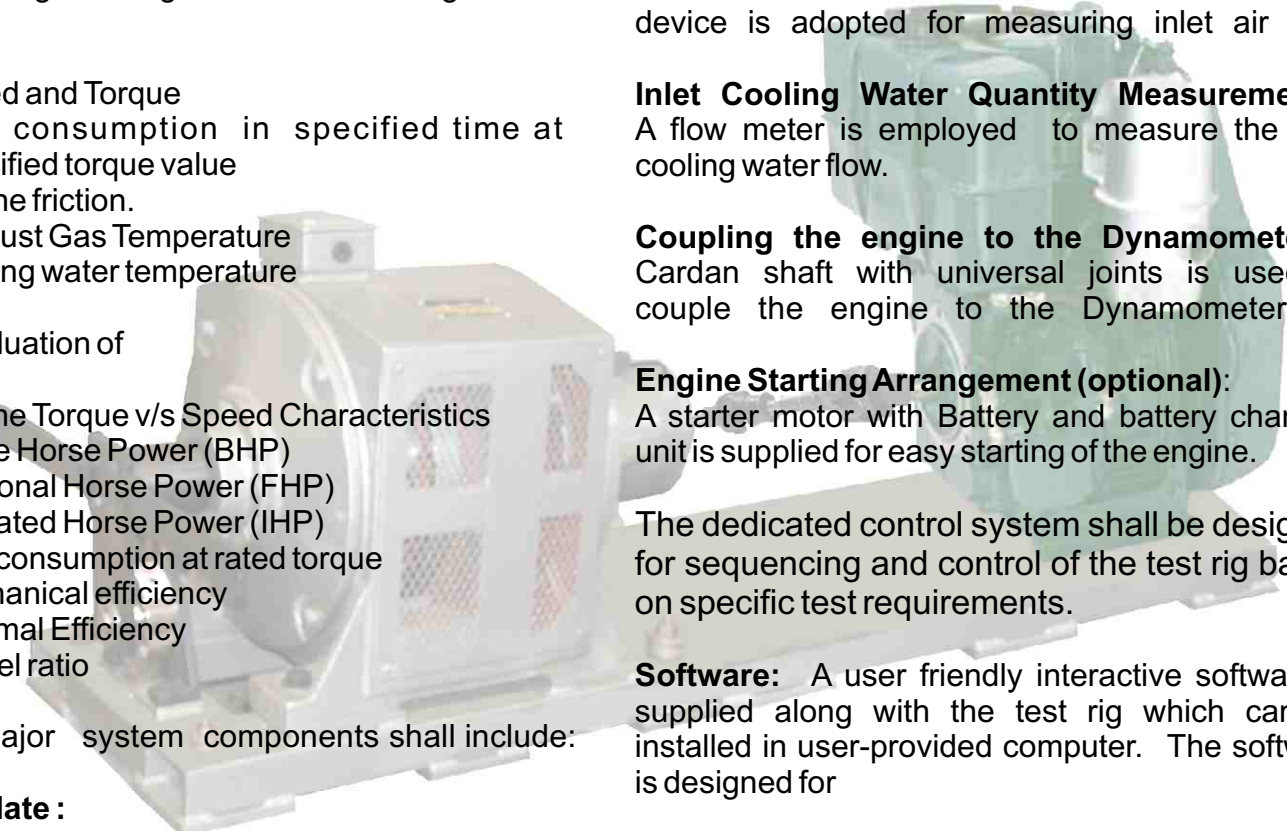
The dedicated control system shall be designed for sequencing and control of the test rig based on specific test requirements.

Software: A user friendly interactive software is supplied along with the test rig which can be installed in user-provided computer. The software is designed for

1. Conducting test & acquiring test data
2. Tabulation of the data in the form of report
3. Plotting of Characteristic curves
4. Printing of reports and Characteristic curves

Braking devices / Dynamometer :

Dynaspede offers one of **the widest variety of braking devices / dynamometers** for the engine test rig. Depending on the specific applications and torque-speed characteristics of the engine, the most appropriate type of braking device can be selected. Salient features of the same are given over-leaf.



Braking devices / Dynamometers...from 10 Ncm up to 1500 Nm



EDDY CURRENT :

Salient features:

- ◇ Available in different speed ranges
- ◇ Suitable for loading prime movers that develop torque, gradually increasing with speed or constant torque over mid- to- high speed ranges.
- ◇ Available in self cooled, water cooled and coolant cooled models

MAGNETIC PARTICLE (POWDER) :

Salient features:

- ◇ Set torque is fairly stable right down to zero speed
- ◇ Speeds of operation up to 3000 rpm, depending on the model
- ◇ Low inertia, dynamically balanced rotors
- ◇ Low residual torque, as specified for each model
- ◇ Available in water cooled models



PNEUMATIC :

Salient features:

- ◇ Set torque is fairly stable right down to zero speed
- ◇ Speeds of operation up to 2000 rpm, depending on the model
- ◇ Low inertia, dynamically balanced rotors
- ◇ Low residual torque, as specified for each model
- ◇ Bi-directional operation
- ◇ Built-in filter-regulator and electric/pneumatic converter

AC / DC MOTORING :

Salient features:

- ◇ Low Inertia construction
- ◇ High response
- ◇ High degree of control stability and repeatability
- ◇ Available in low to medium power ratings and for wide speed range
- ◇ Models available for full regeneration of power to the mains
- ◇ Capable of monitoring the system / friction losses
- ◇ Models available for performing inertia / road load simulations



All the above braking devices are available with integral speed and torque sensor and suitable for bi-directional operation

Control options for the braking devices:

For simple torque control, we offer a wall mounted exciter unit...with necessary operator controls mounted on front door of the cabinet such as- Main Power ON/OFF switch, Torque setting potentiometer and Digital Torque & Speed indicators



For high-end control, we offer DSP based programmable digital controller. The feature-packed controller has - Speed and Torque operating modes, a 32 Chars X 1 Line LCD backlit LCD display with membrane keypad, RS-232 interface (Serial communication), capability for high speed data Acquisition (100 data points per sec). The controller also has provision to conduct No load test, Load test, Cyclic load test and Dynamic test.



For specific details and assistance, contact:



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