

## System Features

### Basic Unit

- Compact, comprehensive, sturdy design
- Complete instrumentation for experimentation of I.C. Engine performance.
- Direct reading of parameters like fuel consumption, air flow, temperature and RPM etc.
- Demonstration of performance of I.C. Engine at different load.
- Fault Trainer as optional attachments.

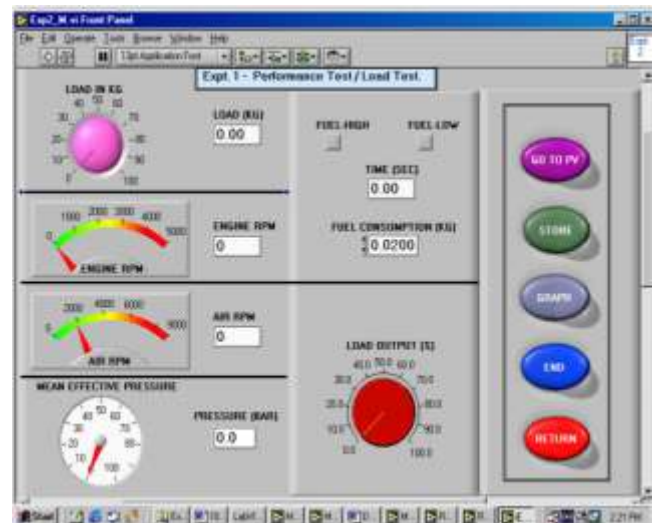
### Computerization Unit

- Data Acquisition with high performance, various function parameter IP & OP.
- Low cost, Portable, compact comprehensive design
- Complete instrumentation for reading different parameters & calculations of Engine Performance.
- Very high -speed dynamic signal acquisition is possible.
- Computerized Load or speed control attachment as optional accessories.

## System Description

### Basic Unit

Study of performance of internal combustion engines & its calculation is important feature of this trainer. System is having unique feature of calculating all



efficiency of internal combustion engine including heat balance sheet. The Engine & Dynamometer is mounted on base structure. Sci-tech Engineers have design the system in such fashion that easily operate; demonstrated & requisite experimentation can be performed. System has facility of measuring Engine brake load, speed, consumption of air, consumption of fuel, temperature at different locations, mass flow of water.

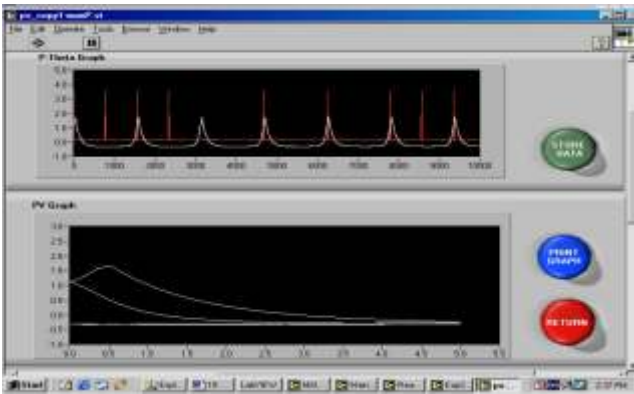
Note: Specifications are subject to change.

## Tesca Technologies Pvt. Ltd.

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### Computerization Unit

System is having unique feature of direct reading & automatic calculating all efficiency & heat balance sheet of internal combustion engine. The online graphical representation of important parameter is displayed on screen to see effect of change in load or speed. Final result & graph are in built available in software. System has facility of measuring Engine brake load, speed, consumption of air, consumption of fuel, temperature at different locations, mass flow of water.



### P-q / P-V Arrangement Console

System is having unique feature of direct Engine Dynamic Pressure & Engine crank angle  $q$  or Engine Volume ( $V$ ) can be measured & plot on computer screen. It gives on line representation of Engine Dynamic Pressure & Engine crank angle  $q$  to study effect of change in load & speed. For correct sensing of Pressure, piezo quartz type transducer from PCB USA or same quality is used.

### Computer Controlled Unit

System is having unique feature of direct control of Engine load or speed from keyboard & mouse. This system is having automatic operation controller & actuator. This can control parameter on line of engine operation.



Sl. No.	LOAD	Engine Speed	Fuel Consumption	Water Flow at Inlet of Calorimeter	Flow of Inlet Water
	(kg)	(RPM)	(lit / Sec)	(lit / Sec)	(lit / Sec)
1	5.54	8	lit	8.93	8.88
2	5.86	8	lit	8.93	8.88

Gr. No.	Calorimeter Inlet	Calorimeter Outlet	Calorimeter Inlet	Calorimeter Outlet	Engine Inlet	Engine Outlet
	(lit)	(lit)	(lit)	(lit)	(lit)	(lit)
1	1185.8	1295.8	888.6	282.8	104.4	126.3
2	1285.8	1295.8	1137.9	442.2	184.8	181.1

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### List of Experiments

- 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
- Brake Mean Effective Pressure and brake power on the basis of engine speed
- Plotting of exhaust temperature versus Speed
- Study of Engine Dynamic Pressure & Crank Angle . (If P - V Arrangement Console is optional ordered)
- Calculation of Indicated Mean Effective Pressure. (If P - V Arrangement Console is optional ordered)
- Computer controlled of parameter like load or Engine speed. (If Computer controlled Unit is optional ordered.)

### Operation & Maintenance Manual

- Self-explanatory operating & maintenance manual will be provided. This will include Theory, operating procedure, standard results, and maintenance procedures.

### System Components

#### Basic Unit

- Engine: Multi-cylinder Petrol or Diesel Engine
- Three Cylinder Four Stroke MPFI Petrol Engine: 796 cc, Max. Power 29 kW @5500 RPM
- Dynamometer suitable for above mentioned Engine. (Choose any one from List motioned below)
- Hydraulic Dynamometer (Capacity: Up to 37 kW @ 3000 RPM)
- Eddy current Dynamometer (Capacity: 10 KW, 20KW, 30 KW, 80KW, 150KW)
- Calorimeter- Shell & Tube type heat exchanger will be used. Water-cooled.
- Air Box – MS powder coated / PVC air box with orifice meter will be used.
- Fuel Tank: capacity 5 liters.
- Base frame – Made up of mild steel C channel duly powder coated.
- Control Panel - for mounting of all indicators.
- Digital Temp. Indicator with temperature sensor – 6 channel 0-400°C (Optional)
- Rotameter: 600 LPH for calorimeter water flow measurement.
- Electrical switches, wiring & Piping

#### P-q, P- V Arrangement Console (Optional)

- Engine cylinder pressure.
- Piston position marker.



Order Code - 32714  
Computerized IC Engine Test Rigs: Three Cylinder  
Four Stroke MPFI Petrol Engine: 796 cc

#### **Optional Accessories**

- Multi Engine Mounting Test Bed.
- Different type of Engines.
- Computer Based Training Software.
- Cut Section Models
- Computer
- Fault Trainer
- Computerization by using Multi Function Recorder Unit with different digital signals & RS232 Output.
- Cooling water flow transmitter

#### **Service Required at Site**

- Electric Supply 230V 50Hz. With proper earthing.
- Tap Water supply & drainage.
- Water circulation at ambient temperature or cooling tower @ 100LPH
- Exhaust chimney
- Concrete foundation.

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