

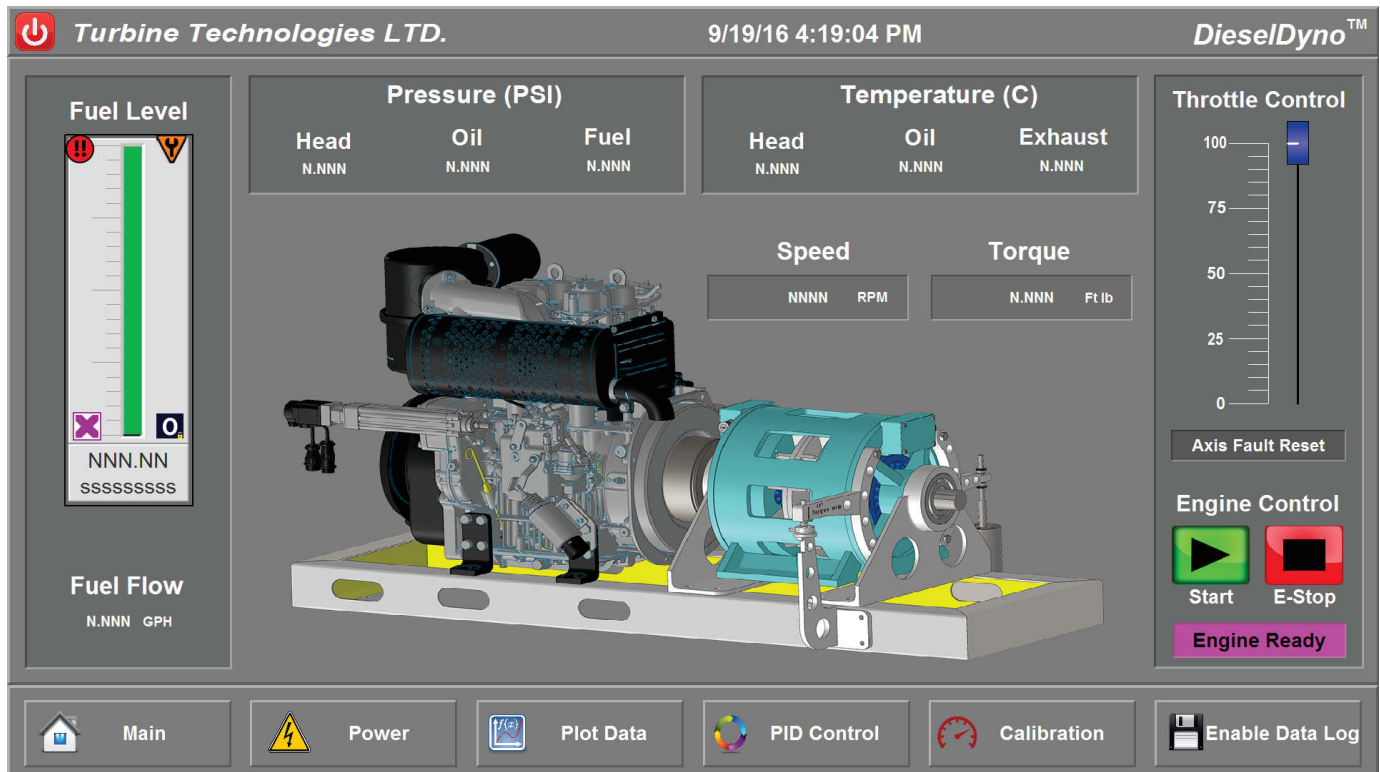


Product Summary

- State-of-the Art Diesel Engine Dynamometer Teaching System
- Twin-Cylinder Industrial Diesel Cycle Engine
- Air-Cooled Eddy-Current Dynamometer with Industrial Load Cell Torque Measurement
- Integrated Programmable Automation Controller (PAC) Suite for Total System Operation
- Panel-Mounted Human Machine Interface for Industrial Tactile Control and Programming
- Feedback Loops: Manual/Automated Dynamometer Loading with Engine Auto-Throttle Response
- Curriculum Included: From Engine Performance Curves to Automation Scenarios

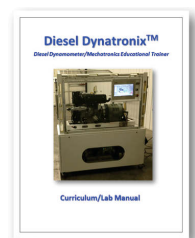
Description

DieselDynatronix™ is a portable diesel engine performance analysis system comprised of a two-cylinder industrial diesel engine driving an air-cooled dynamometer. The eddy-current dynamometer is induction-loaded through an integrated 48 volt DC variable-excitation system. A built-in torque arm (1 foot in length) actuates a load cell (calibrated to read in lbs) to provide a direct torque readout in ft-lbs. The total system is controlled by a built-in Industrial Human-Machine Interface (HMI) which communicates with an integrated Allen Bradley Programmable Automation Controller (PAC) to control engine start/stop, throttle position servo drive and dynamometer loading. The PAC will enable PID feedback control to automatically adjust engine speed based on dynamometer loading. This provides an opportunity to program a variety of operational scenarios that demonstrate the capabilities of diesel power.



Studio 5000 Logix Designer and FactoryTalk View ME Software Included

A comprehensive lab curriculum is included with the system. The curriculum provides extensive classroom material tied to operational lab situations for effective hands-on diesel dynamometer education.



Educational Opportunities

DieselDynatronix™ enables the control and performance testing of a modern industrial diesel power plant.

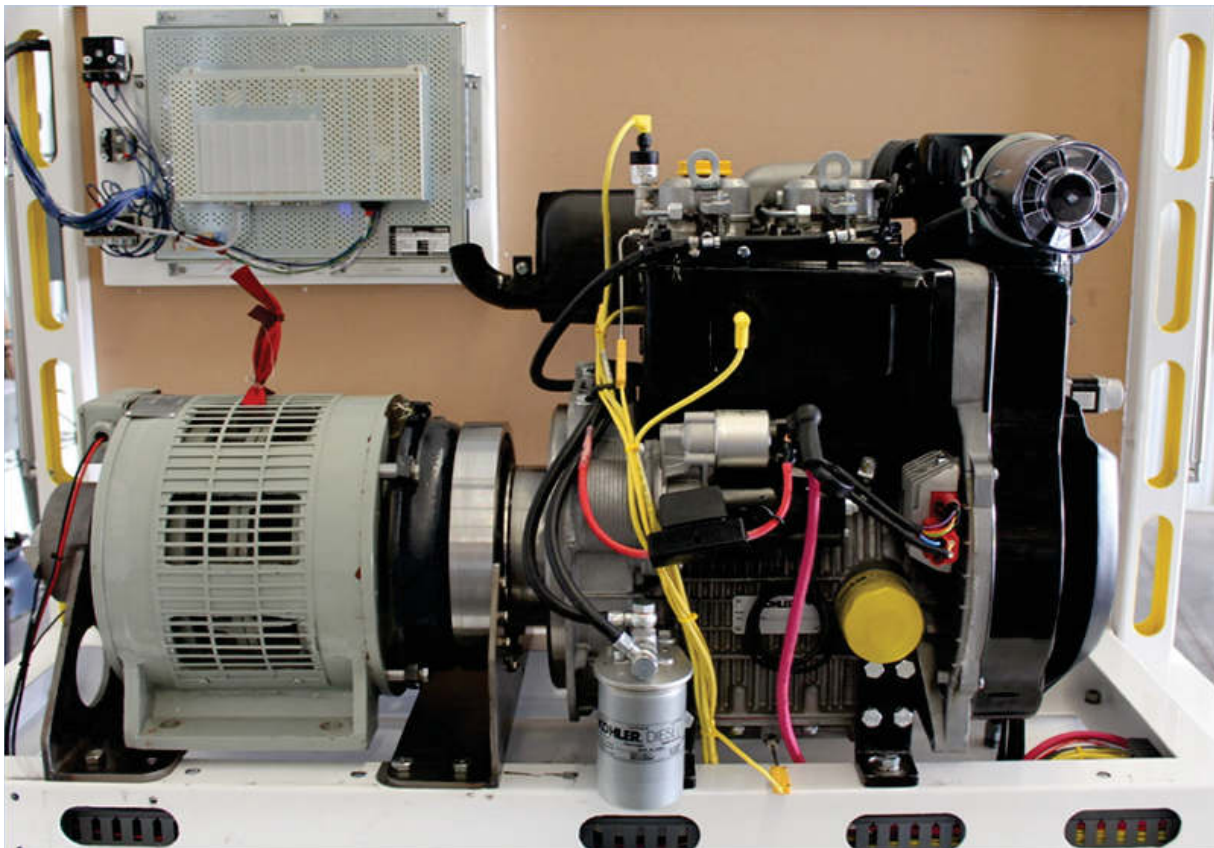
Students learn how a diesel engine operates and tie that back to classroom theory. They then develop the engine's performance curves and power band.

They discover an engine must be loaded to accomplish a work outcome and learn that a dynamometer is a device that provides controlled loading to determine the power output/torque profile of the engine.

Extensive Engine/Dyno sensors and instrumentation provide comprehensive system information for precision operation and detailed analysis.

On-board automation takes the Diesel Dynamometer combination to a whole new level. Students can automate engine operation and loading. The PID feedback loop provides automatic engine response to changes (disruptions) in the engine loading by the dynamometer. These advanced capabilities allow students to grow their knowledge and experience from the basics of the diesel engine operation and its power cycle to current state of the art engine operational methodologies.

Included curriculum provides extensive information tied to operational lab situations for effective hands-on diesel dynamometer education.



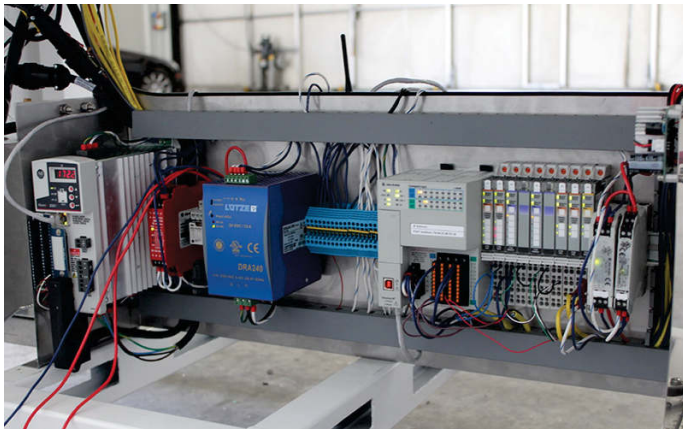
Dynamometer/Engine Module

Main Hardware

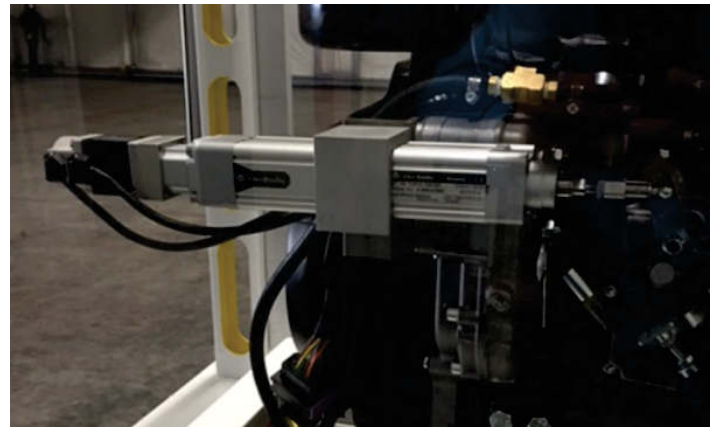
- Engine: Lamborghini/Kohler KD-625-2 Engine
- Dynamometer: DSI Dynamic AS-704 Eddy Current Brake

Main Hardware

- Allen Bradley L18ERM Programmable Automation Controller
- Rockwell Automation Studio 5000 PAC Programming Software
- Rockwell Automation Factory Talk Interface Programming Software
- Ethernet Communications System with wireless capabilities
- Dynics Industrial Human-Machine Interface (HMI) with Custom Virtual Instrument Displays
- Allen Bradley Throttle Servo Drive
- 24 VDC Industrial Controls Power Supply
- 48 VDC Dynamometer Excitation Power Supply
- Safety Switching



Automation Control Panel



Engine Throttle Servo

Dimensions

DieselDynatronix™: 62L x 30W x 70H inches
(158L x 76W x 178H cm)

As Shipped: 68L x 36W x 75H inches
(173L x 91W x 190H cm)

Weight

DieselDynatronix™: 1060 lbs (470 kg)

As Shipped: 1140 lbs (515 kg)

Operating Requirements

Typical Laboratory or Classroom Setting Power:

110V single-phase 50/60Hz

Ventilation

Diesel Exhaust Hose

Instrumentation/Controls

Installed Data Acquisition Sensors

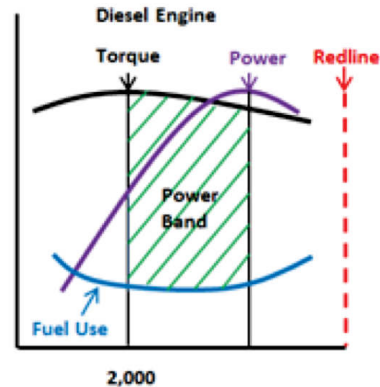
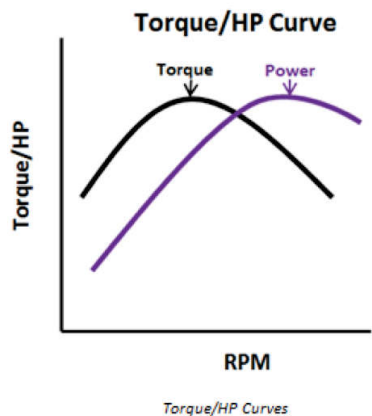
- Engine Head Pressure
- Engine Fuel Pressure
- Engine Oil Pressure
- Engine Head Temperature
- Engine Oil Temperature
- Engine Exhaust Gas Temperature
- Engine RPM
- Engine Fuel Flow
- Engine Torque
- Engine Power (Horsepower and Watts)
- Dynamometer Excitation Voltage
- Dynamometer Excitation Current

Control Panel Mounted Controls

- Power On Button
- HMI On Switch
- Engine "Kill" E-Stop Button

Performance Curves Using an Eddy Current Dynamometer

Students will learn an Eddy Current Dynamometer uses an energized field coil. When the field coil is energized, a magnetic flux is established between its poles. As the rotor revolves, magnetic lines of force are cut in the air gap and eddy-currents are generated which restrict rotation at a rate determined by the amount of excitation applied to the field coil. Increasing calibrated excitation voltage is mapped against full engine RPM to deliver torque-speed data to develop the performance/torque curve. Using additional data such as fuel burn allows students to generate the engine's power band.



Dynamometer Torque Curve / Power Band

Purchase Specifications

A self-contained, mobile diesel engine dynamometer mechatronics system, with:

- Lamborghini/Kohler KD-625-2 Engine
- DSI Dynamic AS-704 Eddy Current Brake
- Allen Bradley L18ERM Programmable Automation Controller
- Rockwell Automation Studio 5000 PAC Programming Software
- Rockwell Automation Factory Talk Interface Programming Software
- Ethernet Communications System with wireless capabilities
- Dynics Industrial Human-Machine Interface (HMI) with Custom Virtual Instrument Displays
- Allen Bradley Throttle Servo Drive
- 24 VDC Industrial Controls Power Supply
- 48 VDC Dynamometer Excitation Power Supply



DieselDynatronix™ has a free two year warranty on the entire system

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All DieselDynatronix™ specifications are subject to change