



**FCT Engine Dynamometer System**  
[www.pwrtst.com](http://www.pwrtst.com)



# FCT Dynamometer System

Power Test was the first company to offer a Fully Contained Transportable (FCT) dynamometer system. The FCT Dynamometer System is specially engineered to use the shipping containers as the final testing facility, allowing for a transportable, secure testing solution available at a lower cost to the end user, just add fuel and water and begin testing. Equipped with a reliable Power Test dynamometer and full support equipment, all components arrive assembled, making reliable, repeatable testing available in just a few hours. The dynamometer, sub base, data acquisition, control equipment and a generator set are all standard equipment. With the addition of a water storage tank, extended periods of testing can be achieved. This allows FCT customers to benefit from the testing capabilities of a Power Test dynamometer whether in a remote location, or simply avoiding the costs associated with a permanent testing facility.



## Test Cell Components

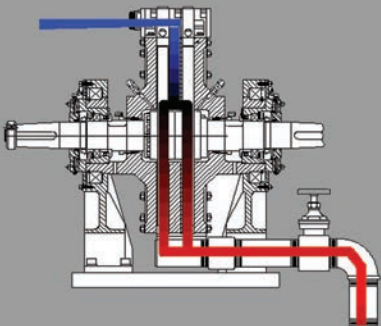
- Power Test Dynamometer and Sub Base/Holding Tank
- PowerNet LT Data Acquisition and Control System
- Filtered Test Cell and Engine Air Intake Systems
- Engine Exhaust Silencer
- 12/24 Power Supply for Winch and Starting Systems
- UPS Battery Back-up System
- Fuel Storage Tank and Pump
- 6,000lb Universal Engine Cart and Winch System
- Engine Cooling Column

## Observation Booth

- Windows®-based PC equipped with PowerNet LT Software
- Optional Heating/Cooling Systems

## Support Unit Components

- Generator Set
- Water Recirculation System
- Cooling Towers
- Heat Exchanger
- Water Holding Tank



## How A Water Brake Dynamometer Works

In the Power Test water brake dynamometer, water flow proportional to desired applied load is used to create resistance to the engine or motor. A controlled flow of water through the inlet manifold is directed at the center of the rotor in each absorption section. This water is then expelled towards the outside of the dynamometer body by centrifugal force. As it is directed outward, the water is accelerated into pockets on the stationary stator plates where it is decelerated. The continual acceleration and deceleration causes the applied load to the input device. Through this transfer of energy, the water is heated and discharged.

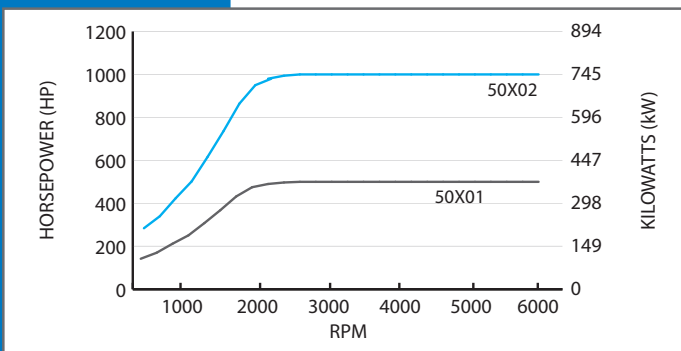
## 50X Series Dynamometer

The FCT dynamometer system features our industry standard 50X series engine dynamometer. Each X-Series dynamometer features a trunnion mounted, fixed base design that provides equal load capability in either direction of rotation. Power Test dynamometers are constructed of multiple absorption sections to provide the flexibility to test prime movers of widely varying outputs with the same dynamometer.

The through shaft design allows either end of the dynamometer to be driven and for the attachment of a dynamometer mounted starting systems. Although designed to provide years of trouble free service, internationally available bearings and seals are used in every X-Series dynamometer. These components are located in easy to access cartridges which allows field service with no need for specialty tools or the removal of the dynamometer.

Each of the X-Series dynamometers may be operated for extended periods of time without water flow. This feature ensures that this dynamometer can perform flawlessly even in extreme conditions without fear of damaging the absorber.

In addition to the X-Series dynamometer, Power Test manufactures several series of water brake and eddy current dynamometers, any of which can be included with the FCT Dynamometer System to meet the needs of the end user.



### 50X Series

- For testing electric motors, gasoline, and higher speed diesel applications.
- Power ranges from 50-1000 HP.
- Speeds to 6,000 rpm.
- Alloy construction for reduced inertia.



## A Fully Contained Transportable Testing Solution

With more available room than expected, the FCT Dynamometer System has been designed to make efficient use of the space provided. Last minute adjustment and repairs are easily accomplished with the engine in position.

The Test Cell unit includes a sound insulated observation booth enabling the operator to control the testing under close supervision. The booth can be equipped with optional heating and air conditioning systems for operator comfort.

Additionally, the FCT is designed for flexibility, with a wide assortment of optional equipment, including: engine adaptor plates, torsional dampeners, 500 gallon water storage tanks, charge air coolers, and additional sensors and breakout boxes for controlling electronically controlled engines. All components can easily be upgraded, allowing maximum performance and compatibility to meet nearly every testing need.

At the end of the day, when testing is completed, simply shut down the system and lock the doors for secure storage of the dynamometer, engine, and equipment.

## PowerNet - The Future of Engine Testing

PowerNet LT is a complete monitoring and control package for dynamometers and engines. Power Test transforms a standard desktop computer and a specifically developed interface box into engine development and qualification tools. Featuring a condensed version of our PowerNet Windows®-based software, manual setpoint and fully automated tests are just a mouse click away.

With PowerNet LT, standard engine tests can be recalled from a file and by clicking on the start button anyone can perform a test and achieve the same results. The automation of the engine throttle and the dynamometer load assure that every step of the test is performed correctly.

Included with the PowerNet LT package are sensors for engine, oil, fuel, and air temperature, as well as sensors for oil and fuel pressure. All sensors are enclosed in an industrial console and supplied with quick disconnects for rapid connection/disconnection. Information collected from these sensors along with torque, rpm, and power measurements from the dynamometer are all automatically recorded to the computer hard drive.

Through automated recording, verifiable test results are obtained. The PowerNet LT package assures that the data is true and accurate. Reports including your company logo, specific workshop information, customer information, engine manufacturer's specifications, along with the actual dynamometer test results in table and graph formats are easily produced. The included paragraph feature allows you to enter any notes or observations made during the test.

The included alarm feature provides visual displays and flashing warnings when a sensor exceeds the usual operation range. Whenever an alarm condition is reached, data is automatically recorded so that a determination of the trouble can be diagnosed.

The PowerNet LT software package may be used as supplied or you may easily change the sensor units, ranges, alarm values, and even the language of display if desired. Once changes have been made, they are stored to the system for future usage. Data that is saved to the hard drive may be recalled and printed at any time and may even be sent by e-mail.



## A Complete Testing Solution

Power Test provides a full range of test cell support equipment and accessories, including engine carts, air start systems, drive shafts, resilient couplings, engine adapters, water recirculation and cooling systems, fuel measurement systems, smoke opacity meters, additional temperature and pressure sensors, and analog input channels. Whether you are dealing with new installation or looking to repair, upgrade, or replace an existing dynamometer, Power Test has a solution.



## Power Test, Your Full Service Dynamometer Manufacturer

Power Test can provide facility design and installation of every dynamometer we sell. We also offer a complete line of support equipment, including ventilation systems, exhaust systems, auxiliary cooling systems, and water recirculation systems.

Contact your Power Test representative or visit our web site at [www.pwrtst.com](http://www.pwrtst.com) for more information.

**Power Test Incorporated**  
N60 W22700 Silver Spring Drive  
Sussex, WI 53089 USA  
262-252-4301  
[www.pwrtst.com](http://www.pwrtst.com)