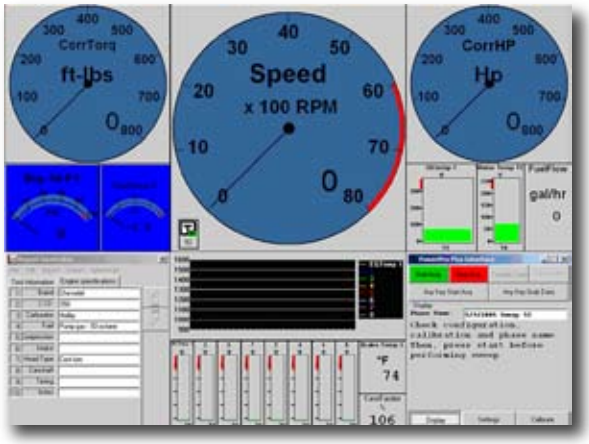
PowerPro
Data Acquisition

STUSKA
DYNAMOMETERS
A DIVISION OF POWER TEST INCORPORATED

PowerPro

PowerPro Commander is a powerful desktop PC operating on Microsoft Windows® XP Pro. Data collected by the Sensor Interface Device (SID) is transmitted to the Commander Computer where it is displayed in an easy-to-read and fully-customizable virtual dashboard (right). Dynamometer and engine data can be viewed on the PowerPro Main Display screen, while data is automatically collected and calculated for post-test review.



PowerPro Commander Virtual Dashboard

Now it is easier than ever before to run sweep or steady-state tests, while monitoring your data on-screen. Running a sweep test is as easy as defining the starting and ending rpms, increasing the engine's rpm throughout the test range, and the test is over! The test information between the starting rpm and the ending rpm is automatically recorded. Steady-state test information is automatically recorded at user-defined intervals or on-demand.

PowerPro's on-screen alarm indicators allow high and low sensor limits to be entered into a computer prior to a test to display an alarm state. When an input is out of the normal range or when a sensor (such as the tachometer) reaches its high limit (red line), the gauge background turns red. In turn, a low limit turns the gauge background blue.

Data, Data, Data

The collection of data is just the start. Dynamometer users demand accurate data. A common belief is that if a computer does not control the dynamometer, then the test cannot be repeated. PowerPro proves otherwise! PowerPro monitors the acceleration rate of the dynamometer and corrects the data based upon the rate of change from one reading to the next. What this means is that if an engine is swept quickly, slowly, or inconsistently, the PowerPro software compensates for the changes and standardizes the results with inertia compensation. Back-to-back repeatable pulls prove it. The result is no more lost data caused by accelerating the engine too fast.

Once the data has been recorded, it is presented in neat, easily understood graphs, tables, and spreadsheets. Data can also be viewed on-screen via the software's View/Chart feature. Furthermore, data can be exported into Microsoft® Excel spreadsheet software. All tests can be stored and easily recalled. The reports can even be e-mailed to others. For professional looking results, color reports are easily printed and can include your company logo.

While we have strived to make this system as easy-to-use as possible for those unfamiliar with computers, we have included advanced features that allow users to explore the *real* capabilities of this system. There is simply no other data acquisition tool on the market that will offer you ease of use, accuracy of data, and so many affordable features.

PowerPro Features

- Operator-friendly “Virtual Dashboard” has easy-to-read on-screen displays
- Fully configurable sensors with color changing displays to quickly indicate alarm conditions
- Customize sensor units, ranges, alarm values, and even the language of display if desired
- Automatically record data for easy diagnostics, including graphing and table formats
- Completely customizable data reporting, including company logo, workshop information, customer information, and engine manufacturer specifications
- Easy-to-use menu system minimizes operator learning curve
- Save data to hard drive, send customer reports via e-mail, and print out diagnostic data on the spot

Automatic Load Control

Stuska's revolutionary Automatic Load Control allows the operator to perform smooth, repeatable tests, while maintaining the engine's natural sweep.

Available with the QuikStik throttle control (shown) or as a stand alone unit, Stuska's Automatic Load Control and PowerPro make an unbeatable combination.

PowerPro Software Data Capabilities & Report Fields

Included Sensors

1 Magnetic Speed Pickup with 50-tooth gear
1 Strain Gauge Load Cell
3 Low Temperature, 32°-300°
8 High Temperature (EGT Thermocouples), 200°-1600°
2 Pressure Sensors, 0-200 PSI
1 Fuel Flow (vol.) 8-80 GPH

Measured Data

- Speed
- Torque
- Elapsed Time
- Volumetric Fuel Flow
- Mass Air Flow (optional)
- Lambda O_2 (optional)

Calculated Data

Observed Horsepower	Calculated Using RPM and Torque Sensor
Corrected Horsepower	Calculated Using RPM and Torque Sensor with Correction Factors
Acceleration	Calculated Using RPM and Time, Shows Rate of Sweep Throughout the Test
Corrected Torque	Calculated Using Torque Sensor with Correction Factors
Brake Specific Fuel Consumption	Calculated Using Observed HP and Mass Fuel Consumption
Corrected S.F.C.	Calculated Using Corrected HP and Mass Fuel Consumption
Mass Fuel Flow	Calculated Using Volumetric Fuel Flow and Density
Volumetric Efficiency	Ratio of Displacement per Revolution vs. Actual Air Flow Measured
Volumetric Air Flow	Calculated Using Mass Air Flow & Weather Conditions
Air/Fuel Ratio	Mass Air Flow/Mass Fuel Flow
Brake Specific Air Consumption	Calculated Using Mass Air Flow and HP
Corrected S.A.C.	Calculated Using Mass Air Flow and Corrected HP
Correction Factor	Calculated Based on SAE Correction and Weather Conditions
Air Density	Calculated Based on Weather Conditions

System Input Data

Inertia Value	User Inputs Value Required
Sweep Test Start RPM	User Inputs Desired Value
Sweep Test End RPM	User Inputs Desired Value
Sweep Step Size RPM	User Inputs Desired Value
Fuel Density (specific gravity)	Requires Input from User
Inlet Air Temperature	Requires Input from User or an Optional Sensor
Barometric Pressure	Requires Input from User or an Optional Sensor
Relative Humidity	Requires Input from User or an Optional Sensor
Volume/Revolution	Used for Volumetric Efficiency. Requires Input from User

PowerPro Data Acquisition

PowerPro Reports

- PowerPro allows all sensor data, calculated data, and input data to be reported, displayed, and saved as desired
- Report as many sensors as needed. Reports may be simplified for ease of understanding
- Report formats may be saved for recalling with other tests
- Electronic storage of reports is limited only by hard drive space. Each test file is very small so many can fit on a standard flash drive
- Test reports can be saved, e-mailed, and viewed by a standard Internet web browser
- Test results can be reported and viewed as graphs, spreadsheets, averages/peaks, etc. and separated by each pull

Available Inputs

- Torque
- Speed
- 3 Fuel Flow
- 12 EGTs
- 5 Low Temperatures
- 4 Pressures
- 3 Analog Auxiliary Inputs

Commander PC Minimum Specifications

- Windows® XP Pro based PC
- 2.4 GHz, Core 2 Duo Processor
- 80 GB Hard Drive, 1.0 GB RAM
- CD-RW/DVD Combo
- 17" Flat Panel, LCD Color Monitor
- Windows® Keyboard
- Optical Mouse and Mouse Pad
- Color Ink Jet Printer with Printer Cable
- Power Surge Protector

Optional Equipment

- Additional Fuel Flow Turbines
- Additional Low Temperature Sensors
- Additional Pressure Transducers
- Additional EGT Sensors
- Mass Air Flow Sensors
- PowerPro Expansion
  - 16 additional channels

- O_2 Sensor Kits
- Integrated Weather Station
- Instrumentation and Control Desk
- Automatic Load Control with the new QuikStik LC (shown) or Stand Alone LC

Stuska Dynamometers - A division of Power Test, Inc.

- Power Test, Inc. has extensive years of experience developing and manufacturing dynamometers and data acquisition and controls. We have used this experience to develop our PowerPro data acquisition system and to further develop the TrackMaster LC dynamometer system with Automatic Load Control.

- Our staff of courteous customer service technicians are here to meet your individual business needs and make your dynamometer and data acquisition experience a positive one.

- Power Test and Stuska are committed to our customer's needs by providing on-site training at your facility.

- Power Test, Inc. has been manufacturing heavy duty dynamometers since 1976. Power Test provides a full range of engine dynamometers and single, tandem, and multi-axle chassis dynamometers. Please visit www.pwrtst.com for more information about the full line of dynamometers, data acquisition, and dynamometer controls.

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