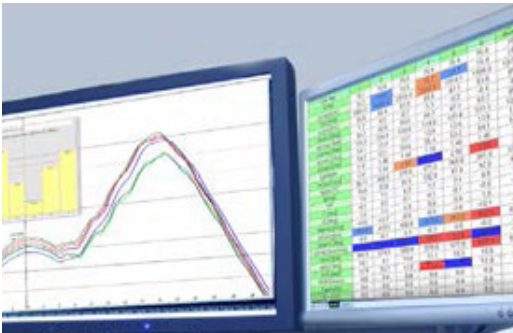




Drew Marine®

DREW™ DPA
Diesel Performance Analyzer



DREW™ DPA DIESEL PERFORMANCE ANALYZER

REDUCTION IN OPERATING COST

- Identify and correct load imbalances quickly and accurately
- Analyze and correct cylinder-to-cylinder combustion differences
- Identify and correct fuel operating settings
 - Fuel pump index setting is too high or too low
 - Fuel pump timing is too advanced or retarded
 - Fuel valve spring setting is too low or damaged
- Properly adjust fuel injection timing to:
 - Minimize ignition delay
 - Reduce exhaust gas temperatures
 - Maintain optimum specific fuel oil consumption

REDUCTION IN MAINTENANCE COST

- Establish a Predictive Maintenance Program
 - Major defects are easily detected
 - Parts are replaced on need rather than running hours
 - Reduce the need for unplanned emergency repairs
- Early detection of worn and damaged engine components that reduce performance
 - Piston ring leakage
 - Piston crown burndown
 - Exhaust valve leakage
 - Worn cylinder liner
 - Leaking fuel valve or fuel pump



Model	Type	PC Software Functionality	Handheld Unit Display Capability	Fuel Sensor Option
DPA IV-USB	Fixed	Software program installation required for DPA measurement, configuration, archiving and analysis	Repeater – limited parameter display MIP, P(max), RPM, P(comp), A(ign)	Yes
DPA-EZ	Portable	File Viewer program optional for configuration, archiving and analysis	LCD displays all parameters, graphs, tables	Yes
DPA-MI	Portable	File Viewer program included for configuration, archiving and analysis	4 digit LED – limited parameter display P(max), RPM	No

DREW™ DPA DIESEL PERFORMANCE ANALYZER

Drew Marine is committed to satisfying the needs of its customers by providing products and services that improve fuel usage and optimize diesel engine performance. Drew Marine promotes a “diagnostics approach to fuel and engine management” that includes fuel sampling and testing equipment, laboratory analysis, fuel homogenization, engine performance monitoring systems, and chemical fuel additives.

COMPLEXITY OF ENGINE MANAGEMENT

Powering a vessel for both propulsion and auxiliary requirements is one of the largest expenses for ship owners. The initial purchase of adequately powered diesel engines, continuous maintenance and repair, and the high cost of fuel consumed by the engines are of primary concern.

Monitoring diesel engine performance using the conventional indicator card method is time-consuming, lacks measurement precision, and can produce inaccurate results when the data is evaluated. The limitations of this method generally make it necessary to follow a preventative maintenance program based on engine running hours, which is costly compared to a predictive maintenance program of making repairs and adjustments only when needed.

- Time consuming
- Poor precision
- Human error
- Limited parameters

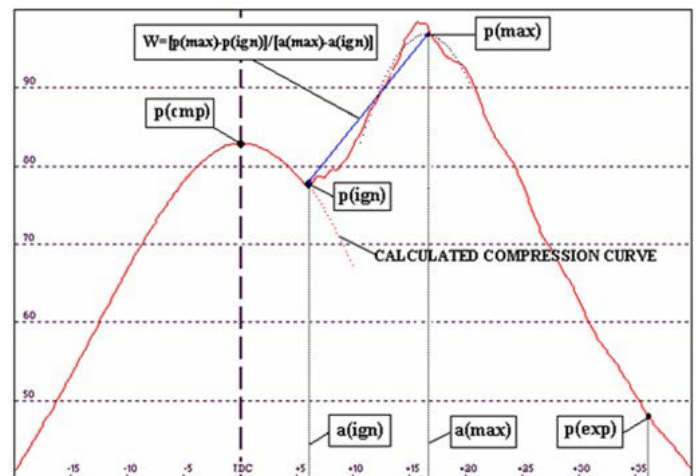


Adding to the complexity of engine management is employing qualified personnel to properly run and maintain diesel engines. Often, shipboard engineers are tasked with many other responsibilities that reduce their time available for proper engine management.



DESIGNED BY ENGINEERS FOR ENGINEERS

As a worldwide leader in fuel management and engine diagnostics, Drew Marine understands the need for asset protection, reduced maintenance costs, and improved engine performance—all achievable by accurate diesel engine monitoring within the time constraints experienced by shipboard engineers. The DREW DPA (Diesel performance Analyzer) turns an existing personal computer into a real-time analyzer saving time for the operator and money for the owner.



Available in both fixed and portable versions, the DREW DPA models are applicable to all 2-stroke and 4-stroke engines (slow, medium and high speed) equipped with an indicator valve.

DREW™ DPA DIESEL PERFORMANCE ANALYZER

SYSTEM DESCRIPTION

Sensors fitted to the engine generate signals that indicate cylinder pressure, crankshaft angle, engine speed, and fuel injection (optional), using information from signals and stored engine parameters, calculates the engine's performance data for display, printout, and storage as digital files. All DREW DPA models are highly accurate, capable of identifying crankshaft position to 0.1 degree, measuring cylinder pressure

DREW DPA IV-USB DIESEL PERFORMANCE ANALYZER

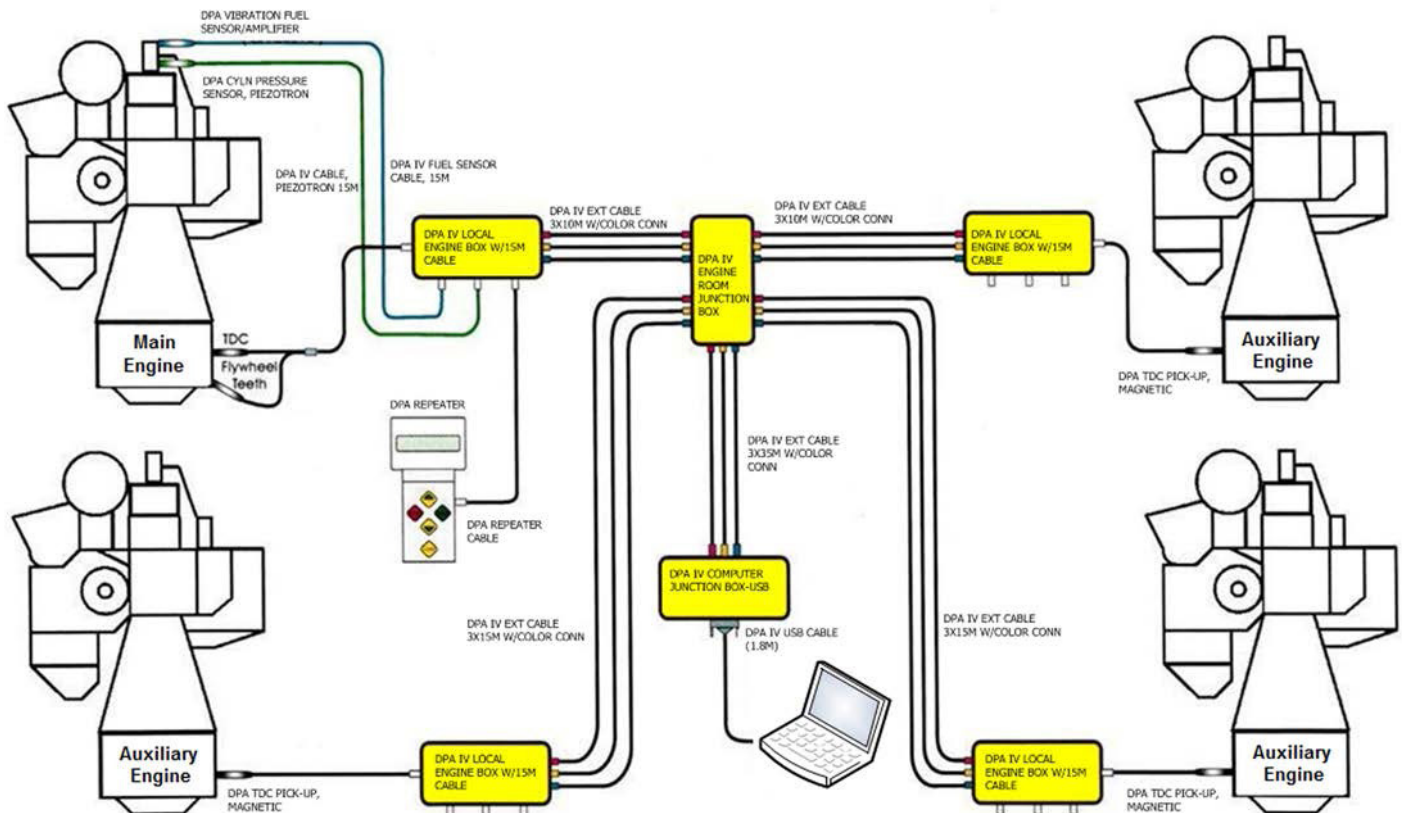
The DREW DPA IV-USB turns an existing personal computer into a real-time analyzer saving time for the operator and money for the owner. The DREW DPA IV-USB is a fixed system installation consisting of signal cables and junction boxes in the engine room and software on the control room PC.

- Inductive pick-ups for TDC and RPM (2-stroke engine only) are mounted near the flywheel and connected by a signal cable to a local engine box required for each engine.
- For multiple engine installations, each local engine box is connected to an engine room junction box with three signal cables.
- The engine room junction box is connected by three cables to a computer junction box adjacent to the PC in the control room.

to 350 bar and displaying this data in real-time. This enables the operator to accurately balance engine cylinder loads to reduce engine wear and optimize fuel injection timing to improve combustion and minimize fuel consumption. Engine data collection and performance evaluation time is greatly improved over the conventional indicator card method.

- Junction box connections and cable end connectors are marked and color coded for ease of installation.
- Cylinder pressure sensor, fuel sensor and handheld repeater are connected to the local engine box of the engine being measured only during operation, and stored in a protective case when not in use.

The DREW DPA IV-USB is user-friendly and can be operated from the PC operator station in the control room or by the handheld repeater connected to the local engine box. Both locations provide real-time engine data when measuring.



OUR VISION

Drew Marine is the most trusted brand and preferred global resource for marine solutions that enhance the longevity and operating efficiency of ocean vessels.

OUR MISSION

To sustain the superiority of the Drew Marine brand by bringing environmentally and technologically superior products and services for the benefit of vessel owners and operators while increasing shareholder value.



Drew Marine[®]

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