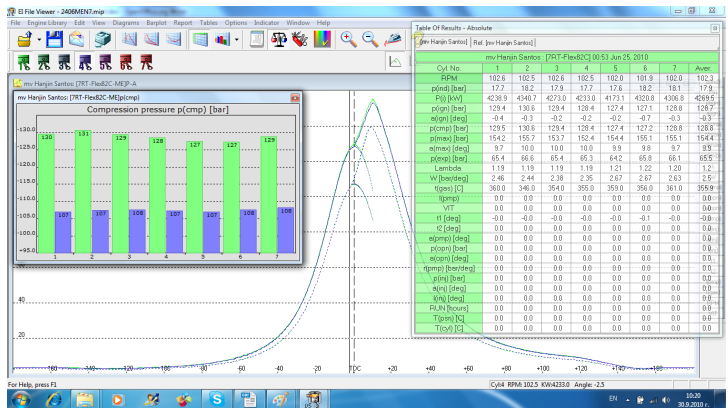


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approximately 2%.

The **EI** may protect against costly downtime by implementing predictive maintenance. Major defects can be easily detected. Engine maintenance can be planned, thus saving in parts and labor by changing engine parts based on need, not on timed intervals.

The **EI** system consist of a robust metal



The **Electronic Indicator - EI** is designed by marine engineers to be used from marine engineers. It measures engine performance, monitors the combustion process in diesel engines in real time and allows in-situ engine tuning while measuring. The Electronic Indicator helps balancing cylinder load, optimize injection timing and detect worn or damaged engine components and thus reducing the engine's operating cost.

Balancing the cylinder load extends engine life, increases efficiency, and reduces emissions to assist with environmental compliance.

Proper ignition timing reduces

exhaust gas temperature and rate of excess carbon build-up. Each degree of delayed combustion increases exhaust gas temperature by approximately 8-10Co.

Tuning the engine may reduce specific fuel oil consumption (SFOC), because each degree that ignition is retarded increases SFOC by

handle unit, including cylinder pressure sensor, connected to the indicator valve of the cylinder being measured, and magnetic, optical or inductive pick-up(s) fitted on the flywheel.

The **EI** is easy to use and very intuitive thanks to the very simple design: just two buttons and 4-digits LED display.

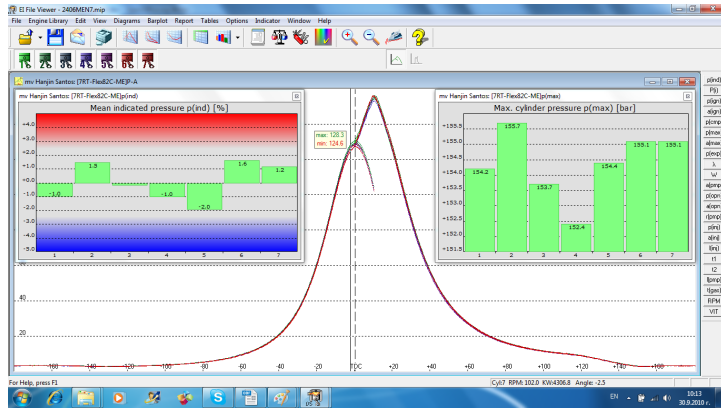
The **EI** has unical design, as a measuring unit, which can easily be connected to PC USB port. No hardware drivers or special IT knowledge is required for the software installation. The PC software is hard coded in the **EI** internal flash memory and can be used on any Windows based PC directly from the **EI** memory.

The **EI** is using just two standard rechargeable AA batteries, charged through the USB connection. The battery life is about four hours when connected to

pickups or 10 hours while in "NONE" mode.

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The **EI** non-volatile memory stores up to 18



engine records/configurations and

up to 125 cylinders pressure diagrams. The **EI** can measure with and

without pickups. The **EI** is very accurate: the angle

precision is 0.1/0.2 deg. and the pressure uncertainty is less than 0.1 bar. Measurements of the cylinder pressure can be made in the range up to 250 bars.

The **EI** can be used very simply as a maximeter with high accuracy, even if the engine data is unavailable.

The **EI** is supplied with a PC software package Electronic Indicator Viewer. The transfer of the measurement records and engine data files to PC folders is done via the USB cable.

PC software package "Electronic Indicator File Viewer" (EI Viewer) and an USB computer cable are supplied as with the system.

The "Electronic Indicator File Viewer" software package can be used to analyze the combustion process, to store the measurements in data files, print diagrams or complete reports, and send data files by E-mail to the home office. It provides the following essential combustion process key points for analysis:

A variety of diagrams, bar plots, trends, charts and tables can be displayed, in order to present the measurements and the manually entered data, in a user-friendly way to facilitate the evaluation of engine condition. The simultaneous display of current and previously taken reference data allows easy identification of worn or defective parts or incorrect adjustments.

Depending on the supplied EI configuration the system may be used with or without pickups. Optimal results are reached when a pair of pickups is used with slow speed 2-stroke engines or one TDC pickup is used with medium or high speed 4-stroke engines.

EI Standard Configuration:

1. Electronic Indicator handle unit including Kistler 6013C pressure sensor, 210x50x50mm, 0.9 kg, 4 hours battery life;
2. Carrying Case; 3. PC to Electronic Indicator USB Cable;
4. "Electronic Indicator Viewer" Software Package.

Optional parts:

1. Pair of Pick-ups;
2. Additional TDC Magnetic /Optical /Inductive TDC Pick-up;
3. Extension Cable for the Pick-up, 10m ; 4. Pick-up(s) Junction Box; 5. Extension Cable for the Pick-up 25m; 6. Engine room storage cabinet.

P(i) [kW]	Indicated Power [kW]
p(ign)	Ignition Pressure [bar]
a(ign)	Angle at Fuel Ignition [deg]
p(cmp)	Compression Pressure [bar]
p(max)	Max. Ignition Pressure [bar]
a(max)	Angle at Max. Ign . Pressure [deg]
p(exp)	Expansion Pressure [bar]