

Kyma Diesel Analyzer



Figure shows the hand held unit with both cylinder pressure sensor and fuel injection pressure sensor.



Picture show the transportation suitcase with sensors.

MIP system to optimize the performance of diesel engines.

- Engine balancing
- Tuning of ignition timing
- Improved maintenance
- Overload protection
- Reduced fuel consumption
- Reduced spare parts consumption
- Reduced emissions
- Trending
- Ship to shore application

TECHNICAL SPECIFICATIONS:

Cylinder Pressure	Sensor Kistler 7613C quartz transducer with Thomson adapter Connection: Standard indicator valves Range: 0 -250 bar Accuracy: $\leq 0,3\%$ FSO Operating tem. range: $\leq 350^{\circ}\text{C}$
Fuel Injection Pressure Sensor	Strain gauge based type Range: 0- 1400 bar Accuracy: $\leq +/- 0,4\%$ FSO Operating temp. range: $\leq 90^{\circ}\text{C}$ Output signal: 4 -20 mA
Scavenging Air Pressure Sensor	Strain gauge based type Range: 0 -4 bar Output signal: 4- 20 mA Operating temp. range: $\leq 65^{\circ}\text{C}$
Crank Angle Sensor	High speed magnetic pickup type Operating temp. range: $\leq 85^{\circ}\text{C}$
Data Logger	Input voltage: 85- 250 VAC, 50- 60 Hz Power consumption: 10 W Output connection: Isolated RS-232

Specifications subject to change without notice



Kyma Diesel Analyser
Condition Monitoring
system for slow - and
medium speed diesel
engines.

Kyma a.s

Aasamyrane 88 B

N-5116 Ulset

Bergen, Norway

Tel. +47 55530014

Fax. +47 55530017

E-mail: mail@kyma.no

Web: www.kyma.no

Strengthen your Engine Performance



KYMA DIESEL ANALYZER

Kyma Diesel Analyzer is a computer based system for monitoring of cylinder and fuel injection system performance on diesel engines. The information can be used for tuning of engine balance, ignition timing, checking of cylinder overload, trending, checking of cylinder wear as well as maintenance planning.

The system can be installed on new buildings and on ship in operation.

Measurements can be done on main engine and auxiliary engines. All measurements is done with a small hand held unit and the information is automatically transferred to the software.

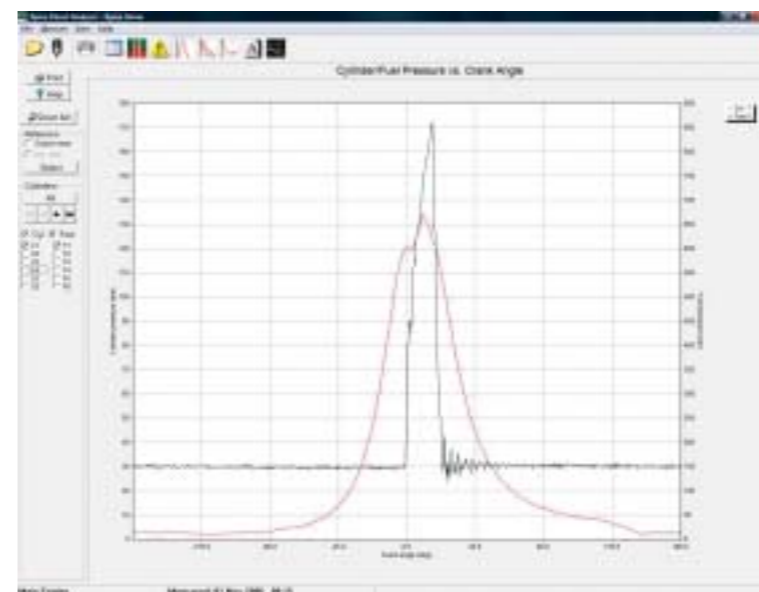
The necessary hardware consists of a portable data logger, electrical junction boxes, sensors and shut-off valves in order to collect performance data form the diesel engines. Optional measurements of fuel injection pressure are available.

OUTPUT INFORMATION

Information about the engine's operation and condition is displayed both numerically and graphically in the user-friendly software. Curves and bar graphs are used in the presentations, where colors separate and highlight the data. An analysis, where data are compared to mean and reference values, provides the user with information about inefficient operation of the engine or cylinder wear.

A full-featured text editor included in the software enables the user to add his own comments to the measurements, for instance additional figures, special running condition etc. All information can be printed in the engine condition report and also sent on shore.

The software includes a database for storage of historical data, and advanced features are available for presentation of data numerically and graphically vs. time. ISO corrections are done on these data with regards to ambient conditions.

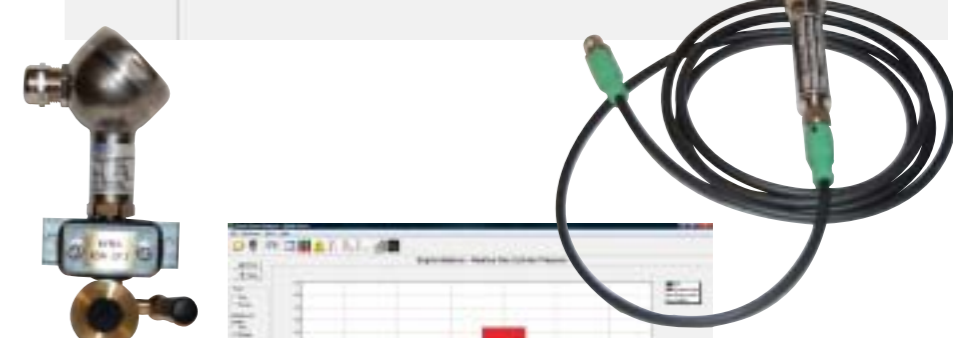


Cylinder and fuel injection pressures versus crank angle or cylinder volume can be shown simultaneously, so that injection and ignition points can be compared directly. Reference curves and curves from different cylinders can be presented together with these curves making it easy to find deviations. For detailed analysis, any section of the curves can be zoomed. Malfunction will be seen and corrective actions can be taken.

Numerical tabulation of recorded and calculated data for one condition:

- Pmi Mean indicated pressure
 - Pcomp Compression pressure
 - Pmax Maximum combustion pressure
 - Arnax Crank angle at maximum combustion pressure
 - Pexp Expansion pressure (pressure at 40. after TDC)
 - Pmax-c Pressure rise due to combustion
 - Aign Ignition timing
 - Pinjmax Maximum fuel injection pressure
 - Ainjmax Crank angle at max fuel injection pressure
 - Power Indicated power in cylinder
 - Rpm Speed of engine during measurement
 - Scav Scavenging air pressure
- Trending of all parameters is available

Cyl	Power (kW)	Rpm	Pmi (bar)	Pcomp (bar)	Pmax (bar)	Arnax (deg)	Pexp (bar)	Pmax-c (bar)	Aign (deg)	Pinjmax (bar)	Pijmax (deg)
1	2158	104.3	18.4	119.6	136.1	11.2	83.8	18.4	2.2	2.8	081.3
2	2172	105.8	18.5	123.0	132.1	11.1	84.7	12.1	2.1	2.8	083.4
3	2104	104.1	18.8	120.8	132.7	11.2	83.1	11.9	1.7	2.8	081.6
4	2172	105.8	18.4	122.8	138.0	11.1	84.3	18.2	1.8	2.8	077.2
5	2133	104.4	19.2	121.8	135.6	11.2	83.7	11.7	1.7	2.8	082.7
6	2148	104.5	19.3	122.0	132.5	11.1	84.2	18.5	2.8	2.8	080.4
Mean	2147	104.5	18.5	121.7	134.3	11.1	83.9	12.8	2.0	2.8	086.1



Bar graphs make it easy to check the engine balance, overload or deviation in operating parameters for the cylinders.

Parameters for relative or absolute presentation:

- Mean indicated pressure
- Max combustion pressure
- Compression pressure
- Expansion pressure.
- Ignition timing

The bar graphs are effective tools for tuning of the engine and for maintenance planning. This makes it easy to identify wrong ignition timing for one or more cylinders.

