

# KYMA DIESEL ANALYZER

## TECHNICAL SPECIFICATIONS:

|                                |   |
|--------------------------------|---|
| Cylinder Pressure              | Sensor Kistler 7613C quartz transducer with Thomson adapter |
| Connection:                    | Standard indicator valve connection                         |
| Range:                         | 0 - 250 bar   |
| Accuracy:                      | +/- 0,3% FSO  |
| Operating temp. range:         | <= 350°C  |
| Fuel Injection Pressure Sensor | Strain gauge based type                                     |
| Range:                         | 0 - 1000 bar  |
| Accuracy:                      | +/- 0,2% FSO  |
| Operating temp. range:         | <= 90°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:         | <= 65°C   |
| Crank Angle Sensor             | High speed magnetic pickup type                             |
| Operating temp. range:         | <= 85°C   |
| Data Logger                    | Input voltage: 85 - 250 VAC, 50 - 60 Hz                     |
|                                | Power consumption: 10 W                                     |
|                                | Output connection: Isolated RS-232                          |

Specifications are subject to changes without notice



## 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



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# STRENGTHEN YOUR ENGINE PERFORMANCE



## KYMA DIESEL ANALYZER

Kyma Diesel Analyzer (KDA) 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 cylinders, 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 ships in operation.

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

The necessary hardware consists of a portable data logger, electrical junction boxes, sensors and shut-off valves to collect performance data from the diesel engines. Measurement of the fuel injection pressure is available as an option for 2-stroke engines.

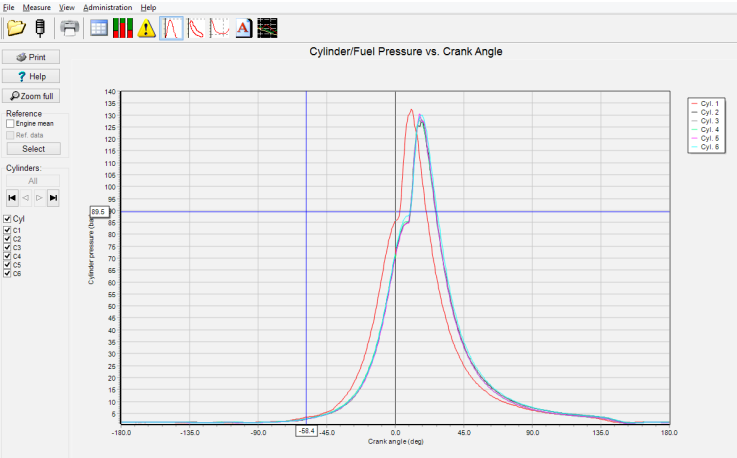
## OUTPUT INFORMATION

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 any 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 sent onshore.



Cylinder and fuel injection pressure 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 each individual cylinder can be presented together with these curves making it easy to find deviations.

For detailed analysis, any section of the curves can be zoomed in.

Deviations can be seen, for corrective actions to be taken.

### Numerical tabulation of recorded and calculated data for one condition:

- Pmi Mean indicated pressure
- Pcomp Compression pressure
- Pmax Maximum combustion pressure
- Amax Crank angle at maximum combustion pressure
- Pexp Expansion pressure (pressure at 40. degrees 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*

File

Measure

View

Administration

Help

Print

Help

Export

Measured values

Indicated power:

23037 kW

Shaft power:

14460 kW

Engine speed:

60.9 rpm

Shaft speed:

60.9 rpm

| Cyl. | Power | Rpm   | Pmi   | Pcomp | Pmax  | Pmax pos | Pexp  | Pmax-c | Ign pos | Scav  |
|------|-------|-------|-------|-------|-------|----------|-------|--------|---------|-------|
|      | (kW)  | (rpm) | (bar) | (bar) | (bar) | (deg)    | (bar) | (bar)  | (deg)   | (bar) |
| 1    | 2841  | 60.9  | 13.8  | 83.9  | 132.6 | 10.7     | 31.3  | 48.7   | 0.4     | 1.2   |
| 2    | 4045  | 60.9  | 19.6  | 65.0  | 127.1 | 17.4     | 43.4  | 62.1   | -2.5    | 1.2   |
| 3    | 4088  | 61.0  | 19.8  | 63.9  | 128.1 | 17.4     | 43.1  | 64.1   | -3.2    | 1.2   |
| 4    | 3888  | 61.0  | 18.9  | 65.5  | 129.2 | 16.4     | 41.5  | 63.8   | -2.8    | 1.2   |
| 5    | 3956  | 61.0  | 19.2  | 63.9  | 130.5 | 15.7     | 41.4  | 66.6   | -2.8    | 1.2   |
| 6    | 4219  | 60.8  | 20.5  | 65.1  | 129.9 | 17.7     | 44.3  | 64.8   | -2.8    | 1.2   |
| Mean | 3839  | 60.9  | 18.6  | 67.9  | 129.6 | 15.9     | 40.8  | 61.7   | -2.3    | 1.2   |

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.

