

5.15 Two stroke diesel engine performance monitoring

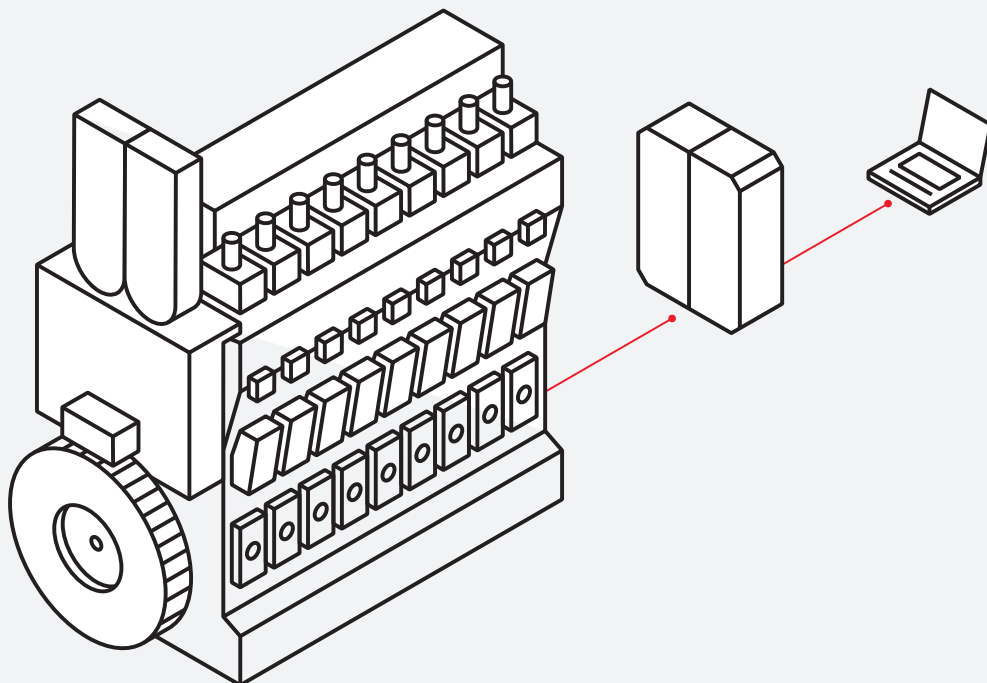
A well tuned and balanced engine consumes less fuel. Using the ABB Cylmate® System, fuel oil consumption can be reduced by around 1-2%, meaning a payback time of less than one year.

Cylmate® – a diesel engine performance monitoring system

Bearing in mind the rising importance of performance information, the Cylmate® System is designed to provide the real-time information required by electronically controlled engines, for the optimization of engine operation through closed loop control of the combustion process. The Cylmate® System introduces a new level of engine performance management.

The Cylmate® System is a powerful tool, developed by ABB for diesel engine performance monitoring. This system, which fits both marine and power plant applications, is designed to withstand marine environmental conditions and fulfills the requirements of classification societies. Combustion pressure is measured, continuously and in parallel, in each cylinder under all load conditions. The Cylmate® analysis and monitoring functions ensure avoidance of the risk of mechan-

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Cylmate® System



ical or thermal overload of individual cylinders, or of the engine itself. In addition, cylinder conditions can be optimized and the engine can easily be balanced and tuned in order to improve its running performance. With the Cylmate® System, you can reduce maintenance and fuel costs – resulting in a short payback time.

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Cylmate® Pressure Transducer, comes with a 5-year warranty



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**Cylmate® Pressure Transducers,
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The Cylmate® System is suitable for both new-build and retrofit installations. An increasing number of ship owners only require a shop test to understand the advantage of using Cylmate®. For the first time, live snapshot recordings and logging of all engine and combustion data, under all load conditions, are possible.

Cylmate® system – key components

The Cylmate® System consists of a Pressure Transducer on each cylinder and an Angle Transducer on the engine flywheel, all of which are connected to the Cylmate® Transducer Bus. The Controller collects all measured data within each engine working cycle, via the Transducer Bus. In real time, a built-in mathematical engine model computes the crank shaft deflection, in order to identify the correct TDC angle and piston position for all cylinders. All combustion parameters, such as Pmax, a-Pmax, Ptdc, MIP, Indicated Power, are logged and monitored for each stroke and can be displayed in trend diagrams. Any deviation from normal performance is presented as an alarm. Evaluated data, alarms and events are transmitted, via an Ethernet LAN, to the Cylmate® Operator Station, as well as to superior systems, if connected.

**Cylmate® pressure transducers,
with 5-year warranty**

The unique and reliable Cylmate® Pressure Transducer has proven its maintenance and calibration-free performance during years of continuous operation. Its measuring accuracy is unaffected by clogging or heat flash from combustion gases, a common problem for membrane-based pressure transducers. For the Cylmate® Pressure Transducer, we give a warranty period of 5 years.

Save money by tuning and controlling combustion pressure stroke-by-stroke. Cylmate® Pressure Transducers used on electronically controlled diesel engines enable improved energy efficiency and lower the risk of off-hire costs.

Pressure transducer used in closed loop control applications by main engine builders

Cylmate® pressure transducers in closed loop control applications

Cylmate® Pressure Transducers can also be used stand-alone and by engine builders for the closed loop control of fuel injection. Cylmate® Pressure Transducers secure reliable operation, stroke-by-stroke, year-after-year. The maintenance and calibration-free performance of the unique and reliable Cylmate® pressure sensor has been proven in years of continuous operation. 5 years warranty.

Recognized, verified and proven

Cylmate® System has received the CIMAC President's award and is recognized as the leading solution for engine performance monitoring by ship owners, yards and engine builders. Over the years, the Cylmate® System has proven its outstanding reliability in numerous installations, while its accuracy has been demonstrated in engine shop tests.

Benefits

- Reduced fuel consumption
- Performance monitoring 24/7 detects and identifies errors in the engine at a very early stage
- An optimized engine enables compliance with environmental regulations
- An engine in good balance avoids thermal and mechanical overloads by ensuring equal power distribution between cylinders
- Pressure transducer used in the closed loop control applications of main engine builders
- Alarm monitoring and trend data recording provides information crucial to optimizing maintenance costs

Savings and payback time

A well tuned and balanced engine consumes less fuel. Using the ABB Cylmate® System, fuel oil consumption can be reduced by around 1–2%, meaning a payback time of less than one year.

Cylmate® pressure transducers can also be used stand-alone, and in the closed loop control of fuel injection by engine builders. Cylmate® pressure transducers secure reliable operation, stroke-by-stroke, year-after-year. The maintenance and calibration-free performance of the unique and reliable Cylmate® pressure sensor has been proven during years of continuous operation.



