

Cylmate® Systems

Diesel engine performance monitoring systems



The unique and reliable Cylmate pressure sensor has proven its maintenance- and calibration-free performance during years of continuous operation.

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Measurement made easy

Main benefits with Cylmate systems

- Reduced fuel consumption
- Performance monitoring 24/7 will detect and identify errors in the engine at a very early stage
- An optimized engine will make it easier to comply with environmental regulations
- An engine in good balance will avoid thermal and mechanical overloads by assuring that the power distribution is equal between the cylinders
- Pressure sensor used in main engine builders closed loop control applications
- Alarm monitoring and trend data recording provides crucial information to optimize maintenance cost

Savings and payback time

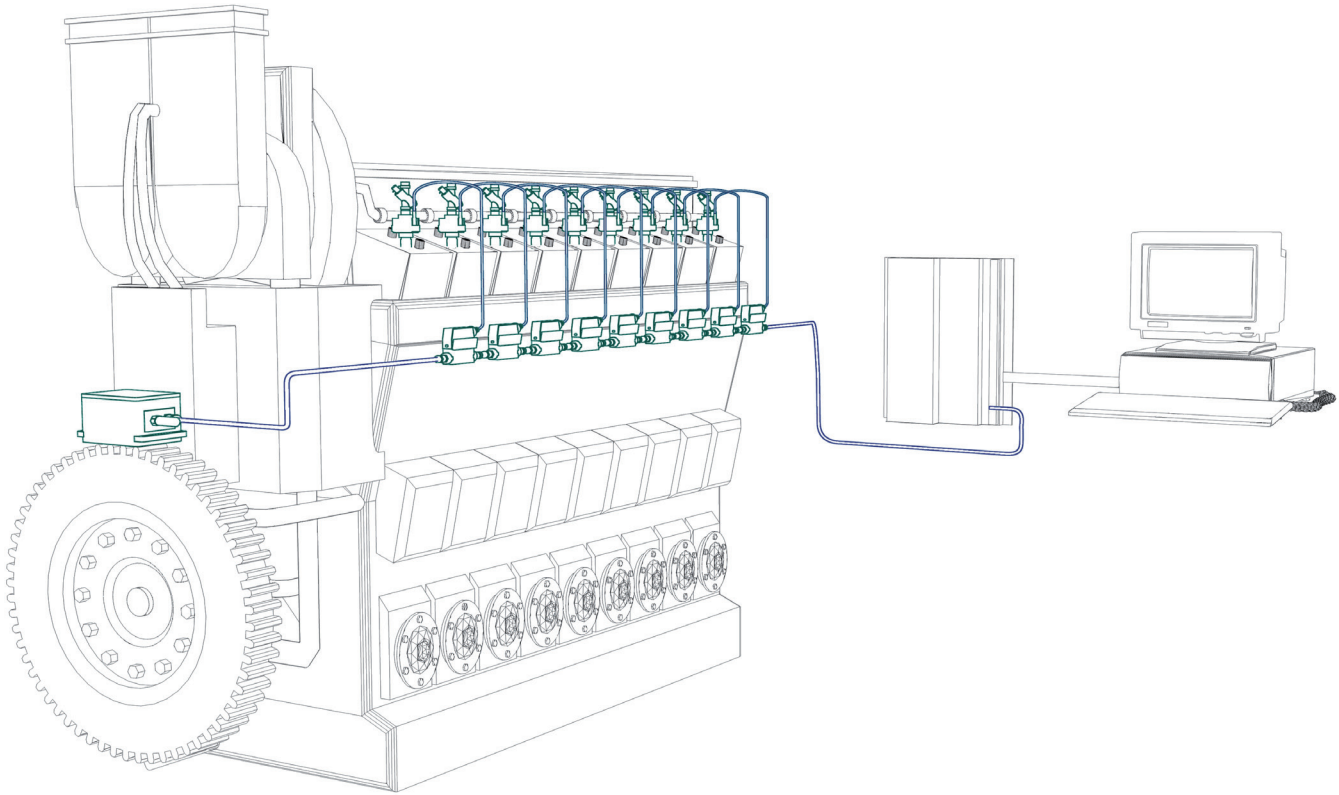
A well-tuned and balanced engine consumes less fuel. By using ABB Cylmate system the fuel oil consumption can be reduced in the range of 1-2%, which gives a payback time of less than a year.

Cylmate – Diesel engine performance monitoring system

Knowledge will become even more important. Therefore the Cylmate system is designed to provide real-time information required by electronically controlled engines in order to optimize the engine operation by closed loop control of the combustion process. The Cylmate system brings a new level of engine performance management.

The Cylmate system is a powerful tool developed by ABB for diesel engine performance monitoring. The system, which fits both marine and power plant applications, is designed to withstand marine environmental conditions and fulfills the requirements of classification societies. The combustion pressure is measured in each cylinder, continuously and in parallel, under all load conditions.

The Cylmate analysis and monitoring functions mean that the risk of mechanical or thermal overload of individual cylinders or the engine itself can be avoided.



Cylmate® System – Diesel engine performance monitoring system.

Further, the cylinder conditions can be optimized and the engine can easily be balanced and tuned in order to improve the running performance. With the Cylmate system you will reduce the costs for maintenance and fuel – resulting in a short payback time.

The Cylmate system fits both new-build and retrofit installations. An increased number of ship owners have understood the advantage of using Cylmate, already at the shop test. It is now – for the first time – possible to do live snapshot recordings and logging of all engine and combustion data under all load conditions.

Cylmate systems – key components

The Cylmate system consists of a pressure sensor on each cylinder and an angle transducer at the engine flywheel, which all are connected to the Cylmate transducer bus. The controller collects all measured data within each engine working cycle via the transducer bus. A built-in mathematical engine model computes, in real-time, the crank shaft deflection in order to get the correct TDC angle and piston position of all cylinders. All combustion parameters such as P_{max} , $\alpha-P_{max}$, P_{tdc} , MIP, indicated power and so on, are logged and monitored for each stroke and can be shown in trend diagrams. Any deviation from normal performance will be presented as an alarm. Evaluated data, alarms and events are transmitted via Ethernet LAN to the Cylmate operator station as well as to superior systems, if connected.

Cylmate pressure sensor, with 5 years warranty

The unique and reliable Cylmate pressure sensor has proven its maintenance- and calibration-free performance during years of continuous operation. The measuring accuracy is not influenced by any clogging or heat flash from the combustion gases, which is a common problem of membrane-based pressure sensors. For the Cylmate pressure sensor we have a warranty period of 5 years.

Save money by tuning and controlling the combustion pressure stroke-by-stroke. Cylmate pressure sensors used on electronically controlled diesel engines enabling improved energy efficiency and lower the risk for off-hire costs.



Cylmate pressure sensor – with 5 years warranty.

Cylmate pressure sensors in closed loop control applications

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

Recognized, verified and proven

Cylmate system has been recognized with the CIMAC President's award and is recognized as the leading solution for engine performance monitoring by ship owners, shipyards, engine builders and engine designers. Over the years the Cylmate system has verified its outstanding reliability by numerous installations and the accuracy has been proven during engine shop tests.

The ABB Pressductor® technology

The Cylmate pressure sensor, which includes a number of ABB patents, is based on the well-proven Pressductor magneto-elastic technology with a blow-through design that simplifies the cleaning of the pressure sensor from combustion residues. The MTBF figures (Mean Time Between Failures) of the pressure sensor is more than 10 years.

The sensor is factory calibrated and designed for continuous combustion pressure measurement: 24h per day 365 days per year without any need of recalibration.

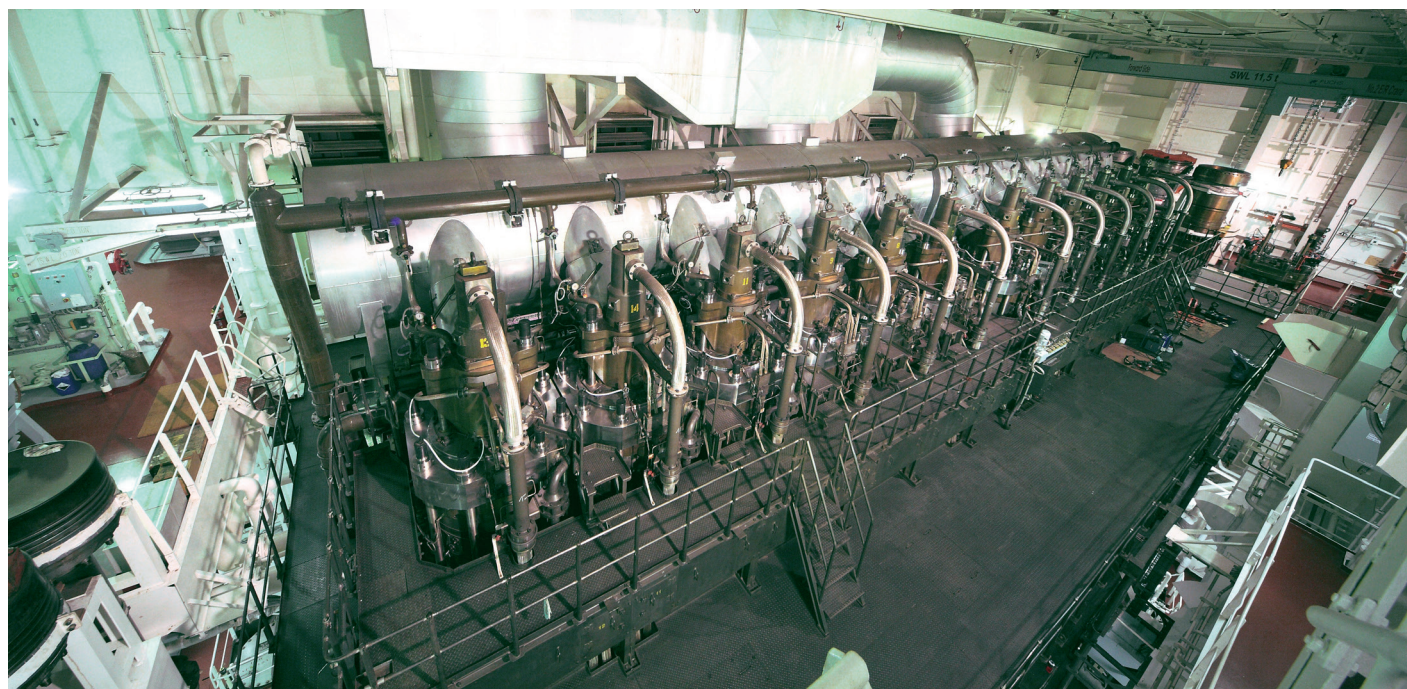
The measuring accuracy is 0.5% over the full measuring range and the accuracy is not influenced by any clogging or heat flash from the combustion gases, which is a common problem of membrane based pressure sensors. A continuous measuring accuracy has a considerable impact on optimizing the fuel consumption as 1.0 bar deviation in Pmax pressure relates to 0,2 g/kWh SFOC.

Engine designers, engine builders, shipyards and ship-owners enjoy major benefits with Cylmate pressure sensors

Warranty:	5 years
Life time:	>10 years
Calibration:	No calibration required
Maintenance:	No maintenance required
Installation:	Easy to install
Accuracy:	<0,5% of full scale

By using Cylmate pressure sensors you will get the key knowledge for obtaining optimum and reliable engine performance:

- reduced fuel consumption
- an engine in good balance will avoid thermal and mechanical over-loads by assuring that the power distribution is equal between the cylinders
- an optimized engine will make it easier to comply with environmental regulations



Engine room of a container ship.

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