

Emission reduction using exhaust gas recirculation



MAN Diesel



MAERSK

Odense Lindo

MAN Diesel has developed an Exhaust Gas Recirculation (EGR) system for low-speed two-stroke engines, which can reduce harmful NO_x emissions from ships by 80%.

The newly developed EGR system reduces harmful NO_x emissions by directing part of the exhaust gas back into the scavenge air of the engine. This redu-

ces the oxygen content of the air in the combustion chamber, thereby reducing the combustion temperature. The lower combustion temperature results in a reduced formation of NO_x.

Tests carried out on MAN Diesel's test engine in Copenhagen have shown very promising results with EGR technology on a two-stroke engine. The results show that it is possible to comply with

the International Maritime Organisation's (IMO) forthcoming requirements for NO_x emissions with EGR alone.

In addition to EGR process tests in Copenhagen, it is necessary to assess the effect of EGR on the engine over a period of time, particularly with the use of Heavy Fuel Oil which contains sulphur and is the most common form of fuel on low-speed two-stroke marine engines.

A. P. Moller - Maersk is participating in a development partnership by providing a ship for a service test of the prototype EGR system. The prototype EGR system is being installed on the container ship Alexander Maersk from July 2009 to January 2010, and once the installation is complete, the EGR system will be put into service until the end of 2010.

There are great expectations towards the EGR system. Especially in light of the new emission rules set by IMO, coming into force in 2016, whereby NO_x emissions must be reduced by 80%. MAN Diesel has led the initiative in developing emission reduction technologies. The EGR system is the first of its kind to be installed on a ship.



Project facts

Category: **Machinery**

Emission reductions:

NO_x 80%
SO_x 19%

Partners:

A.P. Moller-Maersk
Aalborg Industries
MAN Diesel
Odense Steel Shipyard