

addressed by a new assembly and testing facility completed at Tamano last year, which has an annual capacity of 80 low speed engines with an aggregate rating of around 735,000kW.

A stake in the Chinese market was cemented by MES as a partner to the China State Shipbuilding Corporation (CSSC) in the large CMD factory near Shanghai, which came on stream in 2007 to build MAN B&W designs of 700mm-bore and above. The Japanese group has a 34 per cent stake in the venture, with China's Hudong Heavy Machinery and the CSSC respectively holding 51 per cent and 15 per cent shares.

Improvements in MES after-sales services are sought through the development of e-GICS and e-GICSW systems which can diagnose the performance and durability of Mitsui-built engines at sea via satellite.



A 12-cylinder Mitsui-built MAN B&W K98ME engine

## IMES indicator standard on KHI-MAN B&W engines

A hand-held electronic device from German specialist IMES has been adopted for periodic cylinder pressure monitoring on Kawasaki-MAN B&W two-stroke engines. All such engines built by the Japanese licensee will now be supplied with the EPM-XP instrument as standard instead of a mechanical indicator.

Kawasaki Heavy Industries is the first low speed enginebuilder to specify an electronic indicator with new engines, reports IMES, which cites the high accuracy and convenience in ensuring optimised setting of engine operating parameters.

"This contract emphasises the importance of indicated cylinder pressure as a value from which much can be deduced about an engine's operation and its overall condition," says IMES managing director Stefan Neumann.

"As well as saving fuel, optimising engine settings based on accurate cylinder pressure readings will become increasingly important as a method of ensuring NOx emissions comply with the IMO Tier II limits that come into effect from January 2011."

Designed for periodic monitoring of cylinder pressure, the EPM-XP device can record values from up to 20 cylinders of a low speed engine operating at speeds of 40-300 rpm and four-stroke high and medium speed engines with rated speeds of 200-1,500 rpm. Advanced pressure sensors from IMES exploiting TION thin film technology are cited as a key element in the accuracy, reliability, durability and cost-effectiveness of the electronic indicator.

Data recording with the EPM-XP has proven considerably simpler and more accurate than with mechanical engine indicators, IMES asserts.

After acquisition, the recorded data can be downloaded immediately to a PC or laptop via a USB cable, allowing it to be processed using IMES



An IMES EPM-XP electronic cylinder pressure indicator

purpose-developed software and transmitted via telephone or the Internet for remote expert analysis. A new software upgrade enables the output of each cylinder to be calculated.

Largely intuitive operating and interfacing procedures contrast with data acquisition from mechanical indicators, where measurement accuracy is more prone to external influences such as engine vibration on the stylus of the barograph. The traced values are also more difficult to read off accurately and call for expert interpretation as well as requiring manual entry into spreadsheets.

IMES/Kawasaki co-operation started in 2006, Mr Neumann reports, and the company already supplies pressure sensors for KHI's recently launched high-efficiency gas engine. EPM-XP capabilities were demonstrated to the Japanese group in early 2008 and followed by the delivery of two instruments, respectively for testbed and shipboard evaluations.

A customised specification was subsequently agreed for the electronic cylinder pressure indicators that will now be supplied for Kawasaki-MAN B&W two-stroke engines. **MP**