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## **Smooth operator: MaK DICARE safeguards “AIDAluna” engines**

**Hamburg, Germany** – “AIDAluna”, the third in a series of six new club ships for AIDA Cruises aimed at the German cruise market, will soon start her maiden voyage to the Mediterranean. Like her predecessors, “AIDAdiva” and “AIDAbella”, the vessel is powered by MaK 9 M 43 C marine engines in a diesel-electric configuration. Among the latest innovations in propulsion technology on board is the MaK DICARE engine monitoring and maintenance system, which is even capable of real-time data access from ashore.

### **Progressive propulsion**

All six new AIDA club ships will have the same 4x MaK 9 M 43 C engine configuration, each providing a total 36,000 kW for both main propulsion and electric power to the main switchboard. The engines boast a variety of advanced features in monitoring and control, which have been especially designed to meet the owner’s demanding requirements.

A resilient engine mounting and the smooth running of the MaK long-stroke design minimise vibrations on board. Thanks to Flexible Camshaft Technology (FCT), engine emissions are reduced to a minimum for any given load. During manoeuvring in small harbours, diesel-electric propulsion also ensures quick and safe docking.

### **Perfect monitoring**

MaK DICARE is an expert system enabling real-time diagnosis and condition-based maintenance of any MaK four-stroke medium-speed diesel engine. DICARE is designed as an online monitoring system. However, data logging followed by offline evaluation on demand is also possible. As well as using the system solely on board, fleet managers or technical supervisors ashore can also access real-time data via the Internet or satellite. By tracking both

current engine status and long-term trends, DICARE enables optimum utilisation of scheduled maintenance, service personnel and spare parts, cutting operating costs and extending service life.

In principle, MaK DICARE detects engine operation deviations from a set of nominal values. These values are for a perfectly running engine and are derived from data recorded during individual customer acceptance runs on the factory's test bed. DICARE uses complex thermodynamic formulas to incorporate current engine operating points as well as ambient conditions. The system spots malfunctions at a glance, taking into account empirical data, plausibility considerations and the built-in expertise of decades of MaK diesel engine design.

### **Maximum reliability**

“Having MaK DICARE on board gives us peace of mind!”, that’s how Jens Kohlmann, Principal Technical Manager Newbuildings at AIDA Cruises in Rostock, Germany, sees the main benefit of the system in cruise operations. “We have ordered DICARE for all the new vessels. It enables the crew to monitor each of the 4x MaK M 43 C marine engines in comfort as well as to carry out detailed real-time engine diagnosis from ashore if any unexpected incidents should occur. However, we are more than happy to say that so far there has been no need to utilise remote access since all the engines on AIDAdiva and AIDAbella have performed very well”.

AIDA Cruises relies on a customised DICARE version including enhanced temperature monitoring of main and big-end bearings. Another uncommon feature is the real-time data access provided from ashore. Although it is customised, the actual system commissioning on board remains quick and easy. Basically, the DICARE PC just needs to be connected with the advanced engine control cabinet via the existing CANbus system. Once connected, automatic synchronisation between the PC and the control units in the cabinet is triggered and MaK DICARE is soon up and running.

### **Customers pleased**

Caterpillar Marine Power Systems' (CMPS) expertise in designing integrated marine solutions, together with the proven reliability and fuel economy of the MaK M 43 C engine series, has

delivered outstanding results in daily vessel operation. The AIDA Sphinx series' power plant perfectly balances high performance, low emissions and good operational economics. Now that Meyer Werft and AIDA Cruises have jointly brought the number of orders to six ship sets of total 24 engines, the MaK 9 M 43 C of 1,000 kW per cylinder can truly be said to have proven its worth.

Leif Gross, Sales Director Global Cruise Projects with Caterpillar Marine Power Systems, said: "AIDAdiva, AIDAbella, AIDAluna and the three sisters still to come mark our successful entry into the big cruise ship market segment. The AIDAdiva project in fact provided the foundation for further contracts, like those clinched in the meantime with Holland America Line (HAL), Costa Crociere, Norwegian Cruise Line (NCL) and Cunard."

**Characters: 4,672**

**Pictures available on request:**

- 1.) AIDAbella in Hamburg**
- 2.) MaK 9 M 43 C flying into AIDAluna Engine Room**
- 3.) AIDAluna Engine Room with 4x MaK 9 M 43 C**
- 4.) DICARE aboard – AIDAdiva with 4x MaK 9 M 43 C**

### **About Caterpillar Marine Power Systems**

Caterpillar Marine Power Systems, with headquarters in Hamburg, Germany, groups all the marketing and service activities for Cat and MaK marine engines within Caterpillar Inc. The organisation provides premier power solutions in the medium- and high-speed segments with outputs from 93 to 16,000 kW in main propulsion and 10 to 7,680 kWe in marine generator sets. The sales and service network includes more than 2,100 dealer locations world-wide dedicated to support customers in ocean-going, commercial marine and pleasure craft wherever they are.

More information is available at: [www.Marine.Cat.com](http://www.Marine.Cat.com).

### **About Caterpillar**

For more than 80 years, Caterpillar Inc. has been making progress possible and driving positive and sustainable change on every continent. With 2007 sales and revenues of \$44.958 billion, Caterpillar is a technology leader and the world's leading manufacturer of construction and mining equipment, clean diesel and natural gas engines and industrial gas turbines.

More information is available at: [www.Cat.com](http://www.Cat.com).

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