



Major Conference Marks Helios Final Phase

EU-funded initiative on gas-fuelled, two-stroke ship engines

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A major international conference on 27 November in Copenhagen marked the final phase of the EU-funded Helios project. Helios is a cooperation research project within the EU's 7th Framework Programme for Research and Technical Development/Transportation with MAN Diesel & Turbo acting as coordinating partner. The general objective of the project is to develop a research platform for an electronically controlled, two-stroke, low-speed, marine diesel engine that operates on the principle of the direct injection of HP Compressed Natural Gas (CNG) to meet the needs of the emerging LNG market. A large audience of 100 experts from around the world attended the conference to hear presentations on the gas-engine technologies garnered from Helios as well as on other factors influencing the development of gas-fuelled ship engines.

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Activities and results

A broad range of activities were initiated over the past three years under the Helios framework. A concrete result was the development of the new, gas-fuelled ME-GI engine, a dual-fuel unit that MAN Diesel & Turbo has since released to the market with success. Generally speaking, Helios has generated many, positive results and increased the knowledge base in several technical fields, including the development of:

- gas-engine components
- a new gas injection valve and other main components
- a gas-control block
- a new gas-composition sensor
- a new handheld calibration device
- a dedicated control and safety system
- laser-optical, temperature-measurement technology
- new high-temperature materials
- the analysis of potential tribology and corrosion problems.

First orders of gas-fuelled ship engines

As previously mentioned, Helios' most significant result is the development of the ME-GI engine, utilising the direct-injection principle, a concept the market has embraced and which several shipowners have already placed orders for. Recently, Matson (USA) ordered two giant ME-GI gas engines – the largest dual-fuel engines ever ordered in terms of power output – for two new container vessels, while American TOTE and Canadian Teekay also signed



ME-GI orders at the very end of 2012 and will become owners of the most environmentally friendly, two-stroke, low-speed vessels in the world with the first scheduled to be complete in 2014.

MAN Diesel & Turbo assesses the potential for more orders in this new, emerging market segment as great.

Cooperation

The Helios results were gathered through an innovative collaboration with an array of different universities and companies. A research platform was constructed at MAN Diesel & Turbo in Copenhagen, where various ideas were tested and components subsequently developed.

Environmental benefits

The ME-GI engine complies with the IMO's Tier II requirements and, in combination with EGR (Exhaust Gas Recirculation), its emissions are below Tier III limits. A particularly significant, environmental benefit is the ME-GI's very low methane slip. The major benefits stemming from the Helios project are summed up in the following table:

Environmental benefits	
NO_x	24% reduction
CO₂	23% reduction
Methane 'slip'	0.2-0.3 g/kWh
PM	85% reduction
CO	Very low
SO₂	Very low
Smoke	Almost eliminated
Thermal efficiency	Very high



Participating partners		
Name	Type	Country
MAN Diesel & Turbo (Coordinator)	Large company	Denmark
University of Erlangen	University	Germany
Germanischer Lloyd	Large company	Germany
Jönköping University	University	Sweden
Kistler Instrumente Wintherthur AG	Large company	Switzerland
Lund University	University	Sweden
Sandvik Powdermet	Large company	Sweden
TGE Marine Gas Engineering	Large company	Germany
Uppsala University	University	Sweden



More information on the Helios project is available at www.helios-fp7.eu; or contact MAN Diesel & Turbo directly: Senior Manager Lars Juliussen, Coordinator (Tel.: +45 33 85 13 97) or Programme Coordinator Niels Freese (Tel.: +45 33 85 13 68)

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About MAN Diesel & Turbo

MAN Diesel & Turbo SE, based in Augsburg, Germany, is the world's leading provider of large-bore diesel engines and turbomachinery for marine and stationary applications. It designs two-stroke and four-stroke engines that are manufactured both by the company and by its licensees. The engines have power outputs ranging from 450 kW to 87 MW. MAN Diesel & Turbo also designs and manufactures gas turbines of up to 50 MW, steam turbines of up to 150 MW and compressors with volume flows of up to 1.5 million m³/h and pressures of up to 1,000 bar. The product range is rounded off by turbochargers, CP propellers, gas engines and chemical reactors. MAN Diesel & Turbo's range of goods includes complete marine propulsion systems, turbomachinery units for the oil & gas as well as the process industries and turnkey power plants. Customers receive worldwide after-sales services marketed under the MAN PrimeServ brand. The company employs around 14,000 staff at more than 100 international sites, primarily in Germany, Denmark, France, Switzerland, the Czech Republic, India and China. MAN Diesel & Turbo is a company of the Power Engineering business area of MAN SE.

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