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## WinGD and Propulsion Analytics cooperate on 2-stroke digitisation

In a new collaboration, large 2-stroke engine designer and developer Winterthur Gas & Diesel (WinGD) has taken a decisive step towards a future where the acquisition and evaluation of real-time propulsion operating data will play a crucial role in both engine operation and on-board support.

Signed on 16 December 2016, an agreement with ship performance monitoring specialist Propulsion Analytics of Piraeus, Greece calls for the joint development of an advanced diagnostics system for all WinGD 2-stroke diesel and dual-fuel engines.

Representing a major step towards digitisation in the shipping sector, the objective of the system to be developed is to provide ship owners and operators with digital technologies that will enhance both operational efficiency and crew decision-making processes related to the main engine.

The system will acquire and analyse data on the performance and condition of the engine and its subcomponents in real-time and so provide live troubleshooting and diagnostic advice to the crew. In addition, as required, the system will be capable of connecting to shore-based stakeholders. In this way, this system completes and enhances ship digitization by providing a 2-stroke engine performance optimizer and diagnostic system, WinGD VP Operations Mr. Andrew Stump states.

The proposed system will enable the ship operator to:

- optimise engine performance in all its aspects (fuel consumption, power, emissions).
- intelligently diagnose the engine status, via performance information, sub-systems and components current behaviour, enabling prediction and diagnosis of component malfunction and extension of maintenance intervals (condition-based maintenance).
- troubleshoot abnormalities by providing the crew and the shipping company with more detailed information on which key components are affected and what are the relevant steps to fix the malfunction.
- Have an integrated planning and online spare parts purchasing.
- train its crew and shipping company by providing virtual and interactive tuition.
- communicate engine data ashore to the ship owner and, if wished, to other interested parties such as service providers.
- Store data in a secured environment enabling fleet comparisons when required.

All these capabilities will be implemented into a user-friendly on-board system comprising of the most competitive and state of the art hardware, software and data analytics techniques.

## Scope of the agreement

Based on needs identified by WinGD in consultation with engine end-users, Propulsion Analytics will develop software solutions for processing and evaluating data gathered from on-engine sensors. The data will be processed in a digital controlling, monitoring and diagnostic systems.

## Advanced voyage optimization tool

The complete system is also intended to provide a valuable source of knowledge on real-time, round-the-clock engine operation. That can be used to improve engine performance based on load profiles acquired over complete voyages in a full range of ambient conditions (air temperature and pressure, winds, tides and currents).

“In present market conditions, where shipping companies are striving to further optimise their operations and reduce costs, this technology will provide real time support to improve the performance and operational efficiency of their main engine and machinery, while simultaneously strengthening WinGD’s technology leadership in this new digital era,” notes VP Operations Mr. Andrew Stump. “With real-time data collection and exchange across a shipping company’s vessels, WinGD’s new engine diagnostic system will be the first advanced product on a 2-stroke engine that will not only optimise and monitor performance but will also track the condition of key engine components. It will be able to predict future malfunctions and provide troubleshooting support to shipping companies in order to prevent failures and/or fix technical problems faster and more economically.”

## Big picture

Looking at the wider implications of digitisation at a time when global communications networks are expanding rapidly, VP Operations Mr. Andrew Stump notes that the project represents a great step on WinGD’s digital transformation journey. “Industry 4.0 and the Internet of Things represent tremendous opportunities for traditional businesses when incorporating and integrating digital services into product portfolios to achieve a leading position in the next innovation wave,” he states. “Our collaboration with Propulsion Analytics utilises their deep digital knowledge to enable a more traditional products company such as ours to enlarge its offering by taking advantage of the digital technologies.”

Dominik Schneider, Vice President Research & Development at WinGD also sees the agreement as a key step towards technology leadership. “The collaboration with Propulsion Analytics will help us realise our ambition to lead innovation in the field of shipping digitization, focusing first on the 2-stroke engine – our core expertise – and then enlarging it to the whole ship machinery and smart ship”, he said.

For its part, Propulsion Analytics regards the new engine diagnostic system as a breakthrough innovation, both in terms of the technologies employed, as well as the breadth of operational benefits that this digital transformation brings to the end customer and the environment. “The engine diagnostic system is something that the industry has been expecting for a long time and we are really happy to embark on this journey with a pioneering partner like WinGD. The combination of Internet of Things technologies with physical models, big data analytics and human expertise are at the core of our company’s philosophy,” said Panos Theodossopoulos, Propulsion Analytics CEO.

## Timescale

With regard to timing, the agreement targets the implementation of one pilot system with a leading shipping company by early 2017. The prototype is expected to be running in the field by mid-2017 and full release on the entire WinGD engine portfolio is forecasted for 2018.

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## WinGD in brief:

Winterthur Gas & Diesel Ltd. (WinGD) is a leading developer of two-stroke low-speed gas and diesel engines used for propulsion power in merchant shipping. WinGD's target is to set the industry standard for reliability, efficiency and environmental friendliness. WinGD provides designs, licences and technical support to manufacturers, shipbuilders and ship operators worldwide. The WinGD engines are manufactured under licence in four shipbuilding countries. WinGD has its headquarters in Winterthur, Switzerland, where its activities were founded in 1898.

## Propulsion Analytics in brief:

Propulsion Analytics is an innovative company in the area of performance monitoring and energy efficiency for the maritime industry. Its vision is to apply state-of-the-art technology in helping the world shipping community deliver cleaner, cheaper and safer transport of people and goods. Propulsion Analytics offers products and services focusing on marine engine performance monitoring, through the use of virtual models and smart data analytics, for assessment, fault diagnosis and optimisation in service. The company is rapidly expanding its activities in Greece and abroad, already serving a wide spectrum of needs in the shipping industry, ranging from large containership operators to tanker/bulker management companies.