

THYSSENKRUPP MARINE SYSTEMS GMBH CHOOSES METRONOR

thyssenkrupp Marine Systems and Metronor join forces through an Industrial Cooperation program facilitated by the Norwegian government updating the Ula Class submarines and look for new opportunities once the new submarines of the 212 CD type are under contract.

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Thyssenkrupp Marine Systems is being awarded the status “preferred supplier” with its 212 Common Design (212 CD) submarines for both the Royal Norwegian Navy and the Federal German Navy.

Given this as background information, a series of industrial events were held in Norway to find potential Norwegian suppliers for thyssenkrupp Marine Systems through an Industrial Cooperation program facilitated by the Norwegian Government. In one of these events, thyssenkrupp Marine Systems realized the potential of Metronor. Soon after, a meeting at the thyssenkrupp Marine Systems’ facilities in Kiel, Germany was scheduled to further explore the



A GERMAN NAVY 212 SUBMARINE

thyssenkrupp Marine Systems is one of the leading providers of non-nuclear submarines and naval vessels. The company brand represents more than 175 years of engineering expertise.



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possibilities of Metronor’s measurement solutions.

The Challenge and the Possibilities

thyssenkrupp Marine Systems is switching from physical templates that are created to match the onboard geometry of pipes to producing from virtual models of the pipes. With the Metronor solution, what

was a largely manual process in the past, has been streamlined into creating a digital model of a pipe that fits exactly to previously measured connection points, be that valves, flanges or other tubes. This file is then sent to the bending machine, creating an exact replica of the virtual pipe – if need be, without the operator even leaving the construction site, but sending the data via the internet directly to the production center.

How They Stay Ahead

The aim of thyssenkrupp Marine Systems is to make the process of creating pipes more efficient and more accurate and to switch completely to virtual models, in line with the digital-twin concept of Industry 4.0. Transparency, automated flow of digital information and working with as-built CAD representations mark this movement. This insures a highly sophisticated but still straightforward process to implement due to the easy-to-learn functionality of the Metronor system.

Metronor Shipyard Solution

The simple principle of using a tactile system within the complete field of view of a

camera – without the need of a firm base or cable connections – was quickly discovered to be an advantage when measuring pipe connections in the underwater vessels.

Using a unique approach of tracking active, infrared LEDs, Metronor’s systems efficiently measure the relevant pipe geometries. Even in awkward and confined spaces, the system captures critical parameters like flange geometries, bending angles and radii, lengths of straight sections, etc. The system’s core technology is based on a camera observing a pattern of LEDs in a so-called Lightpen and calculating from that its position in 6 degrees of freedom.

The components of the Metronor Shipyard Solution are ready connected in a case that can also be used as a backpack for ease of transportation in difficult environments.

New Business Chances in the Next Decade

The joint submarine procurement project 212 CD of Norway and Germany aims at a contract signature in 2021. This provides the inherent chance to implement Norwegian technology again and will guarantee the perfect first-time fit of pipes and tubes – the lifelines of every submarine. ■■