Proportional Valve Control

GENTLE COUPLING
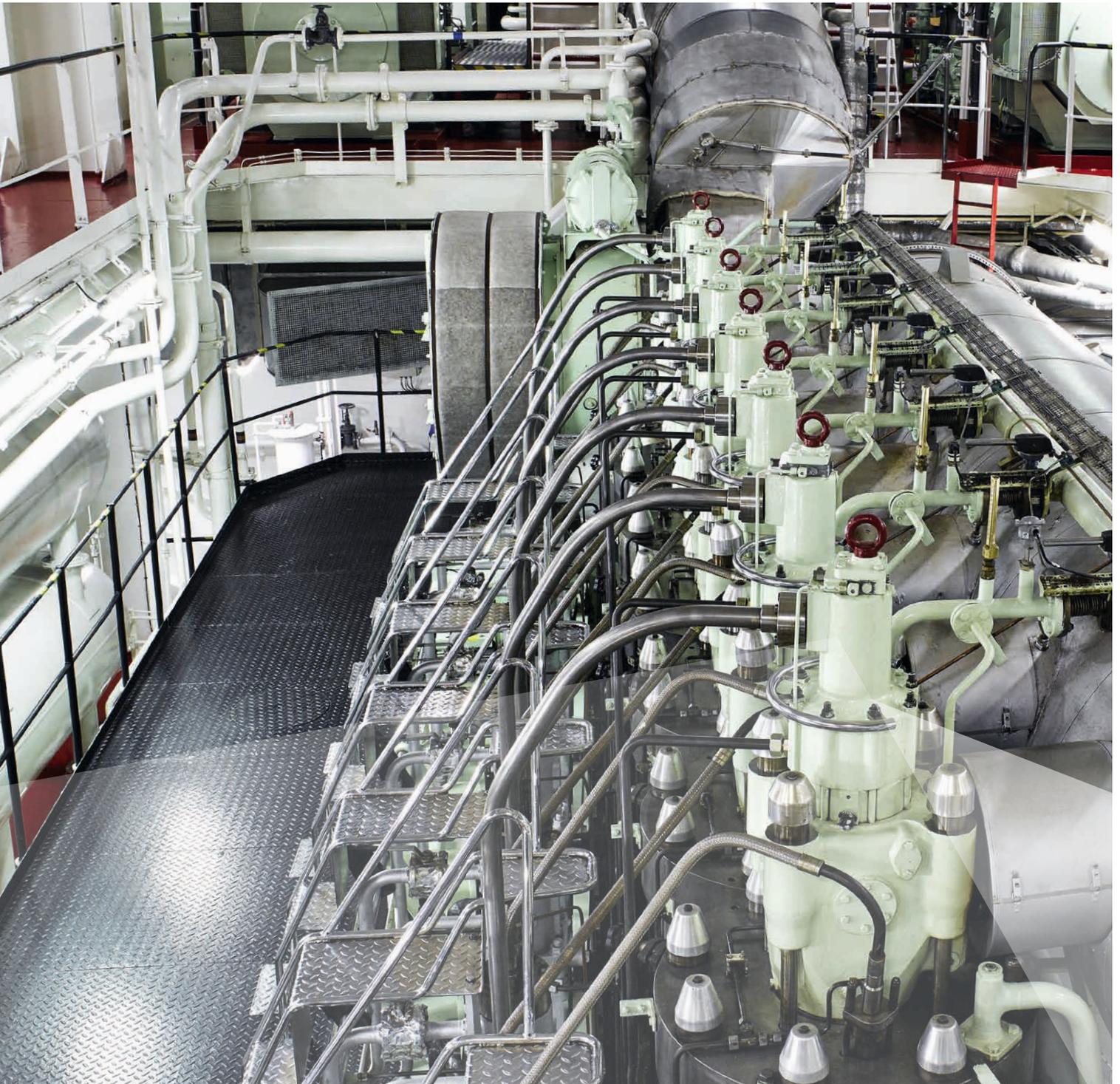
GENTLE COUPLING

Most marine transmission couplings are still controlled hydraulically and mechanically. Coupling processes are sluggish, with unwanted bumps during engaging and rerouting. With proportional valve control, however, power transmission is precise, fast - and gentle. Noris Group has the solution.

The globally active Noris Group GmbH, based in Nuremberg (Germany), develops and produces products, components, and custom solutions for measuring technology and automation in the shipbuilding industry, traffic engineering, and meteorology. In the latest reversing gear units, proportional valves were used for monitoring and control instead of the complicated mechanics: "This enables us to implement complex and dynamic controls and to adapt the power transmission precisely to the drive train behind it", explains Felix Weiss, Head of Sales Marine at NORIS Group.

Challenging Conditions

The specific challenge in finding a solution were the harsh conditions in the engine room, especially the vibrations. In the Bachmann M1 automation system, Noris not only found the right hardware, but a solution that meets their high standards for performance. "With VxWorks as an operating system, we get robust hardware integration with reliable real-time tasks, but with all the interfaces of a modern automation platform for maritime applications," Felix Weiss confirms their decision for the system.

Flexible Hardware

The employed MX213 processor module already includes the most common interfaces such as Ethernet, CAN and serial interface. Furthermore, all protocols required in shipbuilding such as Modbus (RTU, ASCII, TCP, UDP), CAN, J1939 and OPC UA and MQTT are implemented, which made integrating the clutch control straightforward.

Finally, a module from the PVA20X series was selected for the precise control of the proportional valves. Its functions were developed by Bachmann in close cooperation with established shipbuilders.

Burkhard Staudacker, Key Account Manager Maritime at Bachmann electronic grins: "With the GIO212 universal input/output module, you always have a joker in your hand during startup." This module can be used to capture, process and output the most common signal types in the small signal range. Analog and digital input or output signals can be assigned to each channel.

Plethora of Advantages

The control system performs tasks that are usually carried out by mechanical assemblies. This not only reduces the weight and installation effort on board, it also makes start-up and subsequent maintenance easier and cheaper. All the settings are made electronically on site – keeping mechanical components available and replacing them is a thing of the past.

"The PVA module offers many standard functions such as a ramp

NORIS GROUP GMBH

– Headquarters in Nuremberg (DE)

– Founded in 1925

– Globally active in shipbuilding and traffic engineering (rail and special purpose vehicles)

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function and dither, but can also be operated directly via code," Weiss explains the decision for Bachmann. "With the M1 system, we can also execute precise control processes with response times of 1 milli-second without any problem. All this offers us the highest possible com-fort and flexibility."

The Future in Front of Us

Felix Weiss is convinced that advancing digitization and networking will open up many more possibilities in ship automation. The most urgent goals are to operate systems as efficiently as possible, save costs, and protect the environment.

This is why he believes that condition monitoring solutions will become the standard. "It takes the right expertise and high-performing systems that satisfy the growing requirements for data collection and processing power," says Weiss. "With Bachmann we have the right partner at our side."

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