SAFE OPERATION FOR INLAND SHIPPING

Modules for navigation, monitoring and fleet management

The automation of ships requires the management of some complex tasks. Argonics GmbH has broken these tasks down into manageable platform and has thus been able to create some innovative products. The modular platform from Bachmann electronic and its networking capability enables the concepts of Argonics to be implemented easily, thus simplifying routine ship operations.

›Divide and rule‹ – this is the principle by which complex and at first seemingly unmanageable tasks are normally broken down into hierarchical levels. Each level is divided in turn into individual modules which handle definable tasks that are disconnected from each other. By networking individual modules it is possible to exchange information and interact with each other. »This procedure enabled us to create different products for simplifying routine tasks in the inland shipping industry,« explains Alexander Lutz, founder and CEO of Argonics GmbH. »Naturally it also requires the appropriate hardware components in order to implement our concepts in a real system.« For this Argonics uses the M1 automation system from Bachmann electronic. »Its modularity as well as the wide range of networking options impressed us,« Alexander Lutz continues.

Simplified navigation

Different modules, such as argoPropControl, argoPilot and argoCruiseControl are available for navigating ships. The argoPropControl module ensures on the lowest level that the propulsion units implement the skipper's settings for rudder angle and engine speed. »This involves the installation of separate controller and I/O modules for each drive unit in order to ensure maximum safety,« Alexander Lutz explains. On the next level, the argoPilot module functions as a Yawcontroller. Keeping the ship on track. argoCruiseControl additionally ensures that all propulsion engines are always under an even load. »This saves fuel and reduces wear,« Alexander Lutz explains further. The two modules supply setpoints to the argoPropControl module. »This is implemented without the need for additional hardware. The modules are sim-

argonics

Argonics GmbH was founded in Stuttgart in 2014. It was formed from the ›3G Navigation‹ enterprise of the TTI GmbH enterprise company of Stuttgart University. Argonics produces innovative products for navigating and monitoring ships.

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ply networked together,« says Alexander Lutz. argoTrackPilot was the first system developed of its kind in inland shipping for the automatic guidance of ships along set routes. This module, which is exclusively available from Argonics for the highest navigation level, draws on the functionality of the modules of the subordinate levels. In this case, the argopilot module is set with the set speed, which in turn supplies the rudder angle settings to argoPropControl. All modules for navigating the ship require access to the drive hardware and different sensors such as the GNSS global satellite navigation system or the tack and rudder angle indicator. This is implemented via communication modules which use special protocols such as J1939 or NMEA. »These can be easily implemented in the M1 automation system or are supplied already integrated,« a delighted Alexander Lutz explains.

Targeted monitoring

Different monitoring modules can likewise access the variables of the navigation and communication modules. argoMultiDisplay shows on touch screens all the data relevant for ship management. »The visualization is specially implemented according to customer specifications as many configurable instruments are available,« Alexander Lutz explains. In the event of critical states alarms are also indicated to the skipper via the argoMultiDisplay.

Illuminating insights

The argoDataPortal is based on Bachmann's atvise® portal, which enables the shipping company to access all the relevant data of their ships. »This data is transferred from the ships to the onshore database via an openVPN connection,« Alexander Lutz explains. If the connection is interrupted, all the data is buffered locally on

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Dr. Alexander Lutz,
Founder and CEO of Argonics GmbH

the ships. »The technical officers of the shipping company can analyze the saved data in order to identify problems early on and organize the maintenance work,« Alexander Lutz describes the benefits of the portal. »argoDataPortal also enables the ship handling skill of the skipper to be assessed and also enables the requirements of the shipping company to be transferred to the ships via a feedback channel.« The argoTracker is used if the shipping company only requires the information of position and speed data.

»argoTracker sends here the information of a GNSS receiver cyclically to a web server which the shipping company can access,« Alexander Lutz explains.

»Bachmann electronic's state-of-the-art controller architecture allows us to create modules for all areas of navigation, monitoring and fleet management of inland ships and thus simplify the daily work of the skipper,« Alexander Lutz sums up in closing.

▼ The navigation and monitoring equipment on inland vessels is divided into individual modules. The ship also transfers information to an onshore database server.

openVPN

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Digital
Analog
MODBUS
Ethernet
J1939
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