Operational reliability, thanks to consistent redundancy concepts for bridges
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Overview

• Installation companies, operators, and planners of movable bridges are faced with the challenge of implementing fail-safe application control to suit the prevailing situation.

• Phoenix Contact offers control technology, network infrastructure, and the field level connection from a single source.

• Depending on the size and complexity of the system, redundant systems can either be implemented in the application with a small-scale controller or with a high-performance controller.

Application

Movable bridges are often used to transport traffic across waterways. As part of the road network they have to function seamlessly. They should therefore be operated based on high-availability automation technology that opens and closes the bridges reliably. This means that the network technology, the control technology, and, if applicable, the I/O level, need to be designed redundantly.

The bridges themselves can be considered as an independent automation solution, but are usually integrated into a higher-level network or control system. Ethernet-based communication with the control engineering is essential, but can also be used for communication with the bridge. When it comes to frequently used wireless technologies, both WLAN and Bluetooth can be used in place of cables in industrial Ethernet.
Solution

Phoenix Contact offers products and systems for redundant systems of various sizes for maximum availability. Network technology that offers various possibilities for rapid reconfiguration in the event of an error forms the basis of the automation solution for bridges. As such, the network technology can be seamlessly integrated into the local or higher-level automation system.

Control technology represents the central function of bridge communication. Tailored to the requirements of the application, the redundant control technology can be designed to be scalable. Phoenix Contact offers a unique range of applications for all system sizes, which can be based on controller hardware or an in-application solution. This means that the control function can be designed and adapted to suit the importance of the transportation route.

In smaller applications, a high-availability system can already be implemented with a modular Axiocontrol small-scale controller, thanks to in-application system redundancy. In this case the controller is extended to include the redundancy function by means of a function block. Together with the network infrastructure, which is also scalable, it forms the basis for high-availability systems and applications.

Phoenix Contact also offers the right solution for larger systems with its RFC high-performance controllers. These enable the entire network to be reconfigured extremely quickly, for example. Thanks to the link cable between the controllers, distances of up to 80 kilometers can be covered.
In the case of price-sensitive solutions, a solution with small-scale controllers and in-application system redundancy can be used

Your advantages

- In-application system redundancy with no additional cost, thanks to the use of freely available function blocks
- High-availability applications and rapid reconfiguration, thanks to scalable systems
- Integration into existing control systems with standardized Ethernet protocols
- Perfectly coordinated solution, thanks to products and systems from a single source
## Products

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
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<tbody>
<tr>
<td>Axiocontrol small-scale controller</td>
<td>AXC 1050</td>
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<td>Inline high-performance controller</td>
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<td>Redundant compact controller</td>
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<td>Industrial Ethernet Switch</td>
<td>FL SWITCH SMN 8TX-PN</td>
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<td>Function block</td>
<td>Redundancy_ASR V1.00</td>
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