Case Study
Transportation

red lion®

thyssenkrupp

"We require reliable operator panels for our transport crawlers, which - in addition to their controlling and monitoring capabilities - also allow for remote maintenance in very diverse environments, from the frosty, arctic tundra to hot desert deployments. We selected G3 HMIs by Red Lion Controls for our applications and are highly satisfied. The application software runs reliably and the simplified remote diagnostics and maintenance won us over. The G3 HMIs are a good recommendation for critical applications using Crimson 3.0 software."

- Project Engineering thyssenkrupp AG, Germany

Customer

thyssenkrupp AG
www.thyssenkrupp.com

Location

Worldwide

Challenges

- Reliable control of transport crawlers under extreme environmental conditions
- Ability to remotely control and monitor application
- Need for easy and flexible programming

Products

Industrial Automation
G3 HMIs

Results

- Integrated display for multiple components replaced two separate units from previous design
- Seamless programming in different languages using Crimson® 3.0 software

Project Scope

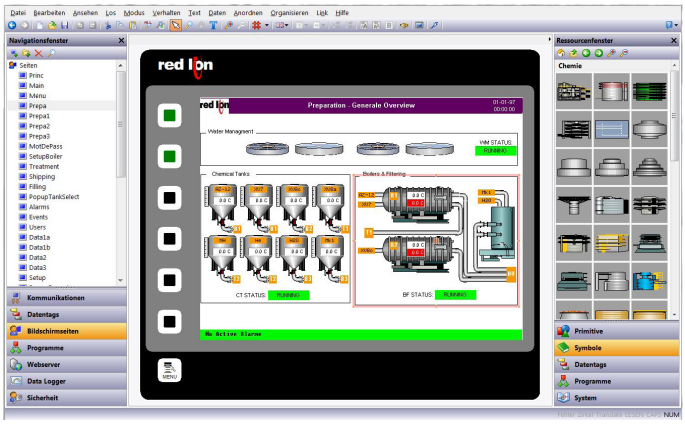
thyssenkrupp, an industrial enterprise with global operations, is Germany's largest steel and technology company in the application fields of mechanics, plant engineering and materials. Activities such as the extraction of raw materials or the construction of large conveyor systems often require moving heavy loads and equipment in rough terrain, and transport crawlers have proven to be the vehicles best suited to these tasks. Deployed globally to all manner of extreme environments - from frigid arctic tundra and sweltering deserts to humid jungles and the salt-laden air of mangrove swamps - these crawlers require a particularly robust design for all components. To facilitate the reliable control, monitoring and if necessary, remote maintenance of the transport crawlers in these types of conditions, thyssenkrupp employs Human Machine Interface (HMI) operator panels.

Complex graphical representations of the PLC, drive technology, engine and other components are essential for use of the operator panel to control the crawler as well as safely ascertain its status or if applicable, to send alerts. As the equipment is often operated by workers on location, it is advantageous if the software and display use the local language. In order to handle maintenance scheduling and deploy the crawlers most effectively, an integrated automatic data logger for the primary operating parameters is also important. Quickly-exchangeable storage media are indispensable and improve the usefulness of the crawler control since they save the recorded data and enable the safe transfer of application software updates.

Solution

The web-serving graphic operator panel of the G3 HMI offers an outstanding fit for these tasks. Providing an advanced HMI with a durable 10.4-inch LCD touchscreen, the G3 offers a built-in web server and the ability to transfer information via FTP. These capabilities in turn enable quick configuration and management of remote maintenance and control parameters. A compact flash slot allows on-board data logging and uploading of application software updates. Databases and log files can be synchronized via USB interface. Numerous interfaces and optional plugin cards for fieldbuses or wireless modems expand the areas of application.

Benefits



G3 HMIs are able to communicate using any of over 300 different industrial protocols, including the SAE J1939 CAN BUS protocol used by the engine of the crawler. This allows a single G3 to provide control, monitoring and data logging for both the PLC and the engine, each of which had previously required their own dedicated operator panel. The simple-to-use programming features of Crimson software allowed thyssenkrupp to continue to use the existing display for PLC control and to add additional functions, such as data logging and an engine data display screen.

Since reliability and availability were the primary criteria in the selection of the control components for the transport crawler, thyssenkrupp Fördertechnik Industrial Solutions conducted intensive in-house tests, to assess the capabilities of devices, including the use of a climatic chamber to simulate various environmental conditions. Results of these tests quickly led to a decision in favor of a Red Lion Controls G3 HMI.

Another reason for using the G3 HMI was the easy and effective programming of the equipment. By using Crimson 3.0 software (shown above), the configuration and control of the user interface can quickly be tailored for each location. Multilingual builds are possible thanks to software support for Unicode characters including such alphabets as Cyrillic and Chinese, simplifying global deployments. This enables the shared use of one database for all applications. Thanks to an intuitive interface, intelligent user guidance and a comprehensive library with more than 5,000 industrial graphics in roughly 60 categories, the application was implemented quickly.

Overall, the updated design using the G3 HMI improves the transport crawler's availability, increases the longevity of the equipment thanks to better proactive monitoring and helps manage the cost of long-term operation.

www.redlion.net

Connect. Monitor. Control.

Americas
sales@redlion.net

Asia-Pacific
asia@redlion.net

Europe
Middle East
Africa
europe@redlion.net

+1 (717) 767-6511

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