

Purest Water

Automated filling station with easyHMI and easyRelay



The Bremen-based company Acmos Chemie develops and produces barrier-layer products which prevent or minimise contact between two materials. The water required for manufacturing the product must be treated, conveyed and dosed via filling stations. Elga Berkefeld, a company based in Celle near Hannover, implemented a tailored solution for the filling stations at Acmos Chemie using Moeller automation components.

Acmos requires highly purified water for the manufacture of its chemical products. The treatment plant installed by Elga Berkefeld supplies this highly purified water by hardening and reverse osmosis, and then feeds it into a storage tank. A ring main was installed so that the highly purified water can be transported into the different production areas. This currently reaches five filling stations via a pressure booster station. A solely manual and mechanical operation of the filling stations, however, would restrict the operating personnel during the filling process and make it more difficult to maintain constantly precise dosing. Furthermore, the

Dezentrale Abfüllstation, bestehend aus easy 800 Steuerrelais und Touch-Display MFD4.



simultaneous drawing of water from several stations could cause an uncontrollable supply shortage which would take the capacity of the plant to its limits. The precise observance of mixing ratios is also vital in order to maintain the constant high quality of the chemical products. The decision to use an automated and programmable solution for the filling process was therefore a logical step. The tailored automation concept had to be future-proof and therefore provide space for later optimizations.

Automated solution

The requirements for the planned automation solution were far greater than those stipulated by the standards. The actual states/values of the sensors, such as flow speed and storage tank level had to be measured in order to control the actuators such as pumps and valves so that the set-point states/values defined by the operator could be reached. This kind of automation task was one that Elga Berkefeld had implemented as a standard solution for several hundred similar applications – using Moeller's easyRelay programmable compact controllers. The additional challenge of the Acmos solution arose from the fact

THE COMPANIES

Elga Berkefeld GmbH has had its headquarters in Celle near Hannover for over 110 years, and since 2004 has been part of Veolia, or more precisely Veolia Water Solutions & Technologies, a leading company worldwide in water treatment. The company's core areas of competence are the planning, engineering and realisation of comprehensive plants for potable water and process water treatment. Furthermore, the company offers standard and tailored water treatment systems for house equipment and building technology, installations for the petrochemical industry, power generation, shipping and offshore platforms, as well as mobile plants for emergency equipment. (www.elga-berkefeld.de)

Acmos Chemie KG, Bremen, develops and manufactures barrier-layer products such as release agents, lubricants, anti-corrosive agents, metalworking fluids and high temperature resistant coatings for the wood, glass and plastics industry. The origins of Acmos Chemie go back to 1909, and the company now sells its range of over 1000 products worldwide. (www.acmos.com)

that different setpoints were required for virtually every filling operation due to the different chemical products involved. With the new solution, the operating personnel should be able to set product parameters at all filling stations simply and with a few operations at any time. In addition to this, it must be possible to monitor warning and fault messages, as well as relevant actual values, setpoints and limit values at a glance.

MFD4 with touch technology

The requirements placed on HMI devices in the chemical engineering industry are high. However, a programmable, full graphics colour display with robust touch technology meets these requirements ideally. Moeller's metallic MFD4 multi-function display was therefore chosen for the visualization of the filling stations. It comes standard with a special polyester foil which is highly resistant to solvents. The rugged MFD4 (protection class IP65) is provided with an absolutely flat, full

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The multi-function display is used to start automated dosing and display the available volume of purified water.

graphics 5.7 inch TFT display with 32,000 colours and resistive touch technology. The device, with a bevelled front frame and small mounting depth, is also suitable for use in dust environments in accordance with the ATEX Directive 94/9/EC Zone 22 Cat 3D and is also approved for use on ships. The Windows CE-based MFD4 comes as standard with an integrated 64 MB SRAM, 4 MB Flash for data/program memory, 6 MB for the visualization and a battery-backed real-time clock. Users can utilise the integrated PLC functionality or use the standard CANopen/easyNet, Ethernet and RS232 interfaces for data exchange with different controllers. The devices also come standard with a slot for an onboard MMC card. Only the easySoft-CoDeSys (IEC 61131-3) software is required for the both the visualization and the PLC application. This provides the pro-

grammer with all the functions for creating screens, password and alarm management or trend and bargraph display. The web server provided onboard allows created screens to be accessed via the Internet or an Intranet.

Intuitive operating concept

Amcos had already created a user-friendly operating concept for its filling stations, thus allowing intuitive operation. This includes graphic elements such as bargraph displays for filling levels and filling progress, as well as meters for flow speed, colour-based status changes and function settings such as supply measurements or pressure boosting, and last but not least warning messages. Setpoints are entered via a temporary numerical keypad. In addition to the actual filling operation, general screens are provided such as the deactivation function for cleaning the display, the system parameters or password protection menu.

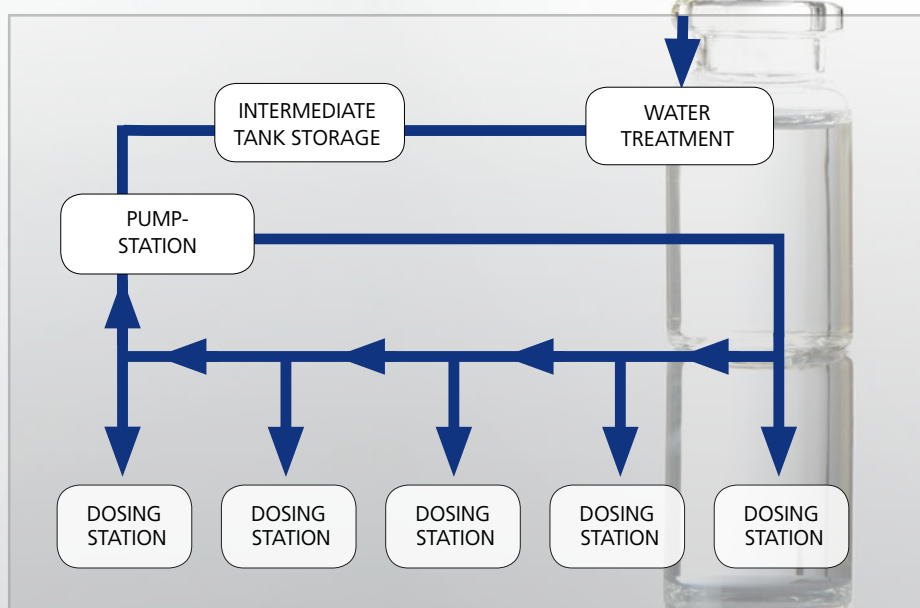
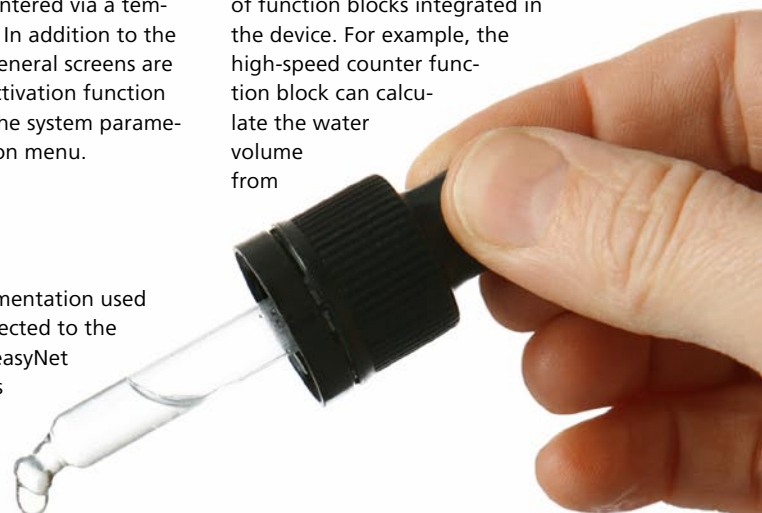
Intelligent I/O

The Elga Berkefeld implementation used an easy800 which is connected to the MFD4 via the CANopen/easyNet interface and which allows the connection of digital and analog inputs and outputs. The programmable easy800

CONCLUSION

Hartmut Sonder, project manager at Elga Berkefeld, explained as follows: "Moeller's MFD4 allows us to provide outstanding solutions to all our customer requirements. The open communication interfaces enable hardware and software to be used anywhere, and the system offers an outstanding price/performance ratio. We chose easy800 for intelligent I/O processing since the devices of the easy family have been serving our customers reliably for years."

processes the signals in advance thanks to the easySoft software and its wide range of function blocks integrated in the device. For example, the high-speed counter function block can calculate the water volume from



the pulses received from the flow meter, and the frequency counter function block can calculate the flow speed in liter per minute from the same pulses. The level in the supply tank is output as an analog value via a pressure transmitter and scaled to a liter value using the value scaling function block. This therefore allows the MFD4 to receive absolute actual values from the easy-Relay and use the released CPU resources for other tasks.

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