



High-quality gas handling – DILO is updating its SF₆ gas service equipment with technology from Eaton

Safe, reliable and efficient handling is essential in order to prevent any hazardous effects of SF₆ on the environment. For many years, DILO Armaturen und Anlagen GmbH, a global market leader in this field, has relied on Eaton to supply components for its service equipment. When the company decided to update the HMI touch panels of its high-end devices, the choice fell on Eaton's XV300 and the GALILEO visualization system. For the most powerful class of devices, the DA1 variable frequency drives will also be used.

Location:

Babenhausen, Bavaria, Germany

Challenge:

To provide improved, more cost-effective HMI panels, which will be installed in service and measuring equipment for SF₆ handling.

Solution:

XV300, GALILEO visualization system, DA1

Results:

A cutting-edge, high-quality product for the entire DILO portfolio. Better performance at lower cost. This will enable the company to maintain its global competitive edge.

"The overall concept and above all the crispness of the display which is really fun to work with gave us a real 'wow' moment. In our opinion, Eaton currently leads the market when it comes to touch panels."

*Robert Escher, Head of Purchasing at
DILo Armaturen und Anlagen GmbH*

Background

Founded in Augsburg in 1951 and now based in Babenhausen, Bavaria, DILO specializes in high-pressure pipe connections and SF₆ gas handling technologies. With more than 50 years of experience in handling sulfur hexafluoride, the medium-sized firm is now a global market leader in this field. Due to its chemical stability, heat resistance up to 500 °C and high dielectric strength, SF₆ (the molecular formula of sulfur hexafluoride) is commonly used as an insulating gas in medium and high-voltage installations for example in gas-insulated switchgear or pipe systems. Thanks to its excellent arc quenching properties (100 times faster than air), it is the medium of choice for encapsulated medium and high-voltage switchgear. In addition, SF₆ is also used in medical devices, semiconductors, displays and microtechnology applications. DILO's comprehensive range of SF₆ products includes leak test systems, refill and evacuation units, as well as gas treatment systems and specialized valves and couplings. In addition, the company also offers SF₆-related trainings, rental equipment for certified users and the full spectrum of gas handling services.

Challenge

The industrial handling of SF₆ comes with special challenges. Although colorless, odorless and generally non-toxic, the United Nations Intergovernmental Panel on Climate Change (IPCC) lists SF₆ as the most potent greenhouse gas in existence. The climatic impact of one kilogram of this gas is equivalent to around 22,800 kg of carbon dioxide, which is why it must be handled with maximum care. Faulty handling can result in a high leakage risk, especially during the extraction and injection of SF₆, or when air is extracted. To make the process of handling SF₆ as safe and cost-effective as possible, DILO offers service equipment series of varying size from "mini" to "mega".

As part of the continuous development of its products, DILO has been working for about ten years to switch from traditional pushbutton operation to touch panel control. This applies both to the gas service equipment, as well as to other product lines such as the devices for measuring quality. One aspect of this project is the replacement of older touch panels with new ones, given the recurring problems associated with some panel types, particularly older models with infrared frames.

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The core aim of the project was thus to improve the quality, performance, speed, ease of use and reliability of the panels and all this at a lower price. Given the company's position as a global market leader, DILO assigned a high priority to the design and image quality of the panels, with a view to ensuring that the upgrade would also be reflected in the external appearance of its products.

As far as ease of use is concerned, the task was to equip the system with multi-language capability while standardizing the HMI technology. Irrespective of the device size and type, the touch panels had to be compatible with all DILO products to provide customers with a uniform operating concept across all device types and generations.

Solution

After a prolonged and thorough selection process, the company chose Eaton's XV300 panels for its new control and operating units. Our HMI control panels with capacitive multi-touch technology prevailed over the offerings of three other industry leaders. DILO had already been using devices from the previous XV100 series, in addition to many other Eaton components such as pilot devices, PLCs or circuit breakers. "We knew in advance that Eaton would be able to meet our demanding requirements, and this was confirmed over the course of the tender process. The overall concept and above all the crispness of the display which is

really fun to work with gave us a real 'wow' moment," says Robert Escher, Head of Purchasing at DILO. "In our opinion, Eaton currently leads the market when it comes to touch panels."

The multi-touch technology with gesture control and the high touch precision of the XV300 panels is intuitive and therefore easy to learn, which makes for a more effective human-machine interaction. The high system performance and the powerful graphics processor allow users to design state-of-the-art user interfaces, incorporating fast image changes as well as multimedia elements such as videos, PDF files and web content. In this way, users can transfer their everyday operating habits directly from their smartphone or tablet to the human-machine interface.

The XV300 panels come with responsive options for three different display sizes: While DILO's larger mobile devices are equipped with 10.1 inch displays, the 7 inch and 3.5 inch versions are intended for smaller systems, such as mobile measuring equipment.

Alongside the decision in favor of the XV300 series, the company also decided to switch all the peripherals to Eaton technology. From now on, DILO will therefore exclusively rely on Eaton products, including our inputs/outputs, gateways and circuit breakers. In future, Eaton's DA1 variable frequency drives will also be used in the large devices of the "Mega"

series. "The Mega series features extremely powerful 18.5 kW motors, which cannot be started directly. That's why we decided to use Eaton's DA1 variable frequency drives, which simultaneously offered a more energy-efficient solution," notes Frank Bolkart, the responsible project engineer at DILO. "Since our inputs/outputs and many of the other components we use communicate via CAN bus, our top priority was to ensure that the drives would be compatible as well as reliable. In terms of the desired system performance and uniformity, the DA1 drives are virtually unrivaled"

Results

DILO's changeover to our XV300 series HMI-PLC has already been a great success. From a technical point of view, the resulting control system offers the highest levels of precision and reliability alongside intuitive operation. The crisp image quality of the display in particular serves as a calling card for the quality of DILO's products and its role as a global market leader.

In terms of reliability, our next generation HMI-PLC has already had a big impact by further improving on the already excellent downtime and maintenance record of DILO's systems. As a result, DILO's customers will benefit from enhanced quality at a lower price. This has also been reflected in the positive customer feedback to date.

Given the fact that DILO had already been using Eaton's HMI

systems, notably the XV100 series, its customers are able to build on their existing knowledge when it comes to GALILEO and CODESYS. By focusing on these two programming options, costs can be further reduced: GALILEO can be downloaded free of charge, and its use is not restricted by any complex licensing model. By eliminating any license fees, DILO is thus able to offer its devices at a lower price.

In addition, GALILEO and CODESYS also offer the advantage of greater compatibility, both with older Windows operating systems or newer versions such as Windows 7 and Windows 10. For DILO, this is a real advantage: "With some types of licensed software, we ran into compatibility issues time and again," says Frank Bolkart. "In the past, we had to develop workarounds for Windows 10 by means of virtual machines in order to keep the respective programs running thanks to GALILEO, this is no longer necessary."

Another advantage of the Eaton products is their understated, sophisticated design. "The XV300 dispenses with large color logos on the front. This not only gives the panels a more sophisticated look, but is also popular with customers who emphasize product neutrality in their systems," explains Robert Escher. DILO now sells thousands of the updated devices each year, all of them equipped with Eaton's XV300 touch panels.



Image 1: Eaton's XV300 HMI-PLC will be used in all future DILO service equipment.



Image 2: In addition to the gas service equipment, the XV300 is also being used in DILO's other mobile and stationary products.



Image 3: With its crisp display and multi-language control system, the XV300 touch panels with GALILEO are ideally suited to the needs of DILO's global customer base.

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