Potential for greater efficiency with CANopen Lift

Digitalization and networking offer new possibilities for modern elevator hydraulics. With the ongoing development of its valve technology in conjunction with sensors and serial network systems, Bucher Hydraulics provides solutions in this field.

Viewed as a development platform, the intelligent iValve with CANopen Lift interface offers far-reaching improvement potential for hydraulic elevators – a potential that is already being exploited in the area of time- and cost-saving installation and commissioning. In addition, elevator manufacturers can develop new service concepts thanks to remote monitoring and the predictive maintenance that results from it. All in all, these advantages increase competitiveness and secure the elevator manufacturer's market position.

"Better to start right now than to wait for the total industrial revolution that is coming," is the motto for new technologies in hydraulic elevators. If the elevator concept, which has been reliable for decades, is to be enhanced to meet future requirements, this will be a job best done step-by-step. The primary objective is not Industry 4.0, but rather reductions in workload, such as shorter commissioning times and faster data access, which result from networking and implementing digital technologies. The prerequisite, however, is that the right basic components are selected. This will ensure that, in the event of later adaptations or extensions, all avenues are open. As a specialist in the development of components for hydraulic elevators, Bucher Hydraulics uses its decades of product know-how as well as its industry insights to show elevator manufacturers valuable potential for increasing efficiency.

Right from the start of the development and construction of the iValve, this background knowledge led the specialists to attach great importance to economic efficiency and future application possibilities. The valve works with a particular learning algorithm that balances and optimizes basic settings and current travel data. This intrinsic intelligence ensures that the car starts faster and can approach the destination floor without any delay. This shortens the travel time and raises energy efficiency. For these reasons, the valve has become the new benchmark in elevator hydraulics.

Several display variants

The integrated electronics include all the parameters for setting speed, acceleration, etc. Up to now, elevator technicians have been able to change these values locally at the elevator system using a hand-held terminal. This means, however, that specific hand terminals must not only be available for components such as the drive, elevator controls, or doors, but must also be available immediately for on-site interventions, which in turn involves additional costs.

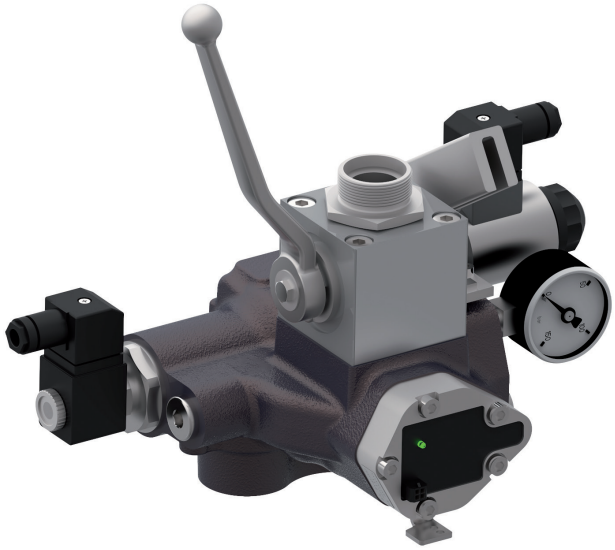

Figure 1: The iValve series of valves feature a CANopen Lift interface, all operation-relevant information such as parameters and status data can be accessed via the elevator controller (Source: Bucher Hydraulics)

In addition, the know-how for operating the hand terminals must be available. For this reason, Bucher Hydraulics has now taken a significant step forward and is the first manufacturer of elevator hydraulics to use the CANopen Lift interface as a future-proof method of connecting the valve to elevator controllers.

In conjunction with the iAccess valve function and the built-in sensors for measuring pressure and temperature, the iValve can now also communicate directly with the elevator controller via network protocol. Travel commands are transmitted rapidly, operating data and status/error messages can be displayed at the elevator controller, and valve parameters can also be changed right at the elevator controller. This technology offers several advantages. During installation and commissioning, the decreased amount of cabling saves time and also reduces the possible sources of errors. In addition, a fault memory provides all the relevant information that helps

Figure 2: Bucher Hydraulics offers drive solutions for hydraulic elevators. The sophisticated, sector-specific solution using the iValve shortens elevator installation and commissioning times and enables proactive responses (Source: Bucher Hydraulics)

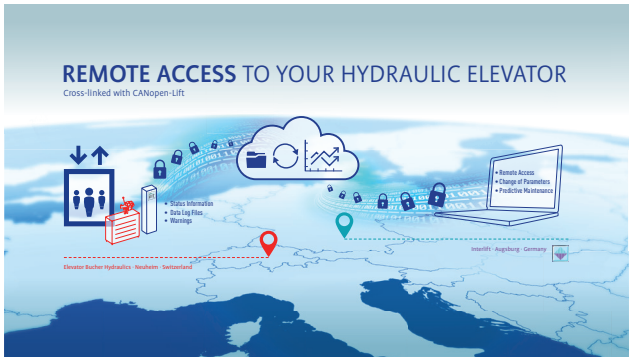

Figure 3: The valve technology helps users to implement predictive maintenance concepts thanks to a continuous awareness of the condition of the equipment (Source: Bucher Hydraulics)

technicians to make informed decisions about how to correct an elevator fault.

The data can be displayed in different ways depending on the elevator controller. The spectrum ranges from two-line displays, through TFT displays and touch screens to smartphone apps via Bluetooth and is constantly being developed and extended. Users, thus have a clear understanding of the system's minute-by-minute operation without the need for any additional equipment and can intervene using the existing elevator controller.

The diagnostic functions, which are based on the information made available and then transmitted via serial network systems, form the basis for the predictive maintenance or needs-oriented service that has the aim of increasing the system availability. The early planning of predictable measures saves time, travel, and costs, as potential faults can be identified long before a possible stoppage.

Applying the valve technology of the iValve in conjunction with CANopen Lift, elevator manufacturers can use it to suit the particular requirements that the elevator must fulfill, and configure it for future customer needs. In further steps, systems can increasingly be networked and digitalized, thus making them smarter. Of course, this also applies to the modernization of existing hydraulic systems.

Starting with the implementation of the valve together with its standardized interface, the spectrum extends to the complete networking of the elevator components via the Internet. There, remote access also enables the data to be monitored on a central computer in a control room and retrieved as necessary. In this way, fast access is guaranteed – for example, in public buildings with a high level of traffic, such as train stations or shopping centers. To protect against cyberattacks, Internet connections can be individually restricted by means of selected access rights.

In the age of the Internet of Things, predictive maintenance solutions are the new core competence. There are various versions of these predictive maintenance solutions, but the objective is always the same: avoid costly downtime, allocate maintenance resources more effectively, and plan maintenance activities more economically. Digital real-time monitoring helps to ensure that components are no longer needlessly repaired or replaced just because it is ▷

Q&A with Huebschmann: Elevators featuring future-oriented technology

Christoph Piorek, Huebschmann Aufzuege

Huebschmann Aufzuege in Korbach has 130 employees and has been manufacturing its own elevators as well as components for other manufacturers' elevators for over 40 years. In addition, this medium-sized family business provides complete coverage in the service area. The fact that the company has its own Design and Development department enables it to implement short-leadtimes and unusual customer requirements. Huebschmann is one of the users of the Bucher Hydraulics iValve valve technology featuring a CANopen Lift interface. Christoph Piorek, authorized signatory (Prokurist) of the elevator specialist in Korbach since 2009, explained how prepared the company is already for the future networking of elevator components.

Q: What were your main reasons for choosing the iValve with CANopen Lift from Bucher Hydraulics?

Christoph Piorek: Modern technology was at the top of the list. The iValve hydraulic drive has intelligent control algorithms and the function of an additional safety valve is already incorporated. Instead of the usual "turn the screw in by feel", the adjustment is purely electronic, so the settings are reproducible and easy to document. As well as that, analysis tools such as the travel-curve recorder and data memory make it easier to troubleshoot any problems.

Q: Is this technology, with its networking possibilities, something that you've been waiting for?

Christoph Piorek: Yes, absolutely, because with the increasing use of electronics in elevator construction, the CANopen Lift standard helps us to use different components from different manufacturers together in one system. In the past, drive systems often required their own handheld terminal or even a PC for convenient commissioning and service. If our control system can also be used as the operating terminal for the drive, that's a considerable simplification. By operating the elevator via CANopen Lift, the amount of wiring in the rest of our control system can be reduced to just the safety circuit. The control card is connected to the CAN network and just runs.

Q: As an elevator manufacturer, what advantages do you get from the new valve technology in the areas of installation and commissioning and in terms of service and the service concept?

Christoph Piorek: First of all, the preset drives plus their self-learning optimization give fast commissioning at the customer's site, and often there is no need to send a "system specialist" to the site. Given the shortage of skilled workers, this is very important for our company. What's more, the technology also shows advantages in the service area. Integrating the controller into the serial network system allows remote access to the drive system, so a detailed fault analysis is also possible from a distant location. In addition, we can detect possible upcoming faults at an early stage and even before they actually occur. This, in turn, is the basis for us to be able to successfully implement current "hot topics" in the service area such as condition-based maintenance or the even further-reaching predictive maintenance.

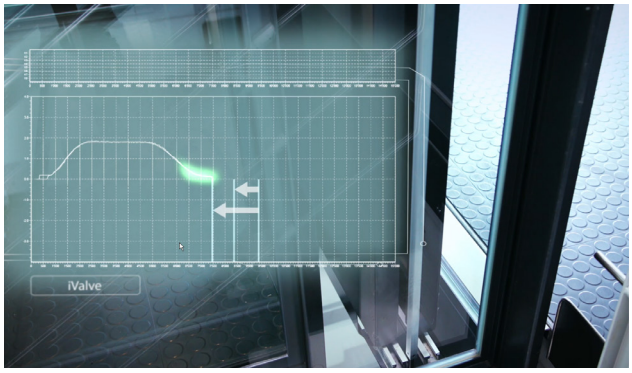

Figure 4: iValve is a self-learning elevator control valve with standardized protocol (Source: Bucher Hydraulics)

specified in the schedule. Instead, and even without an on-site visit, the actual need for repairs can be identified at an early stage through continuous awareness, so the previously customary inspection visits are no longer necessary and deployment plans can be optimized.

All in all, digitalization and networking change not only the manufacturing of elevators, but also their commissioning and the entire service process, in which reliable and life-extending maintenance measures are key factors. Maintaining a hold on a market position and/or aiming for company growth already demand that elevator manufacturers have larger sales territories involving longer journeys. Integrating new technologies into the business model can significantly improve the management of these larger territories, as service personnel can be deployed more efficiently due to up-to-date information. The intelligent iValve from Bucher Hydraulics already offers the prerequisites needed to meet all these challenges and to be able to press the strategic UP button to Lift 4.0 at an early stage. ◀

Source

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Measuring Unit with CAN FD Interface

MU-Thermocouple1 CAN FD

The MU-Thermocouple1 CAN FD from PEAK-System allows the measurement of 8 temperatures via thermocouples of the types K, J, or T depending on the product version. The measurement data is transmitted via a CAN interface that supports the modern standard CAN FD in addition to CAN 2.0.

Data processing, message transmission, and LED indication are set up with a free Windows software. The configuration created on the computer is transferred via CAN to the device which then runs as an independent CAN node. Multiple devices can be configured independently on a CAN bus.

Specifications

- 8 Mini sockets for thermocouple types J, K, or T
- 4 galvanically isolated measuring modules, each with 2 thermocouple sockets of the same type
- Measuring ranges:
  - J: -210 to +1121 °C (-346 to 2050 °F)
  - K: -200 to +1370 °C (-328 to 2498 °F)
  - T: -200 to +400 °C (-328 to 752 °F)
- Measurement accuracy: 0.2 % or 1 K
- Accuracy of the reference temperature sensors at +25 °C ambient temperature: typically ±0.5 K, maximum ±1.0 K
- Maximum resolution of temperature data: 1/16 °C
- High-speed CAN connection (ISO 11898-2) for data transfer and configuring
  - Complies with CAN specifications 2.0 A/B and FD
  - CAN FD bit rates for the data field (64 bytes max.) from 25 kbit/s up to 10 Mbit/s
  - CAN bit rates from 25 kbit/s up to 1 Mbit/s
  - NXP TJA1044GT CAN transceiver
  - Galvanic isolation up to 500 V
- LEDs for measurement channels and power supply
- Configuration with a Windows software via CAN (requires a PEAK CAN interface)
- Voltage supply from 8 to 30 V
- Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

Scope of Supply

- MU-Thermocouple1 CAN FD in aluminum casing
- Mating connector for voltage supply
- Configuration software for Windows
- Manual in PDF format

www.peak-system.com

Take a look at our website for the international sales partners. Scan the QR code on the left to open that page.

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