

INTERLIFT 2019

Elevator hydraulic valve with CANopen Lift

Bucher Hydraulics' digital hydraulic elevator wins "Zuger" innovation award. As part of digitization, the iValve is the world's first elevator hydraulic valve to be equipped with a CAN communication interface.



Bucher Hydraulics receiving the innovation award by Zug (Source: Bucher Hydraulics)

In contrast to traction elevators, hydraulic elevators are moved with the help of a large cylinder. They are mainly used in freight elevators or passenger lifts with glass cabins that are not very high – for example in school buildings and retirement homes in the state of Zug, or the two main elevators at Lucerne Station, Switzerland. These elevators are serviced regularly and, if necessary, readjusted to ensure maximum passenger comfort and safety.

“Previously, the hydraulic drive for elevators was intelligent, but still 'blind.' The valve now has “eyes” operating on a new interface which allows it to regulate lift travel even shorter, smoother, and more precisely”, said C. Schlehs, Head of Research & Development at Bucher Hydraulics.



(Source: Bucher Hydraulics)

The iValve lift control valve from Bucher Hydraulics, with its electronics, uses an integrated learning algorithm to optimize elevator travel, enabling the most pleasant ride possible with high positioning accuracy (no tripping when getting off) and high energy efficiency, said the company. This represents an innovative edge because it was previously not possible to control the travel to the end position: real-time operating data was missing.

Moving toward digitization, the company equips the iValve with a CAN communication interface. This makes it the world's first elevator hydraulic valve and is part of the CANopen Lift project. The connection to the central communication bus of the entire elevator system opens up new possibilities for energy efficiency, ride comfort, and maintenance. The real-time operating data from other components are now used for optimum control of direct access to the desired floor. Inefficient operating modes of the drive, e.g., slow ascent/descent, can be kept to a minimum. In addition, it is now possible to operate devices and drives in sleep/wake-up mode, similar to automatic start/stop in passenger cars, and to achieve further energy savings for the hydraulic elevator.

Real-time remote access

Due to this interface for the iCon valve controller, the hydraulic operating data can now also be retrieved online and in real-time. This enables remote system maintenance, condition monitoring, and even predictive maintenance. The aim is to maximize the degree of availability of the system for the customer. Necessary maintenance work can be planned in advance and scheduled for downtimes – which is crucial in railway stations or hospitals.

Due to the modular design of the iCon electronics, the CANopen Lift interface can be added to any existing iValve system with minimal effort, thereby extending the capabilities of the existing electronics. The potential energy savings not only affect new systems but can also be realized for the over 50 000 existing iValve systems worldwide.

Bucher Hydraulics was awarded the Zug Innovation Award 2019 for this project. Presented by the state government of Zug, the award is endowed with 10 000 Swiss francs and goes to a company from the state of Zug that has created new jobs or retained existing jobs with an economically, socially, and or ecologically meaningful innovation. Bucher Hydraulics will use the award for the development of infrastructure relating to the workplaces of the new electronics apprentices in Neuheim (e.g., ESD workplace and other laboratory equipment). The prize money will thus be invested sustainably and help to ensure that future electronics technicians are trained to the

highest standards, explains the company.



CiA booth at Interlift 2019 in hall 2, stand 2149 (Source: CiA)



CiA 417 - Profile for lift control systems

The CANopen application profile for lift control systems, also known as CANopen Lift specification, defines the communication interfaces for different virtual devices. This includes call, car drive, and car door controllers as well as input panel, output panel, car drive, car position, load measuring, car door, light barrier, remote data transmission, and power-measuring units. All necessary PDOs for a single-shaft lift control system are defined; some of them are distributed in broadcast other peer-to-peer. For multi-shaft lift control systems, the communication between the controllers is manufacturer-specific. Nevertheless, each device may implement up to eight instances of the application profile, so that it can be used in up to eight [lift control systems](#).

CANopen Lift demonstrator at Interlift 2019

At the biannual Interlift trade show in Augsburg (Germany), CiA (CAN in Automation) members have been presenting the CANopen Lift demonstrator since 2009. It demonstrates the interoperability of CiA 417 compliant devices. The demonstrator comprises four independent lift control systems. The demonstrator can be rent for other events on request. Again, [CiA is part of the Interlift 2019](#) in hall 2, stand 2149.

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