A lot of electronic assemblies are needed to realize the desired functionality, the ride quality and the current safety requirements called for in modern lift systems. These electronic assemblies are networked via modern network systems and use these systems to exchange status information or commands. In order to achieve this, it is necessary to have all assemblies involved in the communication “speak and understand” the same network protocol. This is only possible when all assemblies use an open, standardized protocol or a proprietary protocol produced by only one manufacturer. An example of an open standardized protocol is the application profile CiA 417 Lift Control CANopen-Lift, which is based on CANopen. In this application profile, all parameters and commands of a modern lift system are standardized, e.g. the parameters of the frequency converter in the drive unit, or the door controls and commands such as “Open door A”, “Cab call floor 8” or “Position 23,263 m; Speed 0,8 m/s; Acceleration 0,5 m/s²”. In this article the most important milestones of the development of CANopen-Lift and the latest functions are presented.

On the occasion of the Interlift 2001, 20 small to medium-sized lift component manufacturers agreed to participate in producing an open standard for the communication of the CAN network for the first time. At the beginning of 2002, these manufacturers agreed to use the CANopen standard as a development basis, which had already been widely used in automation technology for years, and to extend it by the functions needed for lifts. Within CAN in Automation, the Special Interest Group (SIG) “Lift” was founded. This SIG was expected to check existing profiles to see if they were suitable for lift engineering purposes and extend or redefine functions that were needed. The result of this review was the application profile CiA 417 Lift Control (CANopen-Lift) published in June 2003. This profile determined many “virtual units” of a lift system, objects and messages of these virtual units, as well as technical marginal conditions (bit-rates, services, pin assignments of connectors, etc.). At the Interlift 2003, several manufacturers exhibited the first prototypes of components at a common stand developed by the Special Marketing Group Lift, which had been founded for this particular purpose. In the following months the manufacturers integrated the functions step by step into their components and as early as 2005 the first 1000 lifts were supplied with CANopen-Lift components and put into operation. In the years between 2003 and 2009 an increasing number of units were equipped with a CANopen interface and mostly those functions were integrated into the standard, which had already been realized conventionally and/or with other interfaces, such as......
Tests were also carried out during the tests. The stability of the connections with different lengths of network connections up to a length of 230 m was checked and the units were subjected to a network stress test, in which the network load was gradually increased with high and low prioritized messages up to 100%, while the behavior of the units was tested.

Since 2009 new functions have constantly been integrated into the standard and into the units of the manufacturers, which would not have been possible in this way without an open standard. Up to now the measurement of the energy had to be done manually during a defined test drive. With the integration of the protocols of an automatic, continuous measurement in the CANopen-Lift Standard, the total energy requirement can be calculated over a longer period.

In addition to the existing modes (such as “drive”, “ready”, “standby” or “off”), the power saving mode reduces the demand during the business hours, without compromising the operational readiness of the lift. The resulting savings are much greater than the previously used full shutdown during limited hours.

This process not only allows a software update to be carried out in an assembly but also the parameter sets of all assemblies to be read out and secured following commissioning. This allows system manipulations that were effected after the final inspection to be detected. The process is not only of interest to the servicing company and operator of a lift system, but also to the monitoring authority or the fire brigade in case of damage.

Any unit can place virtual display content on the network and any other unit with a display and keys can be used for representation and configuration. One could for example use an LCD display in the cab and the keys of the control menu in the cab during maintenance and access the parameters or information on malfunctions. At the moment a method to allow the transfer of the graphical displays’ contents is under development.

The CANopen-Lift standard is full of life and under constant development. The essential novelties are still coming from Germany, but CANopen-Lift is also increasingly gaining in international importance. In the future, CANopen-Lift will be the basis for the remote diagnosis of all components over the Internet and for the safety-related data transmission in lifts.

More and more companies are taking part in the development of CANopen-Lift and introducing new ideas into the standard, which are available to all participants. The future remains exciting.