The invisible door opener

The elevator manufacturer Schindler transports more than a billion people every day. Its elevators operate in skyscrapers and apartment buildings, traveling up and down all day long. Yet no one ever actually stops to think about the little motors that open and close the doors.

Elevators are among the things in our daily lives that we take for granted. We press the button, the cab arrives, we enter and are taken to the desired floor quickly, safely, and reliably. Yet hidden from the passengers’ eyes, there is a lot of technology involved in the elevator shaft, in the motor chamber, in the control box, and in the cab itself. A motor installed in the cab is responsible for opening and closing not only the door of the cabin, but also the door to the respective floor. The demands on this motor are high: It has to be small yet powerful, energy-saving, reliable, and, most importantly, intelligent.

Direct drive saves space
Together with the Swiss elevator manufacturer Schindler, maxon motor has developed a drive system that moves the doors and meets the listed requirements: The maxon Door Drive is available in two power levels. The more powerful version uses a belt drive and is able to move doors of up to 400 kilograms. The smaller and newer version is a direct drive. This saves space and is suitable for doors up to 120 kilograms.
Intelligent controller
This system solution consists of a brushless DC motor with a diameter of 90 millimeters and a MILE encoder integrated directly on the print. It is combined with a customer-specific positioning controller based on the EPOS2 series. Encased in a housing, the Door Drive can be mounted directly to the lift cab. This is where its real work starts. There are many different types of elevators, with differently sized cabs, different materials and, depending on the country, different safety standards. After a calibration procedure, the controller of the Door Drive detects the size and weight of the doors, autonomously calculates the optimal parameters, and corrects them if necessary. This greatly simplifies the elevator technician’s work. In just a few steps, the Door Drive configuration is complete, and the drive is ready for use.

Valuable data
The advantage of the flat motor’s narrow design is that the cab can be made bigger. The drive also saves energy and it delivers sufficient torque to smoothly move the doors. The integrated controller is intelligent and with continuous operation, it collects valuable data that the technicians can access at any time. This means that besides doing its main job, the drive also functions as an assistant behind the scenes.

Mechatronic system
The complete drive solution for elevator doors consists of a brushless flat motor (90 mm diameter), an integrated MILE encoder, and a customer-specific positioning controller based on the EPOS2 series.

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