

Case note

ABB drives boost elevator performance



“Largest inside - smallest outside.” The Motala 6000 is designed for stairwells and building exteriors.

ABB high performance machinery drives take elevator company to a new level

Motala Hissar is a Swedish-based manufacturer of compact elevators for buildings that were originally designed without one. It also manufactures platform elevators for immobilized and physically handicapped people. The company sells about 1,000 elevators a year to markets throughout Europe.

Motala Hissar’s unique selling point is “Largest inside – smallest outside.” Its elevator cabins have the largest internal dimensions and the smallest footprint on the market, attributes made possible by technologies that the company has developed over the past 15 years.

While developing a new compact elevator – the Motala 6000 – Motala Hissar hit a technical barrier. Because the elevator is designed without a counterweight to save space, it produced a jerking sensation before starting.

Several drive vendors were approached for a solution that would prevent the jerking without using an encoder, but none could solve the problem satisfactorily. ABB came along with the new ABB high performance machinery drive and a team of experts to work on the problem.

“Within hours we not only had a solution, we had a better, simpler and more competitive product that goes twice as fast as the preceding model,” says Ari Nieminen, site manager at the Motala Hissar factory in Sweden.

Drive improves performance and reduces costs

ABB high performance machinery drives have three main features: modular design with a separate pre-programmed memory unit and separate power and control electronics modules; unlimited functionality for customized programming; and the unrivalled torque response and speed accuracy of ABB’s Direct Torque Control (DTC) technology.

The drive provides precision open-loop control at low or no speed and without need for an encoder or other feedback device. It is programmed to calculate the combined weight of the passengers in the cabin so that it knows how much torque to apply to raise the elevator and prevent it from jerking those crucial few millimeters at the start.

Motala Hissar developed this weight-sensing function into another unique feature. Elevator safety tests are carried out at least once a year by inspectors. Tests include loading the elevator with large weights to ensure that it can operate safely at its maximum load. Motala Hissar programmed the drive to simulate the test in a way that is acceptable to regulators, while bringing significant savings to its customers.

“The ABB drive has helped us to simplify the product,” says Nieminen. “The Motala 6000 is easier to assemble, easier to service and easier to inspect. It’s reduced our operating costs and those of our customers. And we’ve got an elevator that goes twice as fast as our previous elevator model.

“Most importantly, our customers are delighted with the new elevator, and so too are passengers. The ride is fast, quiet and smooth. There are no vibrations and no jerking starts and stops. It all adds up to maximum passenger comfort.”

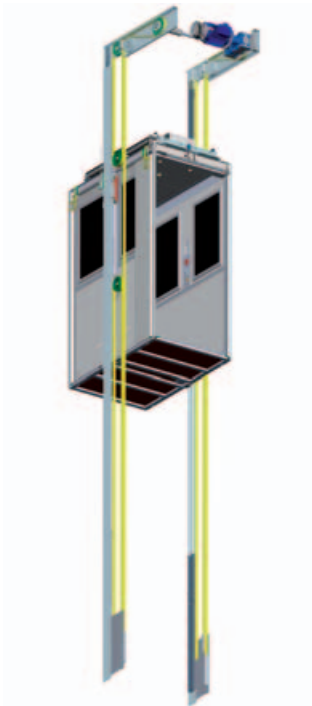


Illustration of the Motala 6000 showing the belt drive system in yellow and the motor at the top of the shaft.

Solved problem

- Jerking sensation in elevator before start
- Drive without encoder or feedback device required

Solution

- ABB assigned a team of drive and application experts to solve problem
- ABB drive provided customer with “better, simpler, more competitive” product

Benefits

- Full torque at zero speed for
 - Smooth elevator start
 - Greater passenger comfort
- Unique weight-sensing function
- Open loop solution (no encoders)
- Unlimited potential for future functionality
- Annual cost savings due to:
 - No feedback devices
 - No load cells
- Benefits for end users
 - Twice as fast
 - Easier weight tests
 - Fewer parts, less mechanical wear
 - Less maintenance



ABB high performance machinery drives.

For more information please contact:

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