SMI- Drive Technology
for Roller Shutters and Sun Protection

Becker-Antriebe GmbH
Christoph Jüngst
The Company

• Postal Address:
  Becker- Antriebe GmbH
  Friedrich-Ebert-Strasse 2-4
  35764 Sinn
  Germany

• Employees:
  Germany  approx. 200
  World-wide approx. 250
Tubular drives and Control Units for Roller shutters and Sun protection

New projects and retrofitting for:
- Roller shutters
- Awnings
- Winter gardens
- Swimming pool covers
- Solar-operated systems
- Vehicle applications
- Smoke and fire protection
- Special applications
Why SMI?

Current problems:

- Inaccuracy of running time to control the drives
- No feedback of the drives on their exact position
- No status feedback of the drives
- One cable per drive to the actuator ⇒ many actuators, complex cabling

Solution:
Basics on Tubular drives

• Optimised, fail-proof power transmission direct on to the shaft

• Optimal usage of the space availability inside the roller shutter box

• Usage of Anti-lifting devices (inhibition of housebreaking)

• Easy installation

• Solutions for new buildings, redevelopments as well as for retrofitting

• Complex control functions feasible
Tubular Drive Technology

- Three-step planet gear
- Two-edged brake system
- Electric motor
- Condenser
- SMI-Interface
- Incremental decoder
- Board with microprocessor
- Switch to adjust direction of rotation
Drives with a torque stronger than 40 Nm have a planet gear made of steel. This gear is flanged on to the drive.

Drives with a torque weaker than 40 Nm have a planet gear made of plastics. This gear is mounted inside the drive tube.
Electric motor with two-edged brake system

The electric motor 230V/50Hz consists of a rotor and a stator.
Rotor with two-edged brake system
The brake gap is thoroughly adjusted at the „Rotor-Line“.
The Incremental Decoder

The Incremental decoder checks permanently the position as well as the torque demand of the drive and thus ensures the exact switching-off in the limit position as well as protects the material of the roller shutter and sun protection by a smooth switching-off at the rear limit position. The limits can be programmed at any position required.
Incremental Decoder

Uniform impulses = no blocking

Decreasing impulses = blocking ⇒ switching-off
...advantages of BECKER drives

Easy commissioning

No knowledge in programming of a bus system is needed for commissioning

- The limits are easily set with the SMI-Installation set (Point to Point or Point to Blocking)
- The direction of the rotation is easily corrected on the motor switch
- The commissioning of the bus system is effected by an electrician afterwards
1. Robust technology and easy installation

- Voltage supply and data transmission in just one five-wired cable
- Protection against reverse polarity
- Unusual distances (up to 350m) between actor and drive
- All requirements on the transmission technology as well as on the overvoltage capability are met
The blocking behaviour in the upper limit on cassette awnings

Example: R30/17- PS SMI

Recommendation: R30/17- PS(+) SMI

In order to ensure a complete closing PS(+) SMI -Drives with an increased torque for closing are used for cassette awnings.
2. Standard functions of drives

- Reversion of rotation direction with integrated switch
- Stopping of a drive movement
- Up/Down movement
- Step Up/Down function (2°-550°/2°Step)
- Fixed positions between up and down
- Reaching of any fixed position (0%-100%)
- Feedback of the current position (0%-100%)
- Feedback of the motor status (inclusive of error messages)
- Synchronous start on operation impulse

Position-exact feedback
Advantages

3. Compatibility between manufacturers

• Uniform electronic interfaces with all manufacturers
• Compatible data protocol
• Uniform connections
Advantages

4. Parallel switching reduces total cost

- For eight drives just one five-wired cable
- Drives can be controlled individually
- Each drive position can be separately asked for and parameterised
Example: EIB/KNX-Network **WITHOUT** SMI-Drives

Switch cabinet with EIB actors
Example: EIB/KNX-Network WITH SMI-Drives
SMI-EIB/KNX Project Opera House OSLO

Project : New Opera House in Oslo
Principal : Norwegian National Opera House
Architects : Snøhetta AS
Opening : April 2008
Sun protection: Textile sun protection with SMI-Drives
15 x 2 m strips with the glass fins on the inside of the facade. The motors are fixed on top. The system is in a box underneath the floor and thus is invisible and is pulled up by stainless steel wires. The warm air is used to heat up the building.
The motor is moving with the barrel and rolling up two pieces of fabric (drawings by “erco”): each approx. 18 m long (= high) and between 5 and 7,2 m wide (each between 77 and 36 m² of fabric).