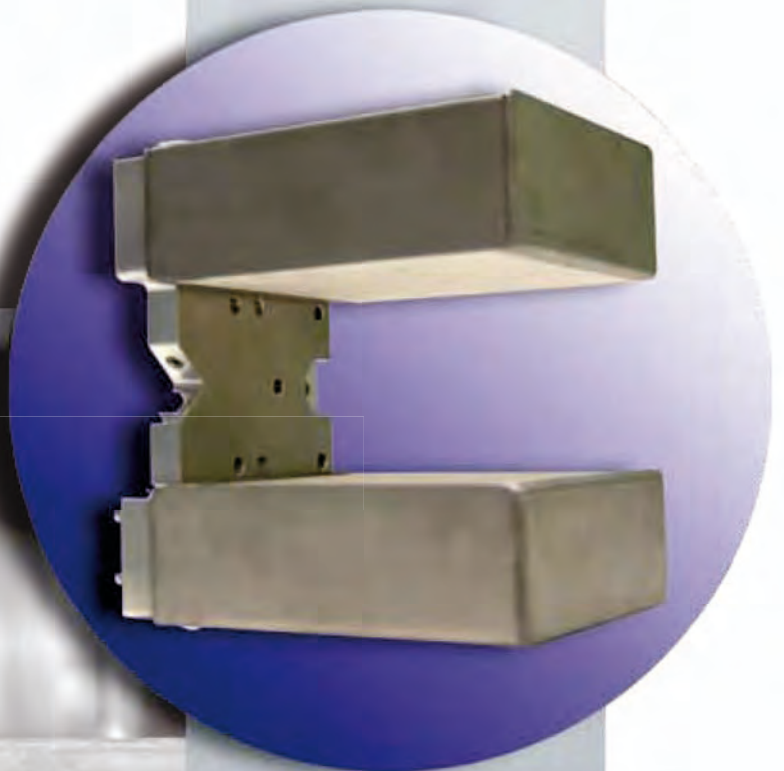
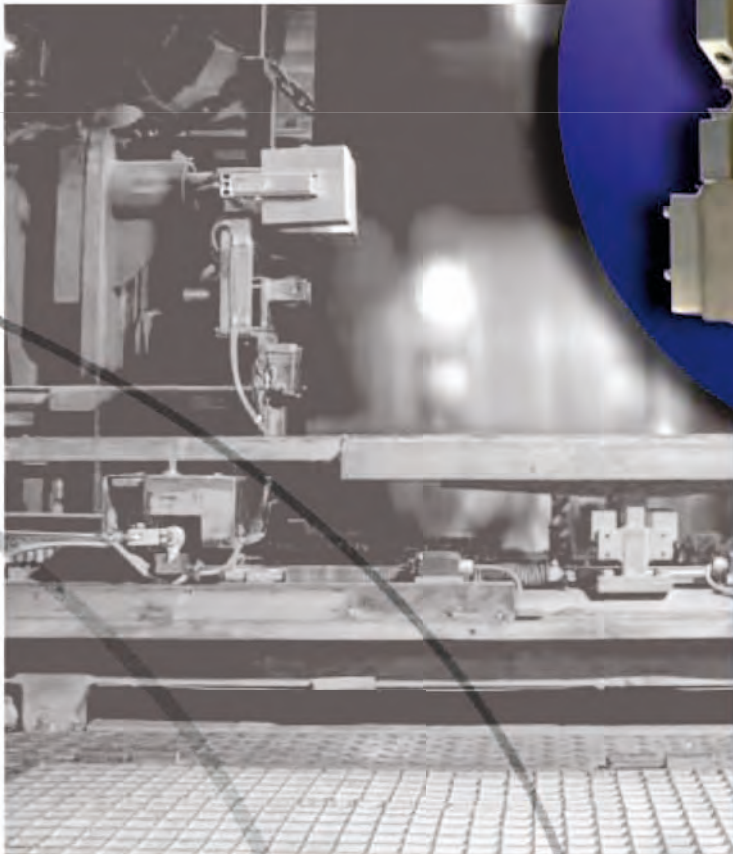


## Baffle Blade Control System



- ▶ **contact-free**
- ▶ **inductive**
- ▶ **low maintenance**

# eBACS electronic BAffle Blade Control System

## Operating principle:

The inductive edge sensor detects in a contact-free manner the strip edge position of metal strips at raised ambient and strip temperatures. A typical application is the controlled following-up of baffle blades.

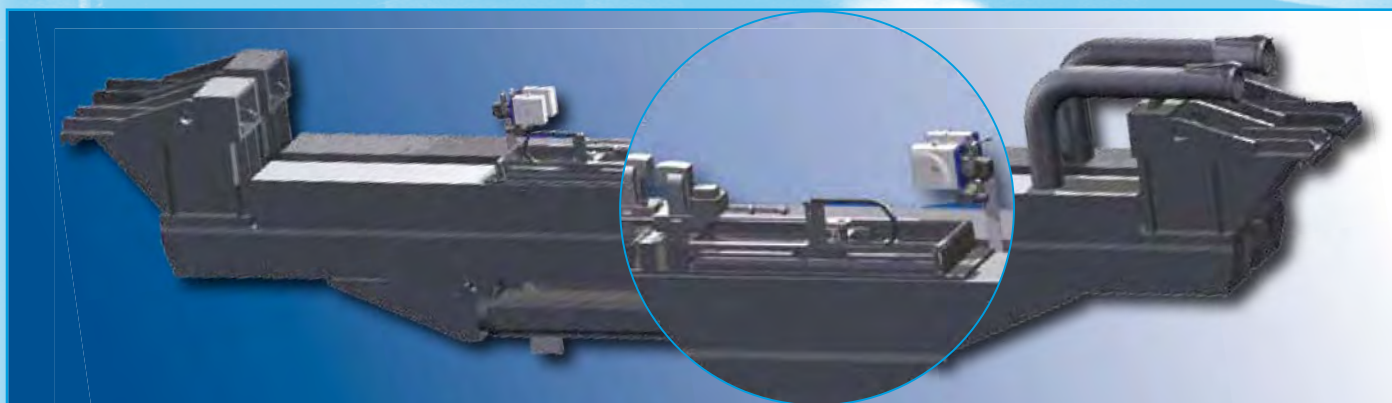
In hot-dip galvanizing lines the zinc coating thickness is determined by means of blowing-off nozzles in the air knife above the zinc bath. In order to avoid any air disturbances which can lead to a strip edge growth and an influence on the surface at the edges, the strips are normally enlarged by baffle blades in this area.

In this case the baffle blades must follow continuously the movement of both strip edge positions and/or a strip width change. The inductive BMI4 edge sensors ensure here an

exact and contact-free following-up of the baffle blade and avoid rough strip edges which can occur by the break-off of the molten zinc by mechanical contact rolls otherwise used.

For this purpose two BMI4 inductive strip edge sensors are installed on the baffle blades. The position of the strip edges are continuously identified and the baffle blades are automatically repositioned. The desired gap width can be flexibly adjusted during the production process via the system interface.

With the use of the electric motorized EMG actuators for positioning the baffle blades the critical adjustment of the pneumatic pressure for a mechanical touch roll arrangement is no longer needed (especially critical for thin or hot strips).



*Complete baffle blade control system*

EMG Automation GmbH specialises in the automation of continuous production processes in the metal, paper and plastics industries as well as in the foil and tyre industries. The company, which was established in 1946, is a leading provider of electro hydraulic control systems. Furthermore, EMG provides quality assurance systems for the manufacturing industry. Based on the combination of more than 60 years of experience, the quality of our products and complete solutions as well as our advisory skills, our customer, by his trust, makes us the market leader. In close co-operation with our customers, research facilities and universities we are permanently searching for innovative solutions to promote our new and further developments and therefore to design and form the market as innovation leader actively.

## Customer's benefit:

- ▶ Homogeneous zinc layer on strip edge
- ▶ No flaking of zinc coating at the strip edge
- ▶ No deformation at strip edge
- ▶ Contact-free position measurement
- ▶ High precise follow up
- ▶ Low maintenance
- ▶ Compact integration
- ▶ Avoiding mechanical contact rolls
- ▶ Remote adjustment of the masks distance
- ▶ Strip position and width measurement deducible

## • contact-free

### Function principle:

The inductive edge sensor provides, in combination with the BMI4 evaluation electronics, an output signal which constantly changes according to the strip position of metal strip. The inductive edge sensor basically consists of one transmitting and one receiving coil, which are accommodated in a protective enclosure and ready wired to a connector plug. A maximum of 2 edge sensors may be simultaneously connected to the BMI4 evaluation electronics whereby an output signal is available for each edge sensor.

The BMI4 transmits via CAN Bus the measured signals to the SPC16 control unit. The SPC16 processes the measured signals to check the strip position and the gap between the baffle blades and the strip.

## • inductive

If the strip moves in its position or the strip width changes the SPC16 tracks the actuators by sending a control signal via CAN Bus so that the baffle blades will automatically follow the movement of the strip.

The SPC16 can be connected to a superior plant control via Profibus or binary interface.



*eBACS sensors BMI4/60/80*



*Actuator ESA with stroke transducer*

### Scope of supply:

- ▶ Sensor: 2 x sensor BMI4/60/80
  - ▶ Actuator: 2 x actuator ESA 10-800
  - ▶ 2 x stroke transducer 800 mm measuring range, contact-less
  - ▶ Controlling unit:
    - Electronic cabinet (800 x 600 x 300 mm)
    - Evaluation unit BMI4.23
    - SPC16 with Profibus interface
  - ▶ Housing for ESA, driving mechanics and position measurement
  - ▶ System integration for various nozzle types and existing mask mechanics
- ▶ Options:
    - Installation and commissioning (recommended)
    - Safety switch for monitoring the sensor installation
    - Alternative communication interfaces
    - Quick release fixture for sensors
    - Special sensor design for electrolytical tinning line (see page 5)
    - Mask mechanics

# • low maintenance

## Technical data:

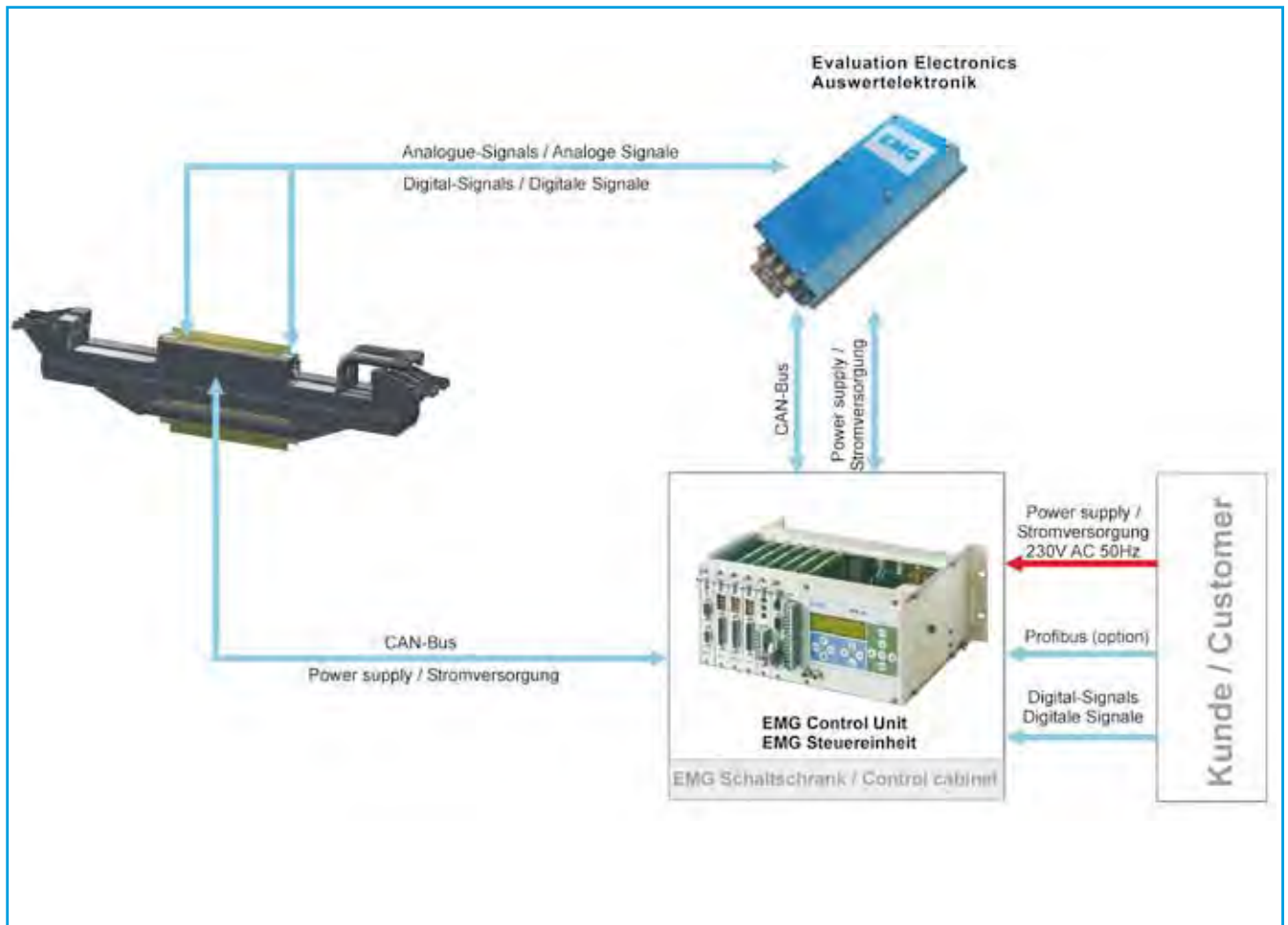
<b>Sensor BMI4/60/80</b>	
Application	• contact-less measurement of strip edge
Mechanical design	• fork type sensor
Measuring range	• approx. 60 mm
Measuring accuracy	• +/- 1 mm at set point with constant working conditions
Ambient temperature sensor	• 0 ... 300 °C
Ambient temperature cable	• 0 ... 200 °C
Ambient temperature plug	• 0 ... 125 °C
Strip temperature	• 0 ... 500 °C
Evaluation electronics	• electronic unit BMI04.23
Cable length	• max. 15 m between sensor and evaluation electronics BMI4.23
Dimension (H x W x L)	• 145 x 225 x 254 mm
Weight	• sensor: 3.8 kg; cable: 3.7 kg
Gap	• 80 mm

<b>Evaluation electronics BMI4.23</b>	
Application	• supply and evaluation of 2 sensors type BMI4/60/80
Power supply	• 110/120/220/230/240 V, 50/60Hz
Power consumption	• 75 VA
Ambient temperature	• 0 ... 50 °C
Interface	• CANopen communication to SPC16
Sample time	• 10 msec
Electrical classification	• IP54
Weight	• 12 kg

<b>Electro servo actuator ESA 10-800/-/E/SC/IFS/01</b>	
Adjustment speed	• typ. 87 mm/sec
Adjusting force	• max.140 N
Stroke	• 800 mm
Ambient temperature	• 0 ...70 °C
Cooling system	• air cooled (provided by customer)
Motor	• 24 V/DC stepper motor with internal power amplifier • interface: CANopen by SPC16 • height: 270 mm / width: 160 mm
Moving system	• toothed belt; push-pull rod with linear guiding motion unit • low self locking (< 10 N), so manual movement in case of power failure possible

<b>Position sensor</b>	
Measuring range	• 800 mm, contact-free
Resolution	• 1/10 mm, digital
Interface (at the bottom)	• CANopen to SPC16

## System configuration:



## Option:

### Sensor for electrolytic tinning lines



Fork sensor type IGS

- ▶ Especially for electrolytic tinning conditions
- ▶ Inured to acidic liquids, vapours, mist or similar contaminations
- ▶ Inured to electrical fields caused by the electrolytical tinning process
- ▶ IP 67
- ▶ Weight: 1.5 kg
- ▶ Cable length: 5 meter
- ▶ Gap: 50 mm

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