Automatic Air Knife Lip Cleaning

- compact design
- high operational safety
- low maintenance
The eWIPE Air Knife Lip Cleaning system is a pneumatically operated cleaning tool for air knives in galvanizing lines. It allows the removal of firmly bonded zinc deposits inside and outside the nozzle lips.

The system mainly consists of:
- two cleaning devices each including a pneumatic cylinder for mounting on a stable substructure upon each air knife
- quick connectors for the pneumatic and electrical lines
- one stand with pneumatic control system
- one small electrical cabinet for the intelligent control system EMG iCON®

(see also system configuration on the second to last page)

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.

**Operating principle:**

- compact design
- high operational safety
- low maintenance

**Customer's benefit:**
- lip cleaning during continuous operation
- fast cleaning process (2 sec)
- preventive or event-driven lip cleaning
- less surface defects
- less scrap production
- decreased number of downgraded coils
- increased operational safety
- remote control
- reduced maintenance of the air knife
The eWIPE Air Knife Lip Cleaning system is operated pneumatically and is controlled electronically by the intelligent control system EMG iCON®. Each pneumatic cylinder moves a scraper unit equipped with a blade unit along each air knife lip. The blades are individually fitted to the specific air knife. The adjustment facilities of the scraper units provide a high precision but flexible alignment of the blades. The equipment withstands local temperatures of up to 150 °C. An optional air blower driven cooling unit in combination with protection covers is recommended. Four proximity switches control the motion sequence. The pneumatic cylinders are internally cushioned at each end of the stroke. Additionally there are mechanical dampers on each side of the air knife to ensure a safe operation of the scraper units with a cushioned movement into the parking position. By the steady application of compressed air to the cylinders the scraper units are always kept in their parking positions. The cylinder speed is up to 2 m/sec. This means for the complete stroke of up to 2300 mm a time of approximately 2 sec for one cleaning process.

The equipment is protected by covers in the best possible way. A maintenance check and cleaning procedure is recommended with every scheduled air knife maintenance. The pneumatics is controlled by the intelligent control system EMG iCON® which is installed in a small electrical cabinet nearby to the air knife. The remote operation of the system is controlled via profibus interface or simple hardwired binary signals (e.g.: on every welding seam) from the higher line control system. A user friendly manual operation is provided by push buttons upon the electrical cabinet.

**Function principle:**

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**Scope of supply:**

- **Scraper unit:**
  - 2 pneumatic cylinders for temperatures up to max. 150 °C
  - 2 scraper heads with blade units
  - guiding mechanisms with welding consoles and protection covers

- **Pneumatics:**
  - 4 valves
  - over boost protection with filter unit
  - industrial standard
  - air accumulator

- **Electronics:**
  - electrical cabinet
  - EMG iCON® (control of eWIPE; various interfaces to pneumatics and scraper unit; Profibus DP interface to line)
  - power supply and electrical adaption

**Technical features:**

- automatic or manual operation
- cleaning inside and outside of the air knife lips
- compact integration upon air knife
- ready for retrofitting on several air knives

**Options:**

- engineering for mechanical integration onto air knife
- installation and commissioning
- alternative communication interfaces
- cooling air unit
- low maintenance

### Technical data:

<table>
<thead>
<tr>
<th>Electronics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Control system</td>
<td>EMG iCON®</td>
</tr>
<tr>
<td>Power supply</td>
<td>115 / 230 V</td>
</tr>
<tr>
<td>Power consumption</td>
<td>2.5 kVA</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>0 °C ... +50 °C</td>
</tr>
<tr>
<td>Interfaces</td>
<td>Profibus, analogue, digital</td>
</tr>
<tr>
<td>Dimensions</td>
<td>600 x 600 x 350 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pneumatic control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Air supply</td>
<td>6 bar and 600 l/min</td>
</tr>
<tr>
<td>Air temperature</td>
<td>max. 40 °C</td>
</tr>
<tr>
<td>Working pressure</td>
<td>2 ... 6 bar</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>+2 °C ... +50 °C without cooling</td>
</tr>
<tr>
<td>Max. feed cable length to the air knife</td>
<td>10 m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pneumatic cylinder</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment speed</td>
<td>up to 2 m/s</td>
</tr>
<tr>
<td>Stroke</td>
<td>up to 2300 mm</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>+2 °C ... +150 °C without cooling</td>
</tr>
<tr>
<td>Position sensor</td>
<td>4 proximity switches</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cooling unit (optional)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Cooling air blower</td>
<td>medium pressure fan with filter, filter class G4</td>
</tr>
<tr>
<td>Cooling power</td>
<td>13 m³/min at 22 mbar, flow control and temperature sensor</td>
</tr>
<tr>
<td>Input power</td>
<td>230 V, 3.6 A, 50/60 Hz (115 V needs transformer)</td>
</tr>
<tr>
<td>Temperature control</td>
<td>air flow controller and PT100</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-20 °C ... +60 °C</td>
</tr>
<tr>
<td>Weight</td>
<td>21 kg</td>
</tr>
<tr>
<td>Tubing</td>
<td>Ø 76 mm with flexible connecting hose to the air knife</td>
</tr>
</tbody>
</table>

### Scraper unit:
- robust and stable guiding mechanism
- spring loaded scraper head
- removable scraper head for maintenance
- replaceable blades, customized, with dedicated hardness
- precise alignment of blade positions

### Electronic unit:
- compact electrical cabinet
- proven EMG quality with EMG iCON®
System configuration:

- Pneumatikzylinder: pneumatic cylinder
- Düse: nozzle
- Reinigungskopf: scraper unit
- Pneumatiktafel: pneumatic board
- Druckluft: compressed air
- Druckluftschauch: pneumatic tube
- Signalen von den Näherungsschaltern: signals from proximity switches
- Ansteuerung: Pneumatik
- Control system: EMG ICON
- Einspeisung: Power supply
  - 230 V AC 50 Hz oder
  - 110 V AC 60 Hz
- Schaltschrank: Electrical cabinet
- externe Steuerung Kunde Profibus DP
- external control customer profibus DP
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