YOUR STRONG PARTNER FOR CLEAN AIR
Scheuch – A Success Story…

100,000,000 Nm³/h with „EMC-Technology“

550,000 Laser Components p.a.

10,000 t Sheet Metal p.a.

7,000 Customer Orders p.a.

4,000 Loaded Trucks p.a.

730 Employees

6 Business Units

ONE COMPANY
# Scheuch GmbH

## Facts & Figures

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership</td>
<td>Scheuch Private Foundation</td>
</tr>
</tbody>
</table>
| Managing Directors| DI Stefan Scheuch *(Technical Executive)*  
|                  | DI Jörg Jeliniewski *(Commercial Executive)* |
| Employee         | 620 in Aurolzmünster                        |
|                  | 815 Scheuch Group                           |
| Turnover         | EUR 130 Mio.                                |
| Export           | 75 %                                         |
Austrian Headquarter in Aurolzmünster
VENTILATION AND ENVIRONMENTAL TECHNOLOGY FOR INDUSTRIAL PRODUCTION PROCESSES

Scheuch worldwide …
Know-how transfer of the industrial sectors

Wood Processing Industry

Wood Based Panels Industry

Metals Industry

Minerals Industry

Energy Industry

Equipment and Components
VENTILATION AND ENVIRONMENTAL TECHNOLOGY
FOR INDUSTRIAL PRODUCTION PROCESSES

Bag Filter
Electrostatic Precipitator
Biological Filter
Production

Aurolzmünster / AUT

Production Area ~18,000 m²
Storage Area ~ 4,800 m²
Office Area ~ 7,400 m²

90 % In-House Production

Production of our product program

Scrubbers, Fans, Classifiers, Bag filters, …

Performance

Material Consumption

<table>
<thead>
<tr>
<th>Material</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet</td>
<td>10,000 t/a</td>
</tr>
<tr>
<td>Bars</td>
<td>1,000 t/a</td>
</tr>
<tr>
<td>Varnish</td>
<td>250 t/a</td>
</tr>
</tbody>
</table>
Production

Prievidza / SK

Production Area  ~ 6,200 m²

Steel construction, Platforms, ..
### Filter Bag Pattern and Media

<table>
<thead>
<tr>
<th>Impuls - Rundschauchfilter</th>
<th>Flachschlauchfilter</th>
<th>Flächenfilter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1m² Schlauchboden</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0,45 m² Filterbodenfläche</td>
<td>0,51 m² Filterbodenfläche</td>
<td>0,49 m² Filterbodenfläche</td>
</tr>
<tr>
<td>11,89 lfm Filterumfang</td>
<td>26,27 lfm Filterumfang</td>
<td>33,99 lfm Filterumfang</td>
</tr>
</tbody>
</table>

![Diagram](image)
Plants < 10 MW / Single Compartment Filter
Plants > 10 MW / Multi-Compartment Filter
IMPULS BAG FILTER

Filter Bag

- Diameter: 100 mm / 160 mm
- Lengths: 1,125 up to 10,000 mm
- Material: Pe, PAN, PP, PPS, PI, PTFE, m-Aramid, PTFE-Membrane

Support Cage

- Diameter: 100 mm / 160 mm
- Lengths: 1,125 up to 10,000 mm
- Design: single-piece / split-cage w/ coupling
- Material: stainless or mild steel w/ coating
IMPULS BAG FILTER

Snap Band Seal

Filter bag with sewn-in stainless Snap Band Seal (cut for demonstration)

Bag tube sheet (t=5mm)

Snap band Seal (double-ring)

Tube sheet Seal
Qualities of filter bags

- **ePTFE membrane**
  - New
  - After 1,000 hours of operation

- **P84 needle-felt**
  - New
  - After 1,000 hours of operation
- Darstellung des Druckverlustes -
Schlauchtestanlage III (L = 4500 mm)

1.R.: PTFE-P/PTFE
2.R.: Tetratex Membran

100,000 Impulse entsprechen einer Betriebsdauer von 4 Jahren bei Normalbetrieb.
IMPULS BAG FILTER

Filter Bag Cleaning

- Compressed Air Pulse Cleaning
  ON-/OFF-Line
- Filtration from outside to inside
- Cleaning Modes
  - dynamic
  - differential pressure
  - continuous
Multi-Compartment IMPULS bag filter
Plants > 10 MW / Multi-Compartment IMPULS bag filter
Plants > 10 MW / Multi-Compartment IMPULS bag filter
Plants > 10 MW / 1 Compartment in Maintenance

Remaining Compt. in Filtration

Compt. in Maintenance

Filter Bag Change during Operation (Availability)

N₂-Flushing of Compartments for Fire Prevention
COMPUTER-AIDED DESIGN IN 3D
ECONOMICAL CONVERSION FROM ESP TO BAG FILTER IN THE CEMENT INDUSTRY
FILTER TECHNOLOGIES USED IN THE CEMENT INDUSTRY

- Reverse air
- ESP
- Shaker type
- Jet filter

Am³/h
### EUROPEAN EMISSION STANDARDS
### DAILY MEAN VALUES IN MG/NM³

<table>
<thead>
<tr>
<th>Components</th>
<th>Guideline 2000/76/EC*</th>
<th>Current range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dust</td>
<td>30 (10 **)</td>
<td>1 – 80</td>
</tr>
<tr>
<td>TOC</td>
<td>10</td>
<td>1 – 20</td>
</tr>
<tr>
<td>HCL</td>
<td>10</td>
<td>1 – 20</td>
</tr>
<tr>
<td>HF</td>
<td>1</td>
<td>0 – 5</td>
</tr>
<tr>
<td>SO₂</td>
<td>50***</td>
<td>20 – 2,500</td>
</tr>
<tr>
<td>NOₓ as NO₂</td>
<td>500 (200 **)</td>
<td>200 – 1,500</td>
</tr>
</tbody>
</table>

* For cement kilns with secondary fuel burning
** > 40 % secondary fuel rate
*** exemptions, if SO₂ from raw material
## ESP Features

### Advantages
- Temp. up to 400 °C
- Low pressure drop
- Low maintenance costs
- Simple operation

### Disadvantages
- Emission mostly > 20 mg/Nm³
- High investment costs for low emission limits
- High dust emission during transient operation and CO-switchoff
- Kiln stop during maintenance required
- Separation degree depends on operating conditions
- Gas conditioning required
NORMAL PULSE-JET FEATURES

Advantages
- Emission < 10 mg
- No CO-problems
- Maintenance also possible during operation (Off-line)
- Constant degree of separation also during transient operating conditions
- Low weight
- Low investment costs

Disadvantages
- Limit of temp.: < 260 °C
- Higher pressure loss (compared to ESP)
- Higher maintenance costs
- Composition of gas influences lifetime of filter bags
SCHEUCH EMC FEATURES

- Combines the advantages of all 3 filter designs
- Low pressure pulse jet technology
- Low footprint and filter volume
- Extreme low dust and noise emissions
- Lower Δp and compressed air consumption
- Constant separation efficiency
- No CO switchoff-problems
- Long bag lifetime
- Bag length up to 8m possible
## COMPARISON TABLE FILTER TECHNOLOGIES

<table>
<thead>
<tr>
<th>Feature</th>
<th>ESP</th>
<th>Reverse air</th>
<th>Pulse-Jet High pressure</th>
<th>Pulse-Jet Scheuch EMC Low pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible A/C ratio resp. required filter area</td>
<td>n. a.</td>
<td>--</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Filter volume/footprint</td>
<td>--</td>
<td>--</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Dust emission</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>CO-switchoff problems</td>
<td>--</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Pressure drop</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Operating costs for</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- filter fan</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>- system cleaning</td>
<td>+</td>
<td>--</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>- wear parts</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>- parts replacement labour</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Investment costs</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Gentle bag cleaning</td>
<td>n.a.</td>
<td>++</td>
<td>-</td>
<td>++</td>
</tr>
<tr>
<td>Partial Offline operation possible</td>
<td>--</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Max. electrode resp. bag length</td>
<td>14</td>
<td>10 m</td>
<td>6 m</td>
<td>8 m</td>
</tr>
<tr>
<td>Cleaning system noise level</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
</tbody>
</table>

++ = excellent  
+ = good  
- = average  
-- = not satisfactory
<table>
<thead>
<tr>
<th></th>
<th>Maintenance costs</th>
<th>Cleaning system</th>
<th>Filter delta p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESP</td>
<td>26,000</td>
<td>138,000</td>
<td>17,460</td>
</tr>
<tr>
<td>Reverse Air</td>
<td>33,200</td>
<td>148,413</td>
<td></td>
</tr>
<tr>
<td>Normal JetPuls</td>
<td>82,750</td>
<td>130,952</td>
<td>4,800</td>
</tr>
<tr>
<td>EMC</td>
<td>14,400</td>
<td>60,784</td>
<td></td>
</tr>
</tbody>
</table>

**Comparison of Operating Costs P.A.**

**KILN/RAW MILL FILTER 660,000 Am/h**

**Graph:**
- ESP
- Reverse Air
- Normal JetPuls
- EMC

**Axes:**
- X-axis: Types of Filters

**Legend:**
- Maintenance costs
- Cleaning system
- Filter delta p
OPERATING COSTS OVER 15 YEARS
KILN/RAW MILL FILTER 1,550,000 Am/h

![Graph showing operating costs over 15 years for different filters.]

- **ESP**
- **RevAir**
- **Normal JetPuls**
- **EMC**

Y-axis: EUR
X-axis: Years

Costs range from 0 EUR to 4,000,000 EUR over 0 to 15 years.
MANY THANKS FOR YOUR ATTENTION!

DIPL.-ING. JIŘÍ DRCMAN – SALES ENGINEER