Power electronic capacitors (PEC)

High-power (HP) series
Key figures

### Key data

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headquarters</td>
<td>Munich, Germany</td>
</tr>
<tr>
<td>Number of plants</td>
<td>9</td>
</tr>
<tr>
<td>Employees total</td>
<td>5600</td>
</tr>
</tbody>
</table>
| Management           | Karl Stoll
                       | CEO                                          |
|                      | Bernhard Koch
                       | Deputy General Manager                       |
|                      | Auxi Fernandez
                       | CFO                                          |

### Portfolio

- **Aluminum electrolytic capacitors** with terminals
  - Screw
  - Snap-in/solder pins
  - Axial-lead/soldering star
  - Single-ended

- **Film capacitors for industrial & automotive**
  - DC capacitors
  - AC capacitors
  - Power chip capacitors (PCC)
  - Power electronic capacitors (MKP)/ HP

- **Film capacitors for energy**
  - Power electronic capacitors (HP)
  - Power factor correction (PFC) capacitors and key components (LV, MV)
  - Power quality solutions (PQS)
Comprehensive portfolio: Aluminum & Film Capacitors Business Group

- **Aluminum electrolytic capacitors**
  - Screw terminals
  - Snap-in/solder pins
  - Axial-lead/soldering star
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- **Film capacitors for industrial & automotive**
  - DC capacitors
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  - Power chip capacitors (PCC)
  - Power electronic capacitors (HP)
  - Power electronic capacitors (MKP)

- **Film capacitors for energy**
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  - Power factor correction (PFC) capacitors and key components (LV, MV)
  - Power quality solutions (PQS)
Global manufacturing:
Aluminum & Film Capacitors Business Group

- Aluminum electrolytic capacitors only
- Film capacitors only
- Both capacitor technologies
- TDK Foil

Manufacturing locations:
- China
  - Zhuhai
- Spain
  - Málaga
- Brazil
  - Gravataí
- Iceland
  - Akureyri
- Germany
  - Heidenheim
- Hungary
  - Szombathely
- India
  - Nashik
- China
  - Xiamen
- Italy
  - Milan
- Hungary
  - Szombathely
- Germany
  - Heidenheim
Málaga plant, Spain

Product range

Film capacitors
- DC capacitors
- Power electronic capacitors (HP)

Technology competence center
- Basic R&D for film capacitors
- Film capacitors product development
- Applications center
- Simulations and mechanical development
- Center of know-how film metalization
- Process innovation, Industry 4.0, and data science center
- Automation concepts for high-power capacitors

Film metalization center

Certifications
- ISO 9001
- IRIS (ISO/TS 22163)
- IATF 16949

- ISO 14001
- ISO 3834/EN 15085
- ISO 50001/CSR

10,200 m²
Startup in 2011 (new facilities)
Product portfolio

AC filter

MKK HP

DC link/DC filter

ModCap™

MKK DCR

MKK DCi-H
DC link & DC filter applications

- Renewable energies
  - Solar
  - Wind
- Traction
  - Loco & EMU
  - Light trains
- Industry
  - LV
  - MV
## Applications vs products

<table>
<thead>
<tr>
<th>Renewable energies</th>
<th>Traction</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar</td>
<td>Wind</td>
<td>Locomotive &amp; EMU</td>
</tr>
<tr>
<td>ModCap™</td>
<td></td>
<td>NEW</td>
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<tr>
<td>MKK DCR</td>
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<td></td>
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<tr>
<td>MKK DCi-H</td>
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<tr>
<td>MKK HP</td>
<td></td>
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</tr>
</tbody>
</table>

Get more info [here](#)
Key figures B25645 series

**ModCap MF (dry-modular-medium frequency)**

**Features**
- Capacitance range from 335 to 2525 µF and voltage from 900 to 2300 V
- Low ESL <14 nH
- Temperature range up to 90 °C hotspot
- IEC 61071, IEC 61881-1, EN 45545-2 HL3 R23 (fire and smoke), UL recognized
- Filled with polyurethane resin (dry technology)
- Plastic case (opened)
- Flat windings

**Benefits**
- High energy density, ultra compact solution
- Modular concept for parallelization
- Snubber avoidance/low voltage overshoot
- Lifetime up to 200,000 hours
- ANSYS™ simulations available for the whole series
- Cost-oriented solution
- Reduced time to market & lead time

Recommended applications
Key figures B25647 series

ModCap HF (dry-modular-high frequency)

Features

- Capacitance range from 640 µF up to 1850 µF and voltage from 900 V up to 1,600 V
- Low ESL (8 nH)
- Temperature range up to 90 °C hotspot
- IEC 61071, IEC 61881-1, EN 45545-2 HL3 R23 (fire and smoke), UL recognized
- Filled with polyurethane resin (dry technology)
- Plastic case (opened), 8 terminals construction
- Flat windings

Benefits

- High power density, high frequency performance
- Modular concept for parallelization
- Snubber avoidance / low voltage overshoot
- Lifetime up to 200,000 hours
- Finite elements analysis available for the whole series
- Specially recommended for SiC semiconductors
- Reduced time to market & lead time
Key figures B25640D series

MKK DCR (dry)

Features
- Capacitance range 100 to 20,000 µF and voltage 700 to 1500 V DC
- Low ESL <30 nH
- Temperature range up to 85 °C hotspot
- IEC 61071, IEC 61881-1, EN 45545-2 (HL2 R22, HL3 R23)
- Filled with polyurethane resin (dry technology)
- Aluminum case (opened)
- Segmented film
- Flat windings

Benefits
- 100% customized solution
- Open design specially suitable for low inductance requirements
- Homogeneous internal current distribution
- Design compatible with bus bar integration
- Life time >150,000 hours at hotspot temperature +85 °C
- ANSYS™ simulations available upon request

Recommended applications

Power electronic capacitors (PEC) • High-power (HP) series
Key figures B25641 series

MKK DCR (dry)

Features
- Capacitance range 100 to 20,000 µF and voltage 700 to 4000 V DC
- Filled with polyurethane resin (dry technology)
- Temperature range up to 85 °C hotspot
- IEC 61071, IEC 61881-1
- Stainless steel case (sealed)
- Flat windings

Benefits
- 100% customized solution
- Hermetically sealed
- Compatible with pressure switch device
- Design compatible with aggressive environmental conditions
- Life time up to 200,000 hours at hotspot temperature +85 °C
- ANSYS™ simulations available upon request

Recommended applications
Key figures B25750H series

MKK DCi-H (oil)

Features
- Capacitance range 100 to 24 mF and voltage 900 to 5400 V DC
- Applications with high ripple voltage >400 Vrms
- Temperature range up to 85 °C hotspot
- Impregnation with vegetable (rapeseed) oil
- IEC 61071, IEC 61881-1
- Oil technology
- Stainless steel case
- Flat windings

Benefits
- 100% customized solution
- Hermetically sealed
- Ultra compact solution
- Life time up to 200,000 hours at hotspot temperature +85 °C
- Compatible with pressure switch device
- Design compatible with aggressive environmental conditions
- ANSYS™ simulations available upon request

Recommended applications
Key figures B25610 series

MKK HP (dry)

Features
- Capacitance range 3 x 200 to 3 x 3000 µF and voltage 230 to 690 VAC
- Customized design for filters
- Temperature range up to 85 °C hotspot
- Impregnation with polyurethan resin
- IEC 61071, IEC 61881-1
- Filled with polyurethane resin (dry technology)
- Stainless steel case
- Flat windings

Benefits
- 100% customized solution
- Hermetically sealed
- Ultra compact solution for filtering (customized)
- Life time up to 200,000 hours at hotspot temperature +85 °C
- Compatible with pressure switch device
- Design compatible with aggressive environmental conditions
- ANSYS™ simulations available upon request

Recommended applications