Cooling Systems for Rolling Stock

Cooling tower for combined cooler for transformer oil and coolant
• Cooling towers consist of aluminum heat exchangers, housing, hydraulic or electric fan drive, pipe work and expansion tanks.

 DE DIESEL-ELECTRIC-LOCOMOTIVES

AKG cooling towers installed in diesel and hybrid locomotives.

• Tailor-made cooling systems for transformers and converters with fluid pumps, speed controlled fans, tanks and pipe work.

 ELECTRIC-LOCOMOTIVES

AKG cooling towers in all sizes.
AKG high performance light weight cooling systems.

- Single core, side-by-side or multi layer coolers options
- Weight optimized expansion tanks and oil tanks
- Reliable axial piston pumps and motors for extended life-time
- Speed controlled fans for low energy consumption and low noise

AKG roof cooling units for transformers and converters.

- Low noise fans
- Designed and engineered in Germany
- Due to modular design usable in different locations of the train
- Integration of coolant pumps, expansion tanks, electrical connectors and pipe work
LRV LIGHT-RAIL-VEHICLE

AKG converter and traction motor cooling.

- High integrity design light weight cooling systems
- Roof mounted plug and play units

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HST HIGH-SPEED-TRAINS

AKG cooling units for transformers and converters.

- High performance light weight cooling units
- Aerodynamically optimized
- Low sound power level
- Part sets or complete functional units
Transformer oil cooling for rolling stock is a major competence of AKG. With our modularisation we can offer you components for
- Underfloor
- Onboard
- Roof cooling units
which fulfill the actual technical and normative railway requirements (EN 15085, EN 45545).

Numerous advantages include:
- Pre-engineered components
- Fast customizing
- Proven and tested technology
- Flexibility to combine various options
- Quick availability and delivery

The flexibility is achieved through:

**U-flow:** Inlet and outlet connection on the same side

<table>
<thead>
<tr>
<th>Model</th>
<th>Power range*(a)</th>
<th>ETD</th>
<th>Total size*(b) incl. header tanks (in mm)</th>
<th>Fan diameter</th>
<th>Rated power of electric motor*(c)</th>
<th>Pressure drop oil side*(d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT.u1</td>
<td>up to 88 kW</td>
<td>60 K</td>
<td>1.040 x 580 x 750</td>
<td>315 mm</td>
<td>2· 2,0 kW</td>
<td>410 mbar</td>
</tr>
<tr>
<td>RT.u2</td>
<td>up to 126 kW</td>
<td>60 K</td>
<td>1.200 x 600 x 820</td>
<td>355 mm</td>
<td>2· 2,8 kW</td>
<td>425 mbar</td>
</tr>
<tr>
<td>RT.u3</td>
<td>up to 174 kW</td>
<td>60 K</td>
<td>1.350 x 650 x 850</td>
<td>400 mm</td>
<td>2· 4,4 kW</td>
<td>480 mbar</td>
</tr>
</tbody>
</table>

**I-flow:** Inlet and outlet connection on different sides

<table>
<thead>
<tr>
<th>Model</th>
<th>Power range*(a)</th>
<th>ETD</th>
<th>Total size*(b) incl. header tanks (in mm)</th>
<th>Fan diameter</th>
<th>Rated power of electric motor*(c)</th>
<th>Pressure drop oil side*(d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT.i1</td>
<td>up to 88 kW</td>
<td>60 K</td>
<td>1.040 x 580 x 750</td>
<td>315 mm</td>
<td>2· 2,0 kW</td>
<td>200 mbar</td>
</tr>
<tr>
<td>RT.i2</td>
<td>up to 128 kW</td>
<td>60 K</td>
<td>1.200 x 600 x 820</td>
<td>355 mm</td>
<td>2· 2,8 kW</td>
<td>205 mbar</td>
</tr>
<tr>
<td>RT.i3</td>
<td>up to 177 kW</td>
<td>60 K</td>
<td>1.350 x 650 x 850</td>
<td>400 mm</td>
<td>2· 4,4 kW</td>
<td>230 mbar</td>
</tr>
</tbody>
</table>

The design focuses on equivalent power at different connection positions. The same level of performance was achieved by selecting different components. All configurations are Twinboxes with two fans. Power range and pressure drop on oil side are examples for following conditions: 200 km/h train speed / Fouling 10% / ETD 60 K: Oil inlet 105 °C, ambient temperature 45 °C / Oil flow: 35 m³/h resp. 583 L/Min / Ester Mide 7131 oil / Elevation 400 m a.s.l. / Fitting Øi 70 mm.

We will be happy to calculate deviating conditions for you. Please contact us by e-mail or phone.

*Rho 1,205 kg/m³ (20 °C; 1.013 mbar) / *considering fan boxes, without flanges, without inlet grid / *calculated size
COOLING SYSTEMS FOR ROLLING STOCK

CONTACTS FOR MANUFACTURERS

AKG Thermotechnik International GmbH & Co. KG
Am Hohlen Weg 31
D-34369 Hofgeismar • Germany
Phone  +49 5671 - 8 83 - 0
info@akg-group.com
www.akg-group.com

AKG France S.A.S.
F-57204 Sarreguemines • France
Phone  +33 3 - 87 95 11 11

AKG of America, Inc.
Mebane, NC 27302-0370 • USA
Phone  +1 919 - 5 63 42 86
E-Mail info@akg-america.com

AKG India Private Ltd.
Coimbatore, Tamil Nadu - 642 109 • India
Phone  +91 422 - 665 1100

AKG Thermal Systems (Taicang) Co., Ltd.
215400 Taicang, Jiangsu Province • Peoples Republic of China
Phone  +86 512 - 53 56 94 18

AKG Termoteknik Sistemler San. ve Tic. Ltd. Şti.
35730 Kemalpaşa, İzmir • Turkey
Phone  +90 232 877 21 99
E-Mail info@akg-turkey.com

AKG Termoteknik Sistemler San. ve Tic. Ltd. Şti.

AKG Service Program

>>Maintenance / Overhaul

>>Supply of spare parts

>>Repair

>>Technical Support

>>Commissioning

>>Service at Customer Location

>>Training

Technical Service
Phone:  +49 5671 - 883 - 1118
E-mail:  AKG-Service@akg-gruppe.de

Spare Parts Service Rolling Stock
Phone:  +49 5671 - 883 - 1471
E-mail:  AKG-Service@akg-gruppe.de