Liquid-cooled components
Our three cooling variants

Indirect cooling with heat sink:
This version the heat sinks are integrated into the components and directly fixed to the heat sources in order to enable a higher degree of efficiency. This design is particularly efficient at higher power levels.

Direct cooling with waveguides:
In addition to its standard indirect cooling method REO now offers the direct cooling method, which enhances cooling efficiency even more. The direct cooling uses waveguides, which includes the conductive material as well as the cooling fluid (water/glycol). The use of this method provides optimal cooling.

Indirect cooling with coldplate:
In this version a heat sink is attached externally to cool it. This is a more economical method for low power levels and smaller components.

Schematic diagram of indirect cooling
- Cooling block
- Winding
- Core

Schematic diagram of direct cooling
- Cooling liquid
- Conductive material

Schematic diagram of Coldplate
- Cooling block
- Winding
- Core
Liquid-cooled chokes

Advantages

- Low surface temperature
- Increased life time
- Size reduction

<table>
<thead>
<tr>
<th>Type</th>
<th>Product group</th>
<th>Rated current</th>
<th>Voltage</th>
<th>Design</th>
<th>Protection</th>
<th>Cooling type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNW MD 806</td>
<td>Dv/dt Choke</td>
<td>100 - 1200 A</td>
<td>500 - 800 V</td>
<td>Encapsulation</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>CNW MD 953</td>
<td>Mains choke</td>
<td>200 - 1200 A</td>
<td>3x400 V (3x690 V)</td>
<td>Partial Encapsulation</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>CNW MD 903</td>
<td>Mains choke</td>
<td>200 - 1200 A</td>
<td>3x400 V (3x690 V)</td>
<td>Partial Encapsulation</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>CNW MD 835</td>
<td>5-Limb Motor choke</td>
<td>450 - 700 A</td>
<td>3x500 V</td>
<td>Partial Encapsulation</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>CNW MD 854</td>
<td>Motor choke</td>
<td>200 - 1200 A</td>
<td>3x400 V (3x690 V)</td>
<td>Partial Encapsulation</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>NNT MD 953</td>
<td>Mains choke</td>
<td>200 - 1200 A</td>
<td>3x400 V (3x690 V)</td>
<td>Encapsulation</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>CNW MD 854</td>
<td>Motor choke</td>
<td>6 - 70 A</td>
<td>500 V</td>
<td>Encapsulation</td>
<td>IP 20 - IP 65</td>
<td>Cold Plate</td>
</tr>
<tr>
<td>CNW MD 903</td>
<td>Mains choke</td>
<td>6 - 70 A</td>
<td>500 V</td>
<td>Encapsulation</td>
<td>IP 20 - IP 65</td>
<td>Cold Plate</td>
</tr>
<tr>
<td>CNW MD 933</td>
<td>Sinusoidal filter</td>
<td>6 - 70 A</td>
<td>500 V</td>
<td>Encapsulation</td>
<td>IP 20 - IP 65</td>
<td>Cold Plate</td>
</tr>
<tr>
<td>NTT LD-DH 100</td>
<td>Snubberchoke</td>
<td>500 - 2500 A</td>
<td>bis 3000 V</td>
<td>Encapsulation</td>
<td>IP00</td>
<td>Direct cooling</td>
</tr>
</tbody>
</table>

*All products are not in stock
Liquid-cooled filter/combinations

Advantages

- Low surface temperature
- Use of cooling surfaces possible by the customer
- Size reduction

Technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>Product group</th>
<th>Rated current</th>
<th>Voltage</th>
<th>Design</th>
<th>Protection</th>
<th>Cooling type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNW MD 458</td>
<td>Mains filter</td>
<td>3 - 64 A</td>
<td>480 V</td>
<td>Housing</td>
<td>IP20</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>CNW C 329</td>
<td>Liquid-cooled Combination</td>
<td>10 - 180 A</td>
<td>500 V</td>
<td>Housing</td>
<td>IP42</td>
<td>Indirect cooling</td>
</tr>
</tbody>
</table>

*All products are not in stock
Liquid-cooled resistors

Advantages

- Minimierung der Baugröße bis zu 80%
- Hohe Effizienz
- Geräuscharmut

Technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>Product group</th>
<th>Rated current</th>
<th>Power</th>
<th>Voltage</th>
<th>Design</th>
<th>Protection</th>
<th>Cooling type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BW D 158</td>
<td>Braking resistor</td>
<td>-</td>
<td>1000 - 60000 W</td>
<td>1000 V</td>
<td>-</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>BW D 330</td>
<td>Braking resistor</td>
<td>-</td>
<td>15000 - 60000 VA</td>
<td>800 V</td>
<td>-</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>NTT RD 158</td>
<td>Railway application</td>
<td>-</td>
<td>2600 W</td>
<td>4200 V</td>
<td>-</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>R D 169</td>
<td>Loading resistor</td>
<td>-</td>
<td>4000 - 6000 W</td>
<td>690 V</td>
<td>-</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>R D 330</td>
<td>Loading resistor</td>
<td>-</td>
<td>30.000 - 160.000 W</td>
<td>500 V</td>
<td>-</td>
<td>IP00</td>
<td>Indirect cooling</td>
</tr>
<tr>
<td>RELOAD 300</td>
<td>Resistive loads</td>
<td>431000 W</td>
<td>-</td>
<td>400 - 1000 V</td>
<td>Switch cabinet</td>
<td>IP 20 - IP 54</td>
<td>Indirect cooling</td>
</tr>
</tbody>
</table>

*All products are not in stock
DIVISIONS:

REO Vibratory Feeding and Power Electronics Division
Brühler Straße 100 · D-42657 Solingen
Tel.: +49 (0)212 8804 0 · Fax: +49 (0)212 8804 188
E-Mail: info@reo.de

REO Train Technologies Division
Erasmusstraße 14 · D-10553 Berlin
Tel.: +49 (0)30 3670236 0 · Fax: +49 (0)30 3670236 10
E-Mail: zentrale.berlin@reo.de

REO Drives Division
Holzhausener Straße 52 · D-16866 Kyritz
Tel.: +49 (0)33971 485 0 · Fax: +49 (0)33971 485 90
E-Mail: zentrale.kyritz@reo.de

REO Medical and Current Transformer Division
Schuldholzinger Weg 7 · D-84347 Pfarrkirchen
Tel.: +49 (0)8561 9886 0 · Fax: +49 (0)8561 9886 40
E-Mail: zentrale.pfarrkirchen@reo.de

REO Test and PowerQuality Division
Brühler Straße 100 · D-42657 Solingen
Tel.: +49 (0)212 8804 0 · Fax: +49 (0)212 8804 188
E-Mail: info@reo.de

PRODUCTION + SALES:

India
REO GPD INDUCTIVE COMPONENTS PVT. LTD
E-Mail: info@reogpd.com · Internet: www.reo-ag.in

USA
REO-USA, Inc.
E-Mail: info@reo-usa.com · Internet: www.reo-usa.com

SALES:

China
REO Shanghai Inductive Components Co., Ltd
E-Mail: info@reo.cn · Internet: www.reo.cn

France
REO VARIAC S.A.R.L.
E-Mail: reovariac@reo.fr · Internet: www.reo.fr

Great Britain
REO (UK) Ltd.
E-Mail: main@reo.co.uk · Internet: www.reo.co.uk

Italy
REO ITALIA S.r.l.
E-Mail: info@reoitalia.it · Internet: www.reoitalia.it

Poland
REO CROMA Sp.z.o.o
E-Mail: croma@croma.com.pl · Internet: www.croma.com.pl

Spain
REO ESPAÑA 2002 S.A.
E-Mail: info@reospain.com · Internet: www.reospain.com

Switzerland
REO ELEKTRONIK AG
E-Mail: info@reo.ch · Internet: www.reo.ch

Turkey
REOTURKEY ELEKTRONIK San. ve Tic. Ltd. Şti.
E-Mail: info@reo-turkey.com · Internet: www.reo-turkey.com