Coolers / Chillers

Overview

Industrial X-Ray

COMET
Technology with Passion
“One Stop Shop” for Industrial X-Ray: Comet’s iXRS
Comet is pleased to offer all of the necessary components for a customized X-Ray module: The iXRS modules contain a Comet X-Ray tube, iVario high-voltage Generator, HV-cables, cooler and interconnections designed for easy integration that will optimize system performance. All iXRS modules are factory pre-tested for hassle free installation and operation. This solution demonstrates Comet’s continuous commitment and investment in delivering real added value to our worldwide customer base.

About the Business Unit Industrial X-Ray
Comet Industrial X-Ray is an experienced supplier of components and modules for industrial X-Ray applications and is proud of its reputation as the preferred engineering partner in terms of innovation potential, know how, flexibility and speed. Our product range features X-Ray tubes and sources with small focal spot resolution up to 6 kW in output for more power demanding requirements. From the smallest footprint for use in portable units to 600 kV fixed gantry systems that are suitable for cargo screening, we offer a solution.
Bipolar XRS Module

- Optional cover for IP54 protection
- Optional touchscreen controller unit with user-friendly interface
- High-voltage tank
- High-voltage cable
- Control unit
- Wire separator
- X-ray tube
- Cooling unit for optimal tube temperature
- Cooling hoses
- IFC terminal (Input/output terminal and central generator intelligence)
- Power cell
Cooler XRC-3023-WA Ordering No. 20086162

- The cooling unit XRC-3023-WA is intended to cool the water circuit.
- The coolant can be water or a mixture of water and antifreeze (water-glycol).
- Water circulates between the cooling unit and the heat source. The water is re-cooled by an air-cooled heat exchanger.

Technical data

Physical dimensions
Length: 483 mm
Width: 406 mm
Height: 481 mm
Weight: 38.5 kg without filling
Coolant capacity: 4.0 l

Performance data
Cooling capacity: 3000 W (ΔT=11°C)
Flow rate: ≥ 5.4 l/min at 4 bar
Main voltage: 230 V AC +10% / −15%, 50/60 Hz
Current consumption: ≤ 2.6 A
Noise level at 1m distance: 55 dB (50 Hz), 59 dB (60 Hz)
Airflow at 50 Hz (60 Hz): 2200 m³/h (2600 m³/h)
Safety class: IP 21

Environmental specifications
Operational temperature: −10°C up to +40°C
(use antifreeze if ambient temperature is below 10°C)
Storage temperature: −25°C up to +70°C
(store with antifreeze)
Air humidity: 20% up to 90% non condensing

Settings
Maximum forward pressure: 6.7 ± 0.2 bar
Flow switch open: < 4 l/min
Flow switch close: > 4.2 l/min
Thermal switch open: > 50°C
Thermal switch close: < 45°C
The cooling unit XRC-3023-WW is intended to cool the water circuit.
The coolant can be water or a mixture of water and antifreeze (water-glycol).
Water circulates between the cooling unit and the heat source. The water is re-cooled by a water-cooled heat exchanger.

Technical data

Physical dimensions
Length: 460 mm  
Width: 296 mm  
Height: 404 mm  
Weight: 24 kg without filling  
Coolant capacity: 8.5 l

Performance data
Cooling capacity: 3000 W (ΔT=22°C)  
Flow rate: ≥ 5.4 l/min at 4 bar  
Main voltage: 230 V AC +10% / −15%, 50/60 Hz  
Current consumption: ≤ 1.8 A  
Noise level at 1m distance: 47 dB (50 Hz), 51 dB (60 Hz)  
Safety class: IP 21

Environmental specifications
Operational temperature: +5°C up to +40°C (use antifreeze if ambient temperature is below 10°C)  
Storage temperature: −25°C up to +70°C (store with antifreeze)  
Air humidity: 20% up to 90% non condensing

Settings
Maximum forward pressure: 6.5 ± 0.2 bar  
Flow switch open: < 4 l/min  
Flow switch close: > 4.8 l/min  
Thermal switch open: > 25°C  
Thermal switch close: < 45°C
The cooling unit XRC-4523-OA serves for cooling the oil circulation system.

- Oil circulates between the cooling unit and the heat source. The oil is re-cooled by an air-cooled heat exchanger.
- The capacity of the cooling unit depends on the ambient temperature difference between the cooling oil outlet and ambient temperature of the heat source.

**Technical data**

**Physical dimensions**
- Length: 778 mm
- Width: 390 mm
- Height: 539 mm
- Weight: 53 kg without filling
- Coolant capacity: 12.5 l

**Performance data**
- Cooling capacity: 4500 W (ΔT=11°C)
- Flow rate: ≥ 14 l/min at 8 bar
- Main voltage: 230 V AC +10 % / −15 %, 50/60 Hz
- Input Power: 0.785 kW (P_{max}; 230 V; 50 Hz)
- 1.058 kW (P_{max}; 230 V; 60 Hz)
- Noise level at 1m distance: 65 dB
- Airflow at 50 Hz (60 Hz): 2200 m³/h (2600 m³/h)
- Safety class: IP 21

**Environmental specifications**
- Operational temperature: −10°C up to +40°C
- Storage temperature: −25°C up to +70°C
- Air humidity: 20 % up to 90 % non condensing

**Settings**
- Maximum forward pressure: 9.5 ± 0.2 bar
- Flow switch open: < 20.5 l/min
- Flow switch close: > 22 l/min
- Thermal switch open: > 50°C
- Thermal switch close: < 47°C
Cooler XRC-4523-OW  Ordering No. 20086165

- The cooling unit XRC-4523-OW serves for cooling the oil circulation system.
- Oil circulates between the cooling unit and the heat source. The oil is re-cooled by a water-cooled heat exchanger.
- The capacity of the cooling unit depends on the ambient temperature difference between the cooling water and the oil outlet temperature of the heat source.

Technical data

Physical dimensions
Length: 621 mm  
Width: 350 mm  
Height: 551 mm  
Weight: 45 kg without filling  
Coolant capacity: 23 l

Performance data
Cooling capacity: 4500 W (ΔT=20°C)  
Flow rate: ≥ 25 l/min at 3.5 bar  
Main voltage: 230 V AC +10 % / −15 %, 50/60Hz  
Input power: 0.55 kW  
Noise level at 1m distance: 60 dB  
Safety class: IP 21

Environmental specifications
Operational temperature: +5°C up to +40°C  
Storage temperature: −25°C up to +70°C  
Air humidity: 20 % up to 90 % non condensing

Settings
Maximum forward pressure: 9.5 ± 0.2 bar  
Flow switch open: < 20.5 l/min  
Flow switch close: > 13 l/min  
Thermal switch open: > 50°C  
Thermal switch close: < 47°C
The cooling unit XRCA-3023-WA is designed to provide a continuous flow of coolant fluid at a constant temperature.

- Water circulates between the cooling unit and the heat source. The water is chilled by an air-cooled refrigeration system.
- The cooling capacity is 3000 W related to 40°C ambient temperature and +25°C +/- 2°C fluid temperature.
- Cooling hoses are connected to the cooling unit via quick connectors.

### Technical data

#### Physical dimensions
- Length: 590 mm
- Width: 612 mm
- Height: 925 mm
- Weight: 115 kg without Water
- Coolant capacity: 14 l

#### Performance data
- Cooling capacity: 3000 W ($\Delta T=15^\circ$C)
- Water flow: $\geq$ 4.4 l/min at 4.0 bar
- Voltage rating: 230 V AC ±10% / −15%, 50/60 Hz
- Current consumption: $\leq$ 9.3 A
- Noise level at 1m distance: $\leq$ 65 dB
- Airflow at 50 Hz (60 Hz): 1700 m$^3$/h (2200 m$^3$/h)
- Safety class: IP 21

#### Environmental specifications
- Ambient temperature: +5°C up to +40°C
- Storage temperature: −25°C up to +70°C (Storage without water)
- Air humidity: 20% up to 90% not condensing

#### Refrigeration cycle
- Refrigerant: R 134 A
- Capacity: 1.3 kg

#### Settings
- Maximum pressure: $\leq$ 6.7 bar
- Water outlet temperature (T1): + 25°C
- Anti freezing (T2): + 5°C
- Temperature MAX (T3): + 35°C
- Flow switch open: $< 4$ l/min
- Flow switch close: $> 4.2$ l/min
Chiller XRCA-5023-OA Ordering No. 20086167 (50Hz) / 20086168 (60Hz)

- The cooling unit XRCA-5023-OA is designed to provide a continues flow of cooling fluid at a constant temperature.
- Oil circulates between the cooling unit and the heat source. The oil is chilled by an air-cooled refrigeration system.
- The cooling capacity is 5000W related to 40°C ambient temperature and +30°C ± 2°C fluid temperature.
- Cooling hoses are connected to the cooling unit via screw connection.

**Technical data**

**Physical dimensions**
- Length: 1120 mm
- Width: 750 mm
- Height: 980 mm
- Weight: 180 kg without coolant
- Coolant capacity: 12.5 l

**Performance data**
- Cooling capacity: 5000 W at 40°C ambient temperature
- Oil flow: ≥ 22 l/min at 3.5 bar
- Voltage rating: 230 V AC +10% / –15%, 50/60 Hz
- Current consumption: ≤ 8.2 A
- Noise level at 1m distance: ≤ 70 dB
- Airflow at 50 Hz (60 Hz): 3400 m³/h (4400 m³/h)
- Safety class: IP 21

**Environmental specifications**
- Ambient temperature: +5°C up to +40°C
- Storage temperature: –25°C up to +70°C (Storage without coolant)
- Air humidity: 20% up to 90% not condensing

**Refrigeration cycle**
- Refrigerant: R 134 A
- Capacity: 3.0 kg

**Settings**
- Maximum pressure: ≤ 8.5 bar
- Oil outlet temperature (T1): + 30°C
- Anti freezing (T2): + 5°C
Oil filter OMF  Ordering No. 20073964

- The oil filter unit OMF has been developed to maintain the quality and dielectric strength of the cooling circuit.
- The oil filter consists of 2 stages, a molecular sieve to remove moisture from the oil and a particle filter.
- For the operation of oil cooled X-Ray tubes it is important to maintain the dielectric strength of the oil also during extended operation of the tube. The oil deteriorates when moisture is being absorbed, in particular during filling or in open cooling systems, when the oil decomposes, or by the formation of particles. This may happen by chemical reactions within the oil at the hot anode surface or by the influence of X-Rays.

Schematic for installation of oil filter unit

Operation parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure, max</td>
<td>10 bar</td>
</tr>
<tr>
<td>Weight</td>
<td>5.6 kg</td>
</tr>
<tr>
<td>Cooling medium</td>
<td>Oil</td>
</tr>
<tr>
<td>Cooling medium temp. at inlet, max</td>
<td>50°C</td>
</tr>
</tbody>
</table>
Accessories for oil cooled units

OMF molecular oil filter unit
incl. mounting kit
Ord. No. 10009817 (for XRC-4501-OA)
Ord. No. 10009818 (for XRC-4501-OW)

Oil Shell Diala S4
5 liter can,
Ord. No. 4512-101-63583

Set of oil hoses (inlet and outlet)
5m, Ord. No. 9421-166-96052
10m, Ord. No. 9421-166-96102
15m, Ord. No. 9421-166-96152
20m, Ord. No. 9421-166-96202

Accessories for water cooled units

Hose nipple,
inner diameter 13mm
inlet, Ord. No. 10009223
outlet, Ord. No. 10009222

Water with antifreeze,
10 liter can
Ord. No. 20039712

Cooling hoses
inlet 5m, Ord. No. 10009352.05
inlet 10m, Ord. No. 10009352.10
outlet 5m, Ord. No. 10009353.05
outlet 10m, Ord. No. 10009353.10

Additional accessories and spare parts are available on request.