VELC

-Liquid-cooled frequency converter switchgear
VEO knows your needs

We deliver automation and electrification solutions for energy production, distribution and consumption in close collaboration with our customers worldwide.
Energy-efficient and silent space saver
VELC is a space-saving frequency converter switchgear solution with liquid-cooled main components. Liquid cooling enhances the cooling effect and reduces equipment noise. The VELC solution is particularly suitable for installations with limitations on the available cooling air or installation space. Typical users include ships, the offshore industry, mines and manufacturers of equipment and machinery. Compared with similar air-cooled equipment, significant savings of space are achieved. Thanks to liquid cooling, large air conditioning equipment or channels are not required as the coolant removes about 95% of the excess heat produced by the main components. This drastically reduces the cooling air requirements. This, in turn, means savings both in capital expenditure and operating costs. Furthermore, the absence of large cooling fans means that the noise level produced by the liquid-cooled frequency converter switchgear is low.

VELC – Liquid-cooled frequency converter switchgear
• environmentally friendly
• energy-efficient
• space-saving
• silent operation
• reliable
• savings in capital expenditure
• savings in operating costs
VELC - Liquid-cooled frequency converter switchgear

VELC 12-pulse version

VELC is a compact and well-tested switchgear that utilises liquid-cooled components. VELC is designed to be flexible, sturdy, compact, as well as easy to install and maintain. It is a safe choice for all demanding applications.

User friendly
The control unit of the frequency converter is in a dedicated space where the auxiliary equipment is also located.

The extensive range of available options allows the switchgear to be equipped to match the customer’s needs.

The cable inlets and clamps for mains cable and motor cables are included in the standard scope of supply.

For demanding environments
The temperatures of the liquid-cooled components used in the switchgear remain low and steady, prolonging the service life even in the most demanding operating environments. The excellent EMC (Electromagnetic compatibility) properties of the switchgear also ensure trouble-free operation.

Maintenance friendly
The components are designed and placed to make them easily accessible from the front side of the switchgear for maintenance and replacement.

For small installation spaces
Liquid cooling has significantly reduced the physical size of main components, leading to a compact switchgear design. Liquid cooling is an ideal solution for switchgear that is to be installed in places where space is limited.

Silent operation
The absence of large cooling fans means that the noise level produced by the VELC switchgear is low.

Environmentally friendly and energy-efficient
Thanks to advanced frequency converter technology, the VELC switchgear has top-class energy efficiency. The excess heat absorbed in the coolant can be utilised by the customer through a heat exchanger.

The basic solution has a 6-pulse circuit, but the total harmonic distortion (THD) in the mains can be limited using a 12-pulse circuit if required.
VELC - Technical data and options

VELC technical data

- **Rated nominal voltage**
  - ≤ 690 VAC, 50/60 Hz
- **Short-circuit withstand strength**
  - \( I_{\text{cw}} (1 \text{ s}) \) 50 kA

- **Power range**
  - Basic solution 630-1400 kW
  - Expandable to ≤ 4800 kW

- **Degrees of protection**
  - IP 23
  - IP 54

- **Standard colour**
  - RAL 7035

Examples of space needed:

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<thead>
<tr>
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<th>12-pulse version, IP 23, IP 54</th>
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<td>630-1250 kW</td>
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<td>Height, mm</td>
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<td>210</td>
</tr>
<tr>
<td>Width, mm</td>
<td>1710</td>
<td>1900</td>
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<tr>
<td>Depth, mm</td>
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<td>Weight, kg</td>
<td>n. 1450</td>
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VELC options

- **Mains device**
  - Moulded case circuit breaker
  - Air circuit breaker
  - Earthing switch

- **Cabling**
  - Mains cabling from top
  - Motor cabling from top

- **Motor output filter**
  - \( \text{dU/dt} \) -filter
  - Common mode ferrite rings

- **Liquid-liquid heat exchanger**
  - 40 kW
  - 120 kW

- **Marine/Offshore**
  - Vibration damping
  - Top support
  - Grip rail
  - Door stay at 90° open

- **Enclosure**
  - IP 23 → IP 54
  - Base plinth
  - Additional empty section
  - Lifting brackets

- **Auxiliary equipment**
  - Control cabling to the terminal block
  - Emergency stop function using a separate relay
  - Isolation level monitoring relay
  - Pilot devices mounted on the door
  - Auxiliary voltage distribution
  - Control of motor cooling fan
  - Motor heater feeder
  - Control of motor brake
  - Cabinet light
  - Cabinet heater

- **Standard colour**
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