

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Liquid cooling unit**with type designation(s)
C-series liquid cooling station

Issued to

Adwaterc Oy
Kangasala, Finlandis found to comply with
DNV GL rules for classification – Ships**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2020-04-28**This Certificate is valid until **2025-04-27**.DNV GL local station: **Finland CMC**for **DNV GL**Approval Engineer: **Dag Harald Williksen**

Oddvar Deinboll
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Job Id: **262.1-032468-1**
Certificate No: **TAP000021S**

Product description

The closed loop cooling station circulates coolant between power electronics and a heat exchanger. A three-way valve is used to ensure constant temperature and to avoid condensation in power electronics.

The liquid cooling station can be stand-alone or part of the switchboard. It can be installed with or without cabinet.

Detailed specification of C-series liquid cooling station can be found in Adwated datasheet E052

Application/Limitation

The unit is approved for liquid cooling of power electronics onboard DVNGL classed vessels.

Tests carried out

Type test carried out with CCE104R, serial no 009100220, on the 2020.01.30 and CCE153R, serial no 008981219, on the 2020-02-05 at Adwatec, Kangasala, Finland

Marking of product

The product to be marked with manufacturer's name or trademark and type number identification.

Periodical assessment

For retention of the type approval, a DNV GL surveyor shall perform an assessment after 2 years and after 3.5 years to verify that the conditions of the type approval are complied with. A renewal assessment will be performed at renewal of the certificate.

In case where the type approved product is manufactured at other companies, the periodical assessment shall verify that the type approval applicant has a quality control system for consistent production at their licensees/subcontractors. Furthermore, periodical assessment shall be carried out randomly at these companies.

Other Conditions

Flexible hoses used to connect the cooling station to the ship system to be type approved by DNVGL

Control and monitoring systems, including sensors and actuators are not covered by this type approval certificate. Documentation for control and monitoring systems shall be submitted for approval according to the Rules Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant type approval certificates.

Electric cables and installation of this is not covered by this approval and must be verified to comply with the requirement of the Rules Pt.4 Ch.8 - Electrical Installation.

No product certificates are required.

END OF CERTIFICATE