DNV·GL

Certificate No:
TAE000041F

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Motor

with type designation(s)
1TZ9 - series, 1PC3 - series

Issued to
Clemens Lammers GmbH
Rheine, Nordrhein-Westfalen, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft
DNV GL class programme DNVGL-CP-0393 – Type approval – Rotating electrical machines

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Degree of protection	**IP 55, IP 56, IP 65**
Insulation class	**155 (F), 180 (H)**
Temp. class (°C)	**45° C or 50 °C**
Voltage (V)	**200 V up to 690 V**
Power (kW)	**0,03 kW up to 378 kW**
Frequency (Hz)	**50 Hz, 60 Hz**
Speed (RPM)	**750 1/min up to 3600 1/min**

Issued at **Hamburg** on **2020-08-04**

This Certificate is valid until **2025-08-03**.

for **DNV GL**

DNV GL local station: **Essen**

Approval Engineer: **Andreas Andrecht**

Arne Schaarmann
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

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Job Id: **262.1-033708-1**
Certificate No: **TAE000041F**

Product description

Rated voltage:	200 V up to 690 V
Rated power:	S1 0,03 kW up to 378 kW
Synchronous speed:	750 1/min up to 3600 1/min
Rated frequency:	50 Hz, 60 Hz, conv. Operation <= 690V
Ambient temperature:	45° C or 50 °C
Thermal class:	155 (F), 180 (H)
Degree of protection:	IP 55, IP 56, IP 65
No. Of poles:	2, 4, 6, 8 and pole-changing types
Spec. Model:	For marine applications / environments On request optional with built-in units like e.g. brakes, external fans, encoders

Tests carried out

IEC 60034-1:2010-02, IEC 92-301-3rd ed. 1980 + Amd 1-1994 + Amd 2-1995
Class Programme DNVGL-CP-0393 Edition 2015 Rotating Machines

Places of manufacturing

97616 Bad Neustadt, Germany
789 85 Mohelnice, Czech Republic
744 01 Frenstat, Czech Republic

Marking of product

Manufacture, decnical data and type desigantion etc.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.
The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer’s product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE