



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-12813**

This is to certify that the  
**Electric Motor**

with type designation(s)  
**K10R, K11R, K12R, K21R and K22R**

Manufactured by  
**VEM motors GmbH**  
**WERNIGERODE, Germany**

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**

Application  
**For installation in non hazardous area.**

|                         |                    |
|-------------------------|--------------------|
| <b>Enclosure class</b>  | <b>IP55 - IP56</b> |
| <b>Insulation class</b> | <b>F</b>           |
| <b>Temp. class (°C)</b> | <b>45</b>          |
| <b>Voltage (V)</b>      | <b>220 - 690</b>   |
| <b>Power (kW)</b>       | <b>7,8 - 440</b>   |
| <b>Frequency (Hz)</b>   | <b>50 - 60</b>     |
| <b>Speed (RPM)</b>      | <b>375 - 3600</b>  |

This Certificate is valid until **2017-06-30**.

Issued at **Høvik** on **2013-10-18**

DNV local station: **Hamburg CMC Northern & Eastern Germany**

Approval Engineer: **Nicolay Horn**

for **Det Norske Veritas AS**

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**Marit Laumann**  
**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.  
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

## Product description

Type K10R, K11R, K12R, K21R and K22R 3-phase induction motor:

|                    |  |
|--------------------|--|
| Rated Voltage:     | 220V up to 690V                              |
| Rated Frequency:   | 50Hz, 60Hz                                   |
| Number of poles:   | 2,4,6,8,10,12,14,16 and combinations         |
| Duty type:         | S1   |
| Enclosure class:   | IP55, IP56                                   |
| Ambient air temp.: | 45 deg. C                                    |
| Construction:      | IM B3, IM B35 and derived type, IM V1, IM B5 |
| Insulation class:  | F  |

| Frame Sizes |             |             | Max.Power |
|-------------|-------------|-------------|-----------|
| K10R        | K11R / K21R | K12R / K22R | kW        |
| 112         |             |             | 8,1       |
| 132         | 132         | -           | 13,0      |
| 160         | 160         | -           | 22,0      |
| 180         | 180         | -           | 36,0      |
| 200         | 200         | -           | 54,0      |
| 225         | 225         | -           | 66,0      |
| 250         | 250         | -           | 105,0     |
| 280         | 280         | -           | 150,0     |
| 315         | 315         | -           | 310,0     |
| -           | -           | 355         | 440,0     |

## Application/limitation

A DNV Product Certificate is required for type approved motors  $\geq 300$  kW.

## Type Approval documentation

Test protocols, product description EWM/03-104/E 0498 NGD. Engineering description of 3-phase asynchronous motors with squirrel cage rotor, design series (limitation 440 kW) K22R 355 / K 12R 355 and inspection certificate 158437-1.

## Tests carried out

Type tests in accordance with IEC 60034-1 as Temperature rise, Overload, Overspeed, Insulation resistance, Winding resistance and No load.

## Marking of product

VEM motors – type designation – technical data

## Certificate retention survey

The scope of the retention/renewal survey is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems/components/materials.

The main elements of the survey are:

- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines.
- Ensuring that systems/components/materials used comply with type approved documents and/or referenced system/component/material specifications.

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- Review of possible changes in design of systems/components/materials, software version and performance, and make sure that such changes do not affect the type approval given.
- Ensuring traceability between manufacturer's product type marking and the type approval certificate.
- Ensuring that type approved documentation is available.

Survey to be performed at least every second year.

END OF CERTIFICATE