



# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate no.:  
**AMMM00000M9**  
Revision No:  
**6**

## This is to certify:

that

**thyssenkrupp rothe erde Germany GmbH**  
**Tremoniastraße 5-11, 44137 Dortmund,**  
**Germany**

is an approved manufacturer of  
**Steel Forgings**

in accordance with

**DNV rules for classification – Ships**  
**DNV-OS-B101 – Metallic materials**  
**DNV class programme – DNV-CP-0247 Steel forgings**

and the following particulars:

<b>Application area</b>	<b>Forgings for hull structures and equipment</b> <b>Forgings for shafting and machinery</b> <b>Forgings for gearing</b> <b>Stainless steel forgings</b>
<b>Steel type</b>	<b>Carbon and carbon-manganese,</b> <b>Alloy,</b> <b>Austenitic stainless,</b> <b>See page 2</b>
<b>Forging method</b>	<b>Ring rolling</b>
<b>Max. weight</b>	<b>See page 2</b>
<b>Max. diameter / section</b>	<b>See page 2</b>
<b>Heat treatment condition</b>	<b>See page 2</b>

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules.  
Materials to be applied to DNV classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Hamburg** on **2025-09-05**

This Certificate is valid until **2028-06-30**.

DNV local unit: **Essen**

Approval Engineer: **Andrzej Otrebski**



for **DNV**

This document has been digitally signed and will  
therefore not have handwritten signature

Christian Wildhagen

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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 USD 300 000.

## Particulars of the approval

### Forgings for hull structures and equipment

Steel type	Grade <sup>3)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Max. thickness [mm]	Max. diameter [mm]	Heat treatment condition <sup>2)</sup>
C and C-Mn	NV F400UW, NV F440UW, NV F480UW, NV F520UW, NV F560UW, NV F600UW	RR	30 000	700	8 000	N, NT, QT
Alloy	NV F550AW, NV F600AW, NV F650AW	RR	30 000	700	8 000	QT

### Forgings for shafting and machinery

#### Forgings for gearing

Steel type	Grade <sup>3)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Max. thickness [mm]	Max. diameter [mm]	Heat treatment condition <sup>2)</sup>
C and C-Mn	NV F400U, NV F440U, NV F480U, NV F520U, NV F560U, NV F600U, NV F640U, NV F680U, NV F720U, NV F760U	RR	30 000	700	8 000	N, NT, QT
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	RR	30 000	700	8 000	QT

### Stainless steel forgings

Steel type / grade <sup>4)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Max. thickness [mm]	Max. diameter [mm]	Heat treatment condition <sup>2)</sup>
Austenitic stainless	RR	30 000	700	8 000	SHT

#### Remarks:

<sup>1)</sup> RR: Ring rolling

<sup>2)</sup> N: Normalized

NT: Normalized and tempered

QT: Quenched and tempered

SHT: Solution Heat Treated (Solution Annealing)

<sup>3)</sup> Incl. equivalent grades in acc. to other standards

<sup>4)</sup> Stainless steel forgings shall be in accordance with recognized standards, e.g. EN 10222, ASTM A473/A965/A1049 and JIS G 3214, provided that supplementary requirements contained herein are also met. Recognition of other standards is subject to submission to the Society for evaluation.