

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate no.:
AMMM00000EH
Revision No:
4

This is to certify:

that

Hammerwerk Erft G. Diederichs GmbH & Co. KG
Ernst-Diederichs-Strasse 1,
53902 Bad Münstereifel,
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:

Application area	Forgings for hull structures and equipment Forgings for shafting and machinery Forgings for crankshafts Forgings for gearing Forgings for boilers, pressure vessels and piping systems Ferritic steel forgings for low temperature service Stainless steel forgings
Steel type	Carbon and carbon-manganese, Alloy, Austenitic stainless, Martensitic stainless, See page 2
Forging method	Open die forging/ ring rolling
Max. weight	See page 2
Max. diameter / section	See page 2
Heat treatment condition	See page 2
Additional approval conditions	See page 2

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 **2025-07-14**

This Certificate is valid until **2028-03-07**.

DNV local unit: **Essen**

Approval Engineer: **Christian Wildhagen**



for **DNV**

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

Stefan Röhr

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 ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. thickness / height [mm]	Outer diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	NV F400UW, NV F440UW, NV F480UW, NV F520UW, NV F560UW, NV F600UW	OD	15 000	1 800	-	N, NT, QT
		RR	4 000	620	2800	
Alloy	NV F550AW, NV F600AW, NV F650AW	OD	15 000	1 800	-	QT
		RR	4 000	620	2800	

Forgings for shafting and machinery

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. thickness / height [mm]	Outer diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	NV F400U, NV F440U, NV F480U, NV F520U, NV F560U, NV F600U, NV F640U, NV F680U, NV F720U, NV F760U	OD	15 000	1 800	-	N, NT, QT
		RR	4 000	620	2800	
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	OD	15 000	1 800	-	QT
		RR	4 000	620	2800	

Forgings for boilers, pressure vessels and piping systems

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. thickness / height [mm]	Outer diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	NV F450H, NV F490H	OD	15 000	1 800	-	N, NT, QT
		RR	4 000	620	2800	
Alloy	NV F0.5Mo, NV F1Cr0.5Mo, NV F2.25Cr1MoN, NV F2.25Cr1MoQT	OD	15 000	1 800	-	NT, QT
		RR	4 000	620	2800	

Ferritic steel forgings for low temperature service

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. thickness / height [mm]	Outer diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	NV F450L, NV F490L	OD	15 000	1 800	-	N, NT, QT
		RR	4 000	620	2800	
Alloy	NV F3.5Ni, NV F5Ni, NV F9Ni*	OD	15 000	1 800	-	NT, QT (*NNT)
		RR	4 000	620	2800	

Stainless steel forgings

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. thickness / height [mm]	Outer diameter [mm]	Heat treatment condition ²⁾
Duplex	22 Cr Duplex	OD	8 000	350	-	SHT
		RR	4 000	350	2 800	

Steels acc. other standards

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. thickness / height [mm]	Outer diameter [mm]	Heat treatment condition ²⁾
C and C-Mn	Acc. to EN 10083-2	OD	15 000	1 800	-	N, NT, QT
		RR	4 000	620	2 800	
	Acc. to EN 10250-2	OD	15 000	1 800	-	N, NT, QT
		RR	4 000	620	2 800	
	Acc. to SEW 550	OD	15 000	1 800	-	N, NT, QT
		RR	4 000	620	2 800	
	Acc. to EN 10084	OD	15 000	1 800	-	NT, QT
		RR	4 000	620	2 800	QT
	Acc. to EN 10222-2	OD	15 000	1 800	-	N, NT, QT
		RR	4 000	620	2 800	NT, QT
	Acc. to EN 10222-4	OD	15 000	1 800	-	N, QT
		RR	4 000	620	2 800	N, NT, QT
	Acc. to EN 10269	OD	15 000	1 000	-	N, QT
		RR	4 000	620	2 800	
Alloy	Acc. to EN 10083-3	OD	15 000	1 800	-	QT
		RR	4 000	620	2 800	
	Acc. to EN 10250-3	OD	15 000	1 800	-	QT
		RR	4 000	620	2 800	
	Acc. to SEW 550	OD	15 000	1 800	-	QT
		RR	4 000	620	2 800	
	Acc. to EN 10084	OD	15 000	1 800	-	QT
		RR	4 000	620	2 800	
	18CrNiMo7-6 acc. to EN 10084 ⁴⁾⁵⁾	OD	15 000	1 800	-	QT
		RR	4 000	620	2 800	
	Acc. to EN 10222-2	OD	15 000	1 800	-	NT, QT
		RR	4 000	620	2 800	

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. thickness / height [mm]	Outer diameter [mm]	Heat treatment condition ²⁾
Alloy	Nickel steel acc. to EN 10222-3	OD	15 000	1 800	-	NT, NNT, QT
		RR	4 000	620	2 800	
	Nitriding steel acc. to EN 10085	OD	15 000	1 800	-	QT
		RR	4 000	620	2 800	QT
Martensitic	Steel acc. to EN 10088-3	OD	15 000	1 800	-	QT
		RR	4 000	620	2 800	
	Steel acc. to EN 10222-2	OD	15 000	1 800	-	QT
		RR	4 000	620	2 800	

Remarks:

- ¹⁾ OD: Open die forging
 RR: Ring Rolling
²⁾ QT: Quenched and tempered
 N: Normalised
 NNT: double normalised and tempered
 NT: Normalised and tempered
³⁾ Incl. equivalent grades in acc. to other standards

Special conditions:

- ⁴⁾ Clean steel forgings of grade 18CrNiMo7-6 acc. to EN 10084 are qualified for approved applications (see pt. 2). Special requirements for clean steel forgings are given in DNV Rules Pt. 2, Ch. 2, Sec.6, [1.6.10].
⁵⁾ Subject to special approval, clean steel forgings of grade 18CrNiMo7-6 acc. to EN 10084 are approved for further processing to gears acc. to DNV Class Guideline No. DNV-CG-0036, and classed to "high grade".