



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM000000S
Revision No:
3

This is to certify:

That

Gustav Grimm Edelstahlwerk GmbH & Co. KG
Ronsdorfer Str. 172-174, 42828 Remscheid,
Germany

is an approved manufacturer of
Steel Forgings

in accordance with

DNV rules for classification – Ships
DNV rules for classification – Naval vessels
DNV-OS-B101 – Metallic materials

and the following particulars:

Application area	Forgings for hull structures and equipment Forgings for shafting and machinery Forgings for boilers, pressure vessels and piping systems Ferritic steel forgings for low temperature service Stainless steel forgings
Steel type	Forgings of liquid quenched and tempered structural steels Carbon and carbon-manganese, Austenitic stainless, Martensitic stainless, Ferritic stainless, Ferritic-austenitic (duplex) stainless
Forging method	Open die forging
Max. weight	10 000 kg
Heat treatment condition	See page 2 ff.
Additional approval conditions	See page 2 ff.

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 **2022-06-24**

for **DNV**

This Certificate is valid until **2025-06-30**.

DNV local station: **Essen**

Approval Engineer: **Stefan Röhr**

Thorsten Lohmann
Head of Section

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 300,000 USD.



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Particulars of the approval

Forgings for hull structures and equipment

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
C and C-Mn	NV F400UW, NV F440UW, NV F480UW, NV F520UW, NV F560UW, NV F600UW	OD	10 000	N, NT, QT

Forgings for shafting and machinery

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	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	10 000	N, NT, QT

Forgings for boilers, pressure vessels and piping systems

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
C and C-Mn	NV F450H, NV F490H	OD	10 000	N, NT, QT

Ferritic steel forgings for low temperature service

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
C and C-Mn	NV F450L, NV F490L	OD	10 000	N, NT, QT

Stainless steel forgings

Steel type / grade	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
Austenitic stainless	OD	10 000	SHT
Martensitic stainless	OD	10 000	QT
Ferritic stainless	OD	10 000	A
22Cr-duplex stainless	OD	10 000	SHT
25Cr-duplex stainless	OD	10 000	SHT

Forgings of liquid quenched and tempered structural steels

Steel type / grade	Forging method ¹⁾	Max. weight [kg]	Max. thickness [mm]	Heat treatment condition ²⁾
NV-M550S, NV-M700S	OD	2 500	300	QT
1.6780 (HY-80) acc. to MIL-S-23009C / BWB WL 1.6780-3 1.6782 (HY-100) acc. to MIL-S-23009C / BWB WL 1.6782-3	OD	2 500	300	QT

Remarks:

- 1) OD: Open die forging
- 2) QT: Quenched and tempered; N: Normalized; NT: Normalized and tempered
SHT: Solution Heat Treated (Solution Annealing); A: Annealed
- 3) Incl. equivalent grades in acc. to other standards