



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM000024H
Revision No:
3

This is to certify:

That

Metalcam S.p.A.

**Via Leonardo da Vinci 3, 25043 Breno, BS,
Italy**

is an approved manufacturer of
Steel Forgings

in accordance with

**DNV rules for classification – Ships
DNV-OS-B101 – Metallic materials**

and the following particulars:

Application area	Forgings for hull structures and equipment, Forgings for gearing, Forgings for shafting and machinery, Forgings for boilers, pressure vessels and piping systems
Steel type(s)	Carbon, Carbon-Manganese, Alloy
Forging method	Open die forging
Max. weight	See page 2
Heat treatment condition	See page 2
Additional approval conditions	Including steelmaking process 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 **2022-01-10**

for **DNV**

This Certificate is valid until **2024-12-31**.

DNV local station: **Italy/Malta CMC**

Approval Engineer: **Andreas Koch**

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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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Page 1 of 2

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	32 000	N, NT, QT
Alloy	NV F550AW, NV F620AW, NV F650AW	OD	32 000	QT, NT ⁴⁾

Forgings for gearing 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	32 000	N, NT, QT
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	OD	32 000	QT, NT ⁴⁾

Forgings for boilers, pressure vessels and piping systems

Steel type	Grade	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
C and C-Mn	NV F450H	OD	32 000	N, NT, QT
	NV F490H	OD	32 000	N, NT, QT
Alloy	NV F0.5Mo	OD	32 000	NT, QT
	NV F1Cr0.5Mo	OD	32 000	NT, QT
	NV F2.25Cr1MoN	OD	32 000	N
	NV F2.25Cr1MoQT	OD	32 000	QT

Remarks:

- 1) OD: Open die forging
- 2) N: Normalised
 NT: Normalised and tempered
 QT: Quenched and tempered
- 3) Incl. equivalent grades in acc. to other standards
- 4) Alloy steel forgings may be supplied in the normalized and tempered condition, in which case the specified mechanical properties shall be agreed with the Society.

Special remark:

Heat treatment is subcontracted to Nitrex Colmege / Siziano PV, Italy