



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00002J3
Revision No:
1

This is to certify:

That

Forgiatura Marcora S.r.l.

**Via A. Gramsci, 36, 21057 Olgiate Olona, VA,
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 shafting and machinery Forgings for boilers, pressure vessels and piping systems Stainless steel forgings
Steel type	Carbon and carbon-manganese, Alloy, Austenitic stainless
Forging method	Open die forging
Max. weight	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 **2022-06-15**

for **DNV**

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

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.



Form code: AM 311

Revision: 2021-03

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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	7 000	N, NT, QT
Alloy	NV F550AW, NV F600AW, NV F650AW	OD	7 000	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	7 000	N, NT, QT
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	OD	7 000	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	7 000	N, NT, QT
Alloy	NV F0.5Mo, NV F1Cr0.5Mo	OD	7 000	N, NT, QT
	NV F2.25Cr1Mo	OD	7 000	N, QT

Stainless steel forgings

Steel type / grade ⁴⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
Austenitic stainless	OD	3 000	SHT

Remarks:

- 1) OD: Open die forging
- 2) QT: Quenched and tempered; N: Normalized; NT: Normalized and tempered; SHT: Solution Heat Treated (Solution Annealing)
- 3) Incl. equivalent grades in acc. to other standards
- 4) 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.

Additional approval conditions:

Including austenitic stainless grades for approved low-temperature applications
 Heat treatment is subcontracted to VIAR Spa, Via Del Saliccio, 11/A, 21040 Sumirago (VA) Italy, Italy