

# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00000SH**  
Revision No:  
**1**

## This is to certify:

That

**FOMAS S.p.A.**  
**Osnago LC, Italy**

is an approved manufacturer of  
**Steel Forgings**

in accordance with  
**DNV GL rules for classification – Ships**

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>Forgings for boilers, pressure vessels and piping systems</b> <b>Stainless steel forgings</b>
<b>Steel type</b>	<b>Carbon and carbon-manganese,</b> <b>Alloy,</b> <b>Austenitic stainless,</b> <b>Ferritic-austenitic (duplex) stainless</b>
<b>Forging method</b>	<b>Open die forging</b>
<b>Max. weight</b>	<b>See page 2</b>
<b>Max. diameter</b>	<b>See page 2</b>
<b>Heat treatment condition</b>	<b>See page 2</b>
<b>Additional approval conditions</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 GL classed object shall fulfill the material requirements in the applicable DNV GL class rules.

Issued at **Hamburg** on **2019-06-14**

This Certificate is valid until **2022-06-30**.

DNV GL local station: **Milan**

Approval Engineer: **Stefan Röhr**



for **DNV GL**

Digitally Signed By: Wildhagen, Christian

Location: DNV GL Hamburg, Germany

Signing Date: 2019-06-14, on behalf of

**Thorsten Lohmann**  
**Head of Section**



Job Id: **263.11-003398-3**  
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## Particulars of the approval

### Forgings for hull structures and equipment

Steel type	Grade <sup>3)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
C and C-Mn	VL F400UW, VL F440UW, VL F480UW, VL F520UW, VL F560UW, VL F600UW	OD	65 000	N, NT, QT
Alloy	VL F550AW, VL F600AW, VL F650AW	OD	65 000	QT

### Forgings for shafting and machinery Forging for gearing

Steel type	Grade <sup>3)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
C and C-Mn	VL F400U, VL F440U, VL F480U, VL F520U, VL F560U, VL F600U, VL F640U, VL F680U, VL F720U, VL F760U	OD	65 000	N, NT, QT
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	OD	65 000	QT

### Forgings for boilers, pressure vessels and piping systems

Steel type	Grade <sup>3)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
C and C-Mn	VL F450H, VL F490H	OD	65 000	N, NT, QT
Alloy	VL F0.5Mo, VL F1Cr0.5Mo	OD	65 000	N, NT, QT
	VL F2.25Cr1Mo	OD	65 000	N, QT

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#### Stainless steel forgings

Steel type / grade <sup>4)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
Austenitic stainless	OD	65 000	SHT
Ferritic-austenitic (duplex) stainless	OD	65 000	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 Electro Slag Remelting process (ESR)