

# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00000TH**  
Revision No:  
**1**

**This is to certify:**

**That**  
**GSA Gesenkschmiede Schneider GmbH**  
**Aalen, Germany**

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 Forgings for shafting and machinery Forgings for gearing Forgings for boilers, pressure vessels and piping systems</b>
<b>Steel type</b>	<b>Carbon and carbon-manganese, Alloy, Austenitic stainless, Martensitic stainless</b>
<b>Forging method</b>	<b>Open die forging/closed die forging</b>
<b>Max. weight</b>	<b>See page 2</b>
<b>Heat treatment condition</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 **2019-08-09**

for **DNV GL**

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

DNV GL local station: **Essen**

Approval Engineer: **Stefan Röhr**

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



Job Id: **263.11-006290-2**  
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## Particulars of the approval

### Forgings for hull structures and equipment

Steel Type	Grade <sup>4)</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, CD	120	N, NT, QT
Alloy	VL F550AW, VL F620AW, VL F650AW	OD, CD	120	N, NT, QT

### Forgings for shafting and machinery Forgings for gearing

Steel type	Grade <sup>4)</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, CD	120	N, NT, QT
Alloy	VL F600A, VL F700A, VL F800A, VL F900A, VL F1000A, VL F1100A	OD, CD	120	N, NT, QT

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

Steel type	Grade <sup>4)</sup>	Forging method <sup>1)</sup>	Max. weight [kg]	Heat treatment condition <sup>2)</sup>
C and C-Mn	VL F450H	OD, CD	120	N, NT, QT
	VL F490H	OD, CD	120	N, NT, QT
Alloy	VL F0.5Mo	OD, CD	120	NT, QT
	VL F1Cr0.5Mo	OD, CD	120	NT, QT
	VL F2.25Cr1MoN	OD, CD	120	N
	VL F2.25Cr1MoQT	OD, CD	120	QT

### Stainless steel forgings

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<b>Steel type / grade <sup>3)</sup></b>	<b>Forging method <sup>1)</sup></b>	<b>Max. weight [kg]</b>	<b>Heat treatment condition <sup>2)</sup></b>
Austenitic stainless	OD, CD	120	SHT
Martensitic stainless	OD, CD	120	QT

Remarks:

- 1) OD: Open die forging; CD: Closed die forging
- 2) QT: Quenched and tempered; N: Normalised; NT: Normalised and tempered  
N+QT: Normalized followed by quenched and tempered;  
SHT: Solution Heat Treated (Solution Annealing)
- 3) Stainless steel forgings shall be in accordance with recognized standards, e.g. EN 10222, ASTM A473/A965/A1049 and JIS G 3214. Recognition of other standards is subject to submission to the Society for evaluation
- 4) Including equivalent grades to other standards