

# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00000KM**  
Revision No:  
**1**

## This is to certify:

That

**EUSKALFORGING, S.A.**

**Calle Altos Hornos de Vizcaya 25, 48910 Sestao Bizkaia, Spain**

is an approved manufacturer of  
**Steel Forgings**

in accordance with  
**DNV GL rules for classification – Ships  
Offshore Standard DNVGL-OS-B101**

and the following particulars:

<b>Steel types</b>	<b>Carbon and carbon-manganese, Alloy</b>
<b>Max. weight</b>	<b>See page 2</b>
<b>Delivery Condition</b>	<b>See page 2</b>

Manufacturer approved by this certificate is 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 **Høvik** on **2017-06-19**

for **DNV GL**

This Certificate is valid until **2020-06-18**.

DNV GL local station: **Bilbao**

Approval Engineer: **Shylate Mahachi**

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**Hanne Anita Hjerpetjønn**  
**Head of Section**



Job Id: **263.11-004532-3**  
 Certificate No: **AMMM00000KM**  
 Revision No: **1**

## Particulars of the approval

### Forgings for hull structures and equipment

Steel type	Grade	Forging method <sup>1)</sup>	Delivery condition <sup>2)</sup>	Max. weight [kg]	Max. wall thickness [mm]
Carbon and carbon-manganese	F600UW <sup>3)</sup>	RR/OD	QT	30 000	504
	F480UW <sup>7)</sup>	RR/OD	N	85 000	504
Alloy	F650AW <sup>4)</sup>	RR/OD	QT	30 000	504

### Forgings for shafting and machinery

Steel type	Grade	Forging method <sup>1)</sup>	Delivery condition <sup>2)</sup>	Max. weight [kg]	Max. wall thickness [mm]
Carbon and carbon-manganese	F760U <sup>5)</sup>	RR/OD	N	30 000	504
	F480U <sup>7)</sup>	RR/OD	N	85 000	504
Alloy	F1100A <sup>6)</sup>	RR/OD	QT	30 000	504

### Forgings for gearing

Steel type	Grade	Forging method <sup>1)</sup>	Delivery condition <sup>2)</sup>	Max. weight [kg]	Max. wall thickness [mm]
Carbon and carbon-manganese	F760U <sup>5)</sup>	RR/OD	N	30 000	504
	F480U <sup>7)</sup>	RR/OD	N	85 000	504
Alloy	F1100A <sup>6)</sup>	RR/OD	QT	30 000	504

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

Steel type	Grade	Forging method <sup>1)</sup>	Delivery condition <sup>2)</sup>	Max. weight [kg]	Max. wall thickness [mm]
Carbon and carbon-manganese	F450H	RR/OD	N	85 000	504
	F490H	RR/OD	N	85 000	504
Alloy	F0.5Mo	RR/OD	QT	30 000	504
	F1Cr0.5Mo	RR/OD	QT	30 000	504
	F2.25Cr1Mo	RR/OD	QT	30 000	504

### Ferritic steel forgings for low temperature service

Steel type	Grade	Forging method <sup>1)</sup>	Delivery condition <sup>2)</sup>	Max. weight [kg]	Max. wall thickness [mm]
Carbon and carbon-manganese	F450L	RR/OD	N	30 000	504
	F490L	RR/OD	N	30 000	504

#### Remarks:

- 1) RR: Ring Rolling, OD: Open Die
- 2) N: Normalised, NT: Normalised and Tempered, QT: Quenched and Tempered
- 3) Approved for all carbon and carbon-manganese steel grades in DNVGL-RU-Ship-Pt2Ch2 Sec 6 Table 5.
- 4) Approved for all alloy steel grades in DNVGL-RU-Ship-Pt2Ch2 Sec 6 Table 5.
- 5) Approved for all carbon and carbon-manganese steel grades in DNVGL-RU-Ship-Pt2Ch2 Sec 6 Table 7.
- 6) Approved for all alloy steel grades in DNVGL-RU-Ship-Pt2Ch2 Sec 6 Table 7.
- 7) Including all lower strength grades.