

APPROVAL OF MANUFACTURER CERTIFICATE

This is to certify:

That
Ire Omba S.p.A.
Bergamo BG, Italy

is an approved manufacturer of
Steel Forgings

in accordance with
DNV GL rules for classification – Ships
DNV GL offshore standards

and the following particulars:

| | |
|---------------------------------|---|
| Application area | Forgings for hull structures and equipment |
| Steel type(s) | Forgings for shafting and machinery |
| Forging method | Carbon, Carbon-Manganese, |
| Max. weight | Alloy |
| Heat treatment condition | Open die forging, ring rolling |
| | 4 000 kg |
| | Normalized, Normalized and Tempered or |
| | Quenched and Tempered |

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 **2017-12-28**

for **DNV GL**

This Certificate is valid until **2020-12-31**.

DNV GL local station: **Milan**

Approval Engineer: **Stefan Röhr**

Thorsten Lohmann
Head of Section



Particulars of the approval

Forgings for hull structures and equipment

| Steel type | Grade ³⁾ ⁴⁾ | Forging method ¹⁾ | Max. weight [kg] | Delivery condition ²⁾ |
|------------|--|------------------------------|------------------|----------------------------------|
| C and C-Mn | VL F400UW, VL F440UW, VL F480UW, VL F520UW, VL F560UW, VL F600UW | OD / RR | 4 000 | N, NT, QT |
| Alloy | VL F550AW, VL F620AW, VL F650AW | OD / RR | 4 000 | NT, QT |

Forgings for shafting and machinery

| Steel type | Grade ³⁾ ⁴⁾ | Forging method ¹⁾ | Max. weight [kg] | Delivery condition ²⁾ |
|------------|--|------------------------------|------------------|----------------------------------|
| C and C-Mn | VL C400U, VL C440U, VL C480U, VL C520U, VL C560U, VL C600U, VL F640U, VL F680U, VL F720U, VL F760U | OD / RR | 4 000 | N, NT, QT |
| Alloy | VL C600A, VL C700A, VL C800A, VL C900A, VL F1000A, VL F1100A | OD / RR | 4 000 | NT, QT |

Remarks:

- 1) OD: Open die forging; RR: Ring Rolling
- 2) QT: Quenched and tempered; N: Normalised; NT: Normalised and tempered
- 3) Certification of any material applied to classed object shall fulfill the applicable material requirements in the DNV GL class rules
- 4) Including equivalent grades to other standards, e.g. EN 10250-2,-3