

# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM000001Y**  
Revision No:  
**3**

## This is to certify:

That  
**Schmiedag GmbH**  
**Grüntaler Str. 11**  
**Hagen, Germany**

is an approved manufacturer of  
**Steel Forgings**

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

and the following particulars:

|                           |  |
|---------------------------|--|
| <b>Products</b>           | <b>Closed Die Forgings (e.g. connecting rods)</b>                    |
| <b>Steel type(s)</b>      | <b>Forgings for Hull Structures and Equipment</b>                    |
|                           | <b>Forgings for Shafting and Machinery</b>                           |
|                           | <b>Stainless Steel Forgings</b>                                      |
| <b>Max. weight</b>        | <b>500 kg</b>  |
| <b>Delivery Condition</b> | <b>Normalized, Quenched + Tempered, Solution annealed + Quenched</b> |
| <b>Remarks</b>            | <b>see Particulars of the approval</b>                               |

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules.

This Certificate is valid until **2019-06-30**.

Issued at **Hamburg** on **2016-02-03**

DNV GL local station: **Essen**

Approval Engineer: **Oliver Krömer**

for **DNV GL**

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

Job Id: **263.11-003254-3**  
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## Particulars of the approval

### Steel Forgings:

| Grade                                | Product | Supply Condition | Thickness<br>[mm], max. | Weight<br>[kg], max. |
|--------------------------------------|---------|------------------|-------------------------|----------------------|
| F400UW                               | GE      | N, Q+T           | 100                     | 500 kg               |
| F440UW                               | GE      | N, Q+T           | 100                     | 500 kg               |
| F480UW                               | GE      | N, Q+T           | 100                     | 500 kg               |
| F520UW                               | GE      | N, Q+T           | 100                     | 500 kg               |
| F560UW                               | GE      | N, Q+T           | 100                     | 500 kg               |
| F600UW                               | GE      | N, Q+T           | 100                     | 500 kg               |
| F550AW                               | GE      | Q+T              | 100                     | 500 kg               |
| F600AW                               | GE      | Q+T              | 100                     | 500 kg               |
| F650AW                               | GE      | Q+T              | 100                     | 500 kg               |
| F400U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F440U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F480U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F520U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F600U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F640U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F680U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F720U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F760U                                | GE      | N, Q+T           | 100                     | 500 kg               |
| F600A                                | GE      | Q+T              | 100                     | 500 kg               |
| F700A                                | GE      | Q+T              | 100                     | 500 kg               |
| F800A                                | GE      | Q+T              | 100                     | 500 kg               |
| F900A                                | GE      | Q+T              | 100                     | 500 kg               |
| F1000A                               | GE      | Q+T              | 100                     | 500 kg               |
| F1100A                               | GE      | Q+T              | 100                     | 500 kg               |
| C & C-Mn Steels acc. to EN 10083-2   | GE      | N, Q+T           | 100                     | 500 kg               |
| Alloy Steels acc. to EN 10083-3      | GE      | Q+T              | 100                     | 500 kg               |
| Austenitic Steels acc. to EN 10222-5 | GE      | S+Q              | 100                     | 500 kg               |

GE: closed die forgings      N: normalized      Q+T: quenched + tempered      S+Q: solution annealed + quenched