



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM000009J
Revision No:
2

This is to certify:

That

Ellwood National Crankshaft Co.
60 Erie Ave, Irvine, PA 16329,
USA

is an approved manufacturer of
Steel Forgings

in accordance with
DNV rules for classification – Ships
DNV-OS-B101 – Metallic materials

and the following particulars:

Application area	Forgings for hull structures and equipment Forgings for shafting and machinery Forgings for crankshafts Forgings for gearing
Steel type	Carbon and carbon-manganese, Alloy
Forging method	See page 2
Max. weight	See page 2
Heat treatment condition	See page 2

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 classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Hamburg** on **2022-11-29**

for **DNV**

This Certificate is valid until **2025-12-31**.

DNV local unit: **New York**

Approval Engineer: **Stefan Röhr**

Thorsten Lohmann
Head of Section

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Particulars of the approval

Forgings for hull structures and equipment

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
C and C-Mn	NV F400UW, NV F440UW, NV F480UW, NV F520UW, NV F560UW, NV F600UW	OD	6 000	N, NT, QT
Alloy	NV F550AW, NV F600AW, NV F650AW	OD	6 000	QT

Forgings for shafting and machinery

Forgings for gearing

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
C and C-Mn	NV F400U, NV F440U, NV F480U, NV F520U, NV F560U, NV F600U, NV F640U, NV F680U, NV F720U, NV F760U	OD	6 000	N, NT, QT
Alloy	NV F600A, NV F700A, NV F800A, NV F900A, NV F1000A, NV F1100A	OD	6 000	QT

Forgings for crankshafts

Steel type / grade ⁴⁾	Forging method ¹⁾	Max. weight [kg]	Heat treatment condition ²⁾
Carbon and carbon-manganese	CGF	6 000	NT, QT
Alloy	CGF	6 000	QT

Remarks:

- 1) OD: Open die forging; CD: Closed die forging; CGF: Continuous grain flow forging
- 2) QT: Quenched and tempered; N: Normalized; NT: Normalized and tempered
- 3) Including equivalent grades to other standards
- 4) Material grades according to DNV approved drawings