



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00001W2
Revision No:
4

This is to certify:

That

Doowon High Steel Co.,Ltd.
87 Sorak-ro Sangdong-myeon Gimhaa-si,
Gyeongsangnam-do,
Republic of Korea

is an approved manufacturer of
Steel Pipes and Fittings

in accordance with

DNV rules for classification – Ships

DNV class programme – DNV-CP-0252 Steel pipes and steel pipe fittings

and the following particulars:

Application area	Pipes for pressure systems
Steel type	Structural hollow sections Carbon and carbon-manganese, Austenitic stainless see page 2
Manufacturing method	Welded
Max. outer diameter	See page 2
Max. wall thickness	See page 2
Heat treatment condition	See page 2
Additional approval conditions	Approved as Independent Heat Treatment Company, see page 3

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 **2023-12-05**

for **DNV**

This Certificate is valid until **2026-12-31**.

DNV local unit: **Gimhae Station**

Approval Engineer: **Enno Brück**

Thorsten Lohmann
Head of Section

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Form code: AM 311

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Particulars of the approval

Pipes for pressure systems

Steel type	Grade ⁴⁾	Manufacturing method ¹⁾	Max. outer diameter [mm]	Max. wall thickness [mm]	Heat treatment condition ²⁾
C and C-Mn	STPY400 acc. JIS G 3457	EFW	1219.2	16	Acc. standard

Austenitic and Ferritic-austenitic steel pipes

Steel type /grade ³⁾	Manufacturing method ¹⁾	Max. outer diameter [mm]	Max. wall thickness [mm]	Heat treatment condition ²⁾
Austenitic stainless	EFW	914.4	22	SHT

Rectangular / square hollow sections

Grade	Product	Manufacturing method ¹⁾	Max. outer dimension [mm]	Max. wall thickness [mm]	Heat treatment condition ²⁾
NV A32, NV A36	Square	CFW	600 X 600	21	- (AR)
	Rectangular	CFW	675 X 600	21	- (AR)

Round hollow sections

Steel type /grade ³⁾	Manufacturing method ¹⁾	Max. outer dimension [mm]	Max. wall thickness [mm]	Heat treatment condition ²⁾
Austenitic stainless	CFW	914.4	22	SHT

Remarks:

- ¹⁾ EFW: electric fusion welded
CFW: Cold formed welded
- ²⁾ AR: as rolled (starting material)
- ³⁾ Austenitic and ferritic-austenitic steel pipes
Suitable pipe grades shall be selected from the following recognized standards:
ISO 9329 Part 4, ISO 9330 Part 6, EN 10216 Part 5, EN 10217 Part 7, ASTM A269, ASTM A312, ASTM A358, ASTM A789, ASTM A790, ASTM A928 or JIS G3459
- ⁴⁾ Possible application and certification of any material to classed object is subject to case by case approval

Special conditions:

Including automatic RT testing in lieu of hydraulic testing according to relevant standard

Approval scope for Independent Heat Treatment Company

Item	Description		
Product type	Pipes, Structural hollow sections		
Steel Type	Austenitic stainless		
Max. Thickness	30 mm		
Max. Weight	5730 kg		
Heat Treatment Type	Solution Heat Treated (solution annealing)		
Furnace Details	ID No.:	Type:	Working zone (mm):
	OD-18112731	Batch type	Length 2 000 x Height 1 000 x Width 8 000
Heat Treatment Procedure	Doc. No. DW-QI-508-09 Rev.0 dtd. 2020-07-01		
Temperature Uniformity Survey Procedure	Doc. No. DW-QI-508-09-01 Rev.0 dtd. 2020-07-01		