



Design Appraisal Document

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Date
11 November 2021

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HPC1710336/37041-18/JM (ENS 37314-18/JW issue 1)

**MACHINERY GENERAL DESIGN APPRAISAL
BALLAST WATER TREATMENT SYSTEM
MANUFACTURER: NORWEGIAN GREENTECH AS
VALID UNTIL 14 MARCH 2023**

This Machinery General Design Appraisal and the plans list in the appendix supersede the previous Machinery General Design Appraisal Number HTS/ETS 36681-18, issue 1, dated 20 June 2018 and its corresponding plans list.

1. The document(s) listed in paragraph 1 of the appendix has/have been examined for compliance with **Part 5, Chapters 25, Part 6 Chapter 1&2 of the Rules and Regulations for the Classification of Ships, July 2021** and is/are assigned an appraisal status as indicated, in accordance with the following conditions:-

2. Details

2.1 System Details

Type: mechanical filtration and ultra-violet treatment
Design pressure: 1.5 bar .. 10 bar

2.2 Treatment Rated Capacity

According to IMO Type Approval Certificate TAP000028V Rev. 1.

3. Comments

- 3.1 Installation in the ship including by-pass and isolation arrangement, fresh water supply, compressed air supply and connections to ship's ballast system are to be in accordance with the approved P&IDs in the Appendix and are to be shown on the ship specific installation plans.
- 3.2 By-pass valve is to be provided by shipyard as shown on approved P&IDs in the Appendix.
- 3.3 It is noted that stainless steel pipes ND 125 and ND 150 are provided with nominal thickness less than required by Part 5, Chapter 12, Table 12.10.1. Acceptance of this thickness based on EN ISO 1127 has been specially considered.
- 3.4 It is understood that the Ballast water treatment system is installed and operating in non-hazardous areas.

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- 3.5 It is to be verified to the local surveyor satisfactory, that the by-pass arrangement, mentioned in item 3.1., is controlled by an approved ballast management system.
- 3.6 This Machinery General Design Appraisal Document does not cover statutory aspects
- 3.7 The validity of this Machinery General Design Appraisal expires as shown above respectively change of Rules requirements, whichever comes first.



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Appendix

1. The document(s) listed below has/have been examined

Document No.	Rev.	Title	Status	Date
P0050	A	Piping & Instrumentation Diagram	A	11/11/2021
P0100	B	Piping & Instrumentation Diagram	A	11/11/2021
P0200	B	Piping & Instrumentation Diagram	A	11/11/2021
P0210	B	Piping & Instrumentation Diagram	A	11/11/2021
P0300	B	Piping & Instrumentation Diagram	A	11/11/2021
P0400	B	Piping & Instrumentation Diagram	A	11/11/2021
P0410	B	Piping & Instrumentation Diagram	A	11/11/2021
P0420	B	Piping & Instrumentation Diagram	A	11/11/2021
P0500	B	Piping & Instrumentation Diagram	A	11/11/2021
P0600	B	Piping & Instrumentation Diagram	A	11/11/2021
P0610	B	Piping & Instrumentation Diagram	A	11/11/2021
P0700	B	Piping & Instrumentation Diagram	A	11/11/2021
P0800	B	Piping & Instrumentation Diagram	A	11/11/2021
P0810	A	Piping & Instrumentation Diagram	A	11/11/2021
P0900	A	Piping & Instrumentation Diagram	A	11/11/2021
P1000	A	Piping & Instrumentation Diagram	A	11/11/2021
P1100	A	Piping & Instrumentation Diagram	A	11/11/2021
P1200	A	Piping & Instrumentation Diagram	A	11/11/2021
E3400-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL1-BK273	A	11/11/2021
E3410-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL2-BK273	A	11/11/2021
E3420-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL3-BK324	A	11/11/2021
E3430-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL4-BK324	A	11/11/2021
E3440-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL4-BK356	A	11/11/2021
E3450-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DXL6-BK356	A	11/11/2021
E3460-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DXL9-BK356	A	11/11/2021
E3470-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DXL9-BK419	A	11/11/2021
E3480-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DXL12-BK419	A	11/11/2021
E3490-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL8-BK419	A	11/11/2021
E3500-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL10-BK419	A	11/11/2021
E3510-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL10-BK521	A	11/11/2021
E3520-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL10-BK600	A	11/11/2021
E3530-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL12-BK600	A	11/11/2021
E3540-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL12-BK750	A	11/11/2021
E3550-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D5XL14-BK750	A	11/11/2021
E3560-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D5XL16-BK750	A	11/11/2021
E3570-04-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D5XL18-BK750	A	11/11/2021

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Document No.	Rev.	Title	Status	Date
C3100-04-0700	A	Electrical diagram - BWMS Control cabinet DL1-BK273~DXL9-BK356	A	11/11/2021
C3200-04-0700	A	Electrical diagram - BWMS Control cabinet DXL9-BK419~D4XL12-BK600	A	11/11/2021
C3300-04-0700	A	Electrical diagram - BWMS Control cabinet D4XL12-BK750~D5XL18-BK750	A	11/11/2021
E3400-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL1-BK273	A	11/11/2021
E3410-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL2-BK273	A	11/11/2021
E3420-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL3-BK324	A	11/11/2021
E3430-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL4-BK324	A	11/11/2021
E3440-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DL4-BK356	A	11/11/2021
E3450-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DXL6-BK356	A	11/11/2021
E3460-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DXL9-BK356	A	11/11/2021
E3470-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DXL9-BK419	A	11/11/2021
E3480-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS DXL12-BK419	A	11/11/2021
E3490-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL8-BK419	A	11/11/2021
E3500-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL10-BK419	A	11/11/2021
E3510-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL10-BK521	A	11/11/2021
E3520-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL10-BK600	A	11/11/2021
E3530-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL12-BK600	A	11/11/2021
E3540-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D4XL12-BK750	A	11/11/2021
E3550-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D5XL14-BK750	A	11/11/2021
E3560-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D5XL16-BK750	A	11/11/2021
E3570-06-1800	A	Control Cabinet Wiring Diagram, NGT BWMS D5XL18-BK750	A	11/11/2021
C3100-06-0700	A	Electrical diagram - BWMS Control cabinet DL1-BK273~DXL9-BK356	A	11/11/2021
C3200-06-0700	A	Electrical diagram - BWMS Control cabinet DXL9-BK419~D4XL12-BK600	A	11/11/2021
C3300-06-0700	A	Electrical diagram - BWMS Control cabinet D4XL12-BK750~D5XL18-BK750	A	11/11/2021

2. The documents listed below have been considered together with the submitted documents in the appraisal

Document No.	Rev.	Title
IM	B	Installation Manual
OSMM	C	Operation, Safety & Maintenance Manual
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Document No.	Rev.	Title
TAP000028V	1	Type Approval Certificate IMO Resolution MEPC.300(72)
-	A	Technical specification, NGT BWMS DL1-BK273
-	A	Technical specification, NGT BWMS DL2-BK273
-	A	Technical specification, NGT BWMS DL3-BK324
-	A	Technical specification, NGT BWMS DL4-BK324
-	A	Technical specification, NGT BWMS DL4-BK356
-	A	Technical specification, NGT BWMS DXL6-BK356
-	A	Technical specification, NGT BWMS DXL9-BK356
-	A	Technical specification, NGT BWMS DXL9-BK419
-	A	Technical specification, NGT BWMS DXL12-BK419
-	A	Technical specification, NGT BWMS D4XL8-BK419
-	A	Technical specification, NGT BWMS D4XL10-BK419
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-	A	Technical specification, NGT BWMS D4XL12-BK600
-	A	Technical specification, NGT BWMS D4XL12-BK750
-	A	Technical specification, NGT BWMS D5XL14-BK750
-	A	Technical specification, NGT BWMS D5XL16-BK750
-	A	Technical specification, NGT BWMS D5XL18-BK750
D0050-11-02	-	Dimensional Sketch
D0100-11-02	-	Dimensional Sketch
D0200-11-02	A	Dimensional Sketch
D0210-11-02	-	Dimensional Sketch
D0300-11-03	-	Dimensional Sketch
D0400-11-02	-	Dimensional Sketch
D0410-11-02	-	Dimensional Sketch
D0420-11-01	-	Dimensional Sketch
D0500-11-01	A	Dimensional Sketch
D0600-11-01	A	Dimensional Sketch
D0610-11-01	A	Dimensional Sketch
D0700-11-01	A	Dimensional Sketch
D0800-11-01	A	Dimensional Sketch
D0810-11-01	A	Dimensional Sketch
D900-11-01	-	Dimensional Sketch
D1000-11-01	-	Dimensional Sketch
D1100-11-01	-	Dimensional Sketch
D1200-11-01	-	Dimensional Sketch

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Document No.	Rev.	Title
D0050	C	Bill of Materials
D0100	C	Bill of Materials
D0200	C	Bill of Materials
D0210	C	Bill of Materials
D0300	C	Bill of Materials
D0400	C	Bill of Materials
D0410	C	Bill of Materials
D0420	C	Bill of Materials
D0500	C	Bill of Materials
D0600	C	Bill of Materials
D0610	C	Bill of Materials
D0700	C	Bill of Materials
D0800	C	Bill of Materials
D0810	C	Bill of Materials
D0900	C	Bill of Materials
D01000	C	Bill of Materials
D01100	C	Bill of Materials
D01200	C	Bill of Materials
007571	00	D4XL8.3000 Mc Us3 NW250 PN10 Q200*
007551	X00	D4XL10.3000 Mc Us3 NW300 PN10 Q200*
007548	00	D4XL12.3000 Us3 Mc NW300 PN10 Q200*
007581	X00	D5XL14.3050 Ec Us3 NW400 PN10 Q200*
007583	X00	D5XL16.3050 Ec Us3 NW400 PN10 Q200*
007584	X00	D5XL18.3050 Ec Us3 NW400 PN10 Q200*
005873	00	DL1.1500 Mc Us3 NW80 PN10 Q200 LC*
005873	00	DL2.1500 Mc Us3 NW80 PN10 Q200 LC*
007590	00	DL3.1500 Mc Us3 NW125 PN10 Q200 LC*
005602	00	DL4.1500 BWTS Mc Us3 NW150 PN10 Q200 LC*
005814	00	DXL6.1500 Mc Us3 NW150 PN10 Q200 LC*
005627	01	DXL9.1500 Mc US3 NW200 PN10 Q200 LC*
005813	01	DXL12.1500 Mc Us3 NW200 PN10 Q200 LC*
Appendix A.2	-	IAS Interface specification
Appendix A.3	-	Alarm list
Appendix A.4	-	Software revision log
Appendix C.3	-	Electrical drawings UV units*

* UV unit and UV electrical drawing reference number and date may vary depending on the wiper option and/or the supply voltage.

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- Documents not mentioned above are not required for appraisal or as supporting documentation and have not been retained.

Appraisal Status Key

- | | |
|----|---|
| A | Approved - provided the arrangements are to the surveyor's satisfaction |
| SI | Retained as supporting documentation for information only |

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