Certificate No:
TAP00002G7

TYPE APPROVAL DESIGN CERTIFICATE

This is to certify:

That the Containerized System according to CP-0553

with type designation(s)
30ft container from JHC
20ft container from JHC

Including PureBallast 3.2 Ex (model range 600, 750 and 1500-2000), Ref. TAP000018Z,

Issued to
Alfa Laval Tumba AB
Tumba, **Sweden**

is found to comply with
DNV rules for classification – Ships

Application :

Approval has been performed according to DNV rules for classification - Ships:
Pt.3 Ch.6 Sec.8 and Ch.12 Sec.2 Structural
Pt.4 Ch.6 Piping systems
DNV class programme DNV-CP-0553 - Containerized systems - Ballast Water Treatment Units

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Design pressure: <30kPa

Issued at **Høvik** on **2022-01-20**
This Certificate is valid until **2026-05-19** .
DNV local unit: **Sweden CMC**

for **DNV**

Approval Engineer: **Endre Lajord**

Dag Sæle-Nilsen
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

A container fitted with a ballast water treatment system (BWTS), pre-approved for installation on open deck of a ship as a deck house.

Product type: 30ft container including a BWTS, type PureBallast 3.2 Ex model 2000
Product type: 20ft container including a BWTS, type PureBallast 3.2 Ex model 600, 750, 1500.

Manufacturing location container: Qingdao Jinhuanghai Container Co., Ltd., Qingdao, China

Manufacturing location BWTS: Alfa Laval Aalborg A/S, Aalborg, Denmark/Qingdao Jinhuanghai Container Co., Ltd., Qingdao, China

Application/Limitation

The deckhouse structure is reviewed based on uniformly distributed load 30 kPa on the external sides and for 16.33 kPa on the roof. Prior to each installation onboard it shall be evaluated that green sea pressure is within this design limitation.

Works Certificate (type 3.1) for the structural materials and relevant NDT-reports are to be presented to the attending surveyor.

The connection interface with the hull shall be evaluated separately for every installation.

Ship specific installation drawings (interface) is subject for approval in each case, including communication interface towards the ship's existing systems including alarms for failure.

Strength against stacking and lifting of the containers are not included in the DNV Class approval scope. CSC certification issued by any recognized body should be verified if relevant for each container.

The ventilation is found suitable for a deckhouse categorized as Service spaces (high risk), with 20 air changes/hour.

The door and hatch are found to be weather tight and strength wise acceptable for the expected green sea loads, with drain plugs in the bottom of the container.

Fire control plan is vessel specific:
The fire control plan for the vessel the container is installed on is to be updated to accurately describe the arrangement of fire safety equipment fitted onboard after the alteration.

Fire extinguishing or fire detection is not required inside the BWTS-container. However, if present, shall be connected to the ships systems.
Position of BWTS space towards other spaces/items needs to be shown on vessel arrangement drawing.

The container is not suitable to handle dangerous goods.

The design approval only covers the container design. No inspection has been covered in this certificate. For each installation onboard the vessel, the following installation related to container manufacture shall be verified by DNV GL attending surveyor:

- Visual inspection of the piping system
- Hydrostatic test/leakage test/function test to the piping system according to DNV Rules Pt.4 Ch.6 Sec.9 5.1 &5.2
- Ventilation system to container shall be function tested, including verify ventilation capacity of 20 air changes/hour
- Resistance between fan unit and deck container shall be tested not to be greater than 10^6 Ohm (DNV Rules Pt.5 Ch.5 Sec.6 1.2.5)
- Commissioning testing of BWMS is to be carried out on board the vessel
- Relevant survey report (alternatively product certificate) for each container shall be delivered onboard the vessel.
- The certificates include material work certificate for pipes with DN>50mm, type approval certificate for couplings (if applicable), type approval certificate for plastic pipe (if applicable), product certificate for explosion proof ventilation fan, IMO type approval certificate for Alfa Laval BWMS PureBallast 3.2Ex.
- Ventilation inlet shall be located outside hazardous area
- See inspection checklist for further information, ref. P32477-J-51.

Installation onboard

To comply with the Ballast Water Convention the BWTS needs to be fitted with the following components external to the deckhouse.
- BWTS bypass possibility (valve for safety ballasting), which shall be connected to the BWTS for monitoring.
- Sampling point, to be able to collect samples of the treated water.

Type Approval documentation

Container/Deckhouse

Structural assessment

JHC-DH600-G03 rev.A
JHC-DH750-G03 rev.A
JHC-DH1500-G03 rev.C
JHC-DH2000-G03 rev.C
262WHL003FM-00-A
262WHL003FM-00-B

Structural fire protection
The container/deck house is designed with fire integrity A60 in all directions. Note: A60 is not a requirement for a BWTS-container.

Certificates:
Material certificates (Works 3.1), as applicable for the container itself.

BWTS installation inside container:
Alfa Laval Tumba AB, PureBallast 3.2 Ex is type approved to comply with the BWMS Code. Reference is made to DNV type approval TAP000018Z issued on behalf of the Norwegian Maritime Administration. System and operational limitations for the BWMS is stated in above reference certificate, which shall be kept on board.

Installation specification:
Alfa Laval: Design Guide for Deckhouse installations.

The following drawings have been received for information/approval for piping system/ventilation of deckhouse:

Drw No.	Rev	Title
9043846	0	FLOW CHART
9046640	1	P&ID 600 m³/h
9046639	1	P&ID 750 m³/h
9044175	2	P&ID 2000 m³/h
9043070	3	P&ID 1500 m³/h
JHC-DH600-G02	A	DECKHOUSE GENERAL VIEWS WITH EXTERNAL ACCESSORIES
JHC-DH750-G02	A	DECKHOUSE GENERAL VIEWS WITH EXTERNAL ACCESSORIES
JHC-DH1500-G02	0	DECKHOUSE GENERAL VIEWS WITH EXTERNAL ACCESSORIES
JHC-DH2000-G02	0	DECKHOUSE GENERAL VIEWS WITH EXTERNAL ACCESSORIES
JHC-DH600-E01	A	ATEX DECKHOUSE GENERAL ARRANGEMENT
JHC-DH750-E01	A	ATEX DECKHOUSE GENERAL ARRANGEMENT
JHC-DH1500-E01	0	ATEX DECKHOUSE GENERAL ARRANGEMENT
JHC-DH2000-E01	0	ATEX DECKHOUSE GENERAL ARRANGEMENT
JHC-DH600-G04	C	ARRANGEMENT PLAN (internal)

JHC-DH750-G04	C	ARRANGEMENT PLAN (internal)
JHC-DH1500-G04	0	ARRANGEMENT PLAN (internal)
JHC-DH2000-G04	0	ARRANGEMENT PLAN (internal)
JHC-DH600-P01	A	Deckhouse - 600m³/h Primary Piping
JHC-DH600-P02	C	Deckhouse - 600m3/h Secondary Piping
JHC-DH750-P01	A	Deckhouse – 750m3/h Primary Piping
JHC-DH750-P02	C	Deckhouse - 750m3/h Secondary Piping
JHC-DH1500-P01	0	Deckhouse - 1500 m³/h Primary Piping
JHC-DH1500-P02	A	Deckhouse - 1500m3/h Secondary Piping
JHC-DH2000-P01		Deckhouse - 2000 m3/h Primary Piping
JHC-DH2000-P02	A	Deckhouse - 2000m3/h Secondary Piping
9046153	1	Ventilation
9047375-80		fan curve
9048914	0	Damper, Ex dim drw
ROIT20P00021		Duct/315/AISI304-/RAL7032/G71/L150 (n.2 Guards)
9049010	1	Ventilation, Ex, dim drw
		JHC Ventilation Capacity Calculation

Ventilation fan:
For installations in hazardous areas the ventilation fan is verified to be spark proof and should have a DNV Product Certificate (PC), or case-by-case approval.

Fans “Rosati”:
Drawings stamped 05.11.2020:

NPS job-ID: A0945349-1

Tests carried out

No tests are carried out for the type approval design certificate. Test may be followed up in separate checklist P32477-J-51 for each container when it is inspected by DNV attending surveyor.

Hazardous area / Ex-proof

The container (20 ft and 30 ft), including the PureBallast 3.2 BWMS and the ventilation fan from Rosati, has been evaluated and found to be in compliance with DNV Rules Pt.4 Ch.8 Sec.11 for hazardous area installations. The filter, UV reactor, CIP unit, valves, backflush pump, optional ballast water booster pump, flowmeters and fan have Ex-certification and can be installed in hazardous area zone 1, gas group IIB+H2 and temperature class T4. The electrical/controlling cabinets are to be located in safe zone, in accordance with Electrical system layout. Ex-certification is not covered by this certificate. Installation in a hazardous area are to be approved in each case according to the Rules and Ex-certification / Special Condition for Safe Use, listed in a valid Ex-certificate issued by a notified/recognized Certification Body.

Periodical assessment

This certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com