



CERTIFICATE NUMBER 17-LD1686310-1-PDA

EFFECTIVE DATE 12-Jul-2018

EXPIRATION DATE 07-Feb-2023

ABS TECHNICAL OFFICE London

## CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

### **OPTIMARIN**

located at

**SJOVEIEN 34, SANDNES, Norway, N-4315**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

**Product** Ballast Water Treatment

**Model** Optimarin Ballast Water Management System

This Product Design Assessment (PDA) Certificate remains valid until 07-Feb-2023 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau of Shipping

Mohammed Abbas, Principal Engineer

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

**OPTIMARIN**

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Norway N-4315

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**Tier: 2 - PDA Issued**

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**Product:** Ballast Water Treatment**Model:** See attachment for full list of models.**Intended Service:**

The Optimarin Ballast Water Management System (BWMS) is based on filtration and UV-treatment. The Optimarin BWMS treatment process does not utilize any chemical or poisoning agents.

**Description:**

Ballast water treatment system.

**Rating:**

See attachment for ratings of each model.

**Service Restriction:**

See attachment for detailed Service Restrictions.

**Comments:**

1. Please see attachment for detailed list of comments.
2. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

**Notes/Drawing/Documentation:**

Drawing No. 101, LAND BASED TESTING OF THE OPTIMARIN BALLAST SYSTEM, Test Report NIVA 5643-2008 dated 11/2009 by Norwegian Institute for Water Research  
Drawing No. 102 Item 1, CAPACITY OF UV SYSTEM AND FILTERS  
Drawing No. 103 Item 1, BILL OF MATERIAL  
Drawing No. 104 Item 1, OPERATION, MAINTENANCE MANUAL  
Drawing No. 110 Item 1, Appendix A (Filter), FILTER APPENDIX A  
Drawing No. 111 Item 1, BACK FLUSH PUMP APPENDIX B  
Drawing No. 112 Item 1, FLOWMETER APPENDIX C  
Drawing No. 113 Item 1, FLOW PRESSURE VALVE APPENDIX D  
Drawing No. 114 Item 1, AIR RELEASE APPENDIX E  
Drawing No. 115 Item 1, UV SYSTEM APPENDIX F  
Drawing No. 116 Item 1, BUTTERFLY VALVES APPENDIX G  
Drawing No. 117 Item 1, BYPAS VALVE APPENDIX H  
Drawing No. 118 Item 1, CABINETS APPENDIX I  
Drawing No. 119 Item 1, CABLES APPENDIX J  
Drawing No. 120 Item 1, UV SENSOR APPENDIX K  
Drawing No. 121 Item 1, TRANSMITTERS APPENDIX L  
Drawing No. 123 Item 1, QUARTZ GLAS APPENDIX N  
Drawing No. 124 Item 1, ALARM HORN AND LIGHT APPENDIX O  
Drawing No. 125 Item 1, TOOLS APPENDIX P  
Drawing No. 126 Item 1, UV SYSTEM APPENDIX Q  
Drawing No. 127 Item 1, SCALING REPORT BOLLFILTER  
Drawing No. 128 Item 1, EVALUATION OF ALTERNATIVE UV LAMPS  
Drawing No. 129 Item 1, OPTIMARIN BALLAST TREATMENT SYS FLOW DIAGRAM  
Drawing No. 2, SHIPBOARD TESTING OF THE OPTIMARIN BALLAST SYS, Test Report NIVA 5828-2009 dated 10/2009 by Norwegian Institute for Water Research  
Drawing No. 201 Item 2, BALLAST SYS FOR INSTALLATION IN HAZARDOUS AREAS  
Drawing No. 202 Item 2, BILL OF MATERIAL  
Drawing No. 202 Item 2, BOM, BILL OF MATERIAL  
Drawing No. 204, BALLAST SYSTEM  
Drawing No. 211 Item 2, EXP PRESSURIZED SYSTEM  
Drawing No. 212 Item 2, SPECIAL EX CABINETS AND ACCESSORES APPENDIX B  
Drawing No. 213 Item 2, FILTER, BOLL & KIRCH MK2 APPENDIX C

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Drawing No. 214 Item 2, BACK FLUSH PUMP APPENDIX D  
Drawing No. 215 Item 2, FOW PRESSURE VALVE APPENDIX E  
Drawing No. 216 Item 2, VALVES AND ACCESSORIES APPENDIX F  
Drawing No. 217 Item 2, INSTRUMENTATION APPENDIX G  
Drawing No. 3, ADDITIONAL LAND BASED TESTING, Test Report N. NR. 5840-2009 dated 11/2009 by Norwegian Institute for Water Research  
Drawing No. 301 Item 3, ITEM 3 QUALITY CONTROL PROCEDURE  
Drawing No. 302 Item 3, ITEM 3 QUALITY MANAGEMENT SYSTEM  
Drawing No. 303 Item 3, ITEM 3 SAFETY HANDBOOK  
Drawing No. 4, FULL SCALE FILTER TESTS  
Drawing No. 5, TECHNICAL REPORT, Date: 04-Nov-2011, DNV  
Drawing No. 8, TYPE APPROVAL CERTIFICATE  
Drawing No. 9, TECHNICAL REPORT, Date: 02-Sep-2016, Applica Test and Certification AS  
Drawing No. 30258261495, Optimarin Software Development Processes  
Drawing No. 6, EMC TEST REPORT, Date: 23-Aug-2012, Thales Netherlands  
Drawing No. OBS, PLC revision history, OBS, PLC revision history  
Drawing No. Task List - PLC, Task List - PLC  
Drawing No. 7, MECHANICAL AND CLIMATE TEST REPORT, Date: 23-Aug-2012, Thales Netherlands  
Drawing No. TECHNICAL RISK ASSESSMENT, Optimarin Ballast System Risk Assessment  
Drawing No. Table of Content, TABLE OF CONTENT APPLICATION FOR TA RENEWAL

**Terms of Validity:**

This Product Design Assessment (PDA) Certificate 17-LD1686310-1-PDA, dated 12/Jul/2018 remains valid until 07/Feb/2023 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

**STANDARDS****ABS Rules:**

2018 ABS Rules for Building and Classing Steel Vessels: 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-4-1, 4-6-2, 4-6-4/7.7, 4-8-3/5.3.1, 4-8-3/Table 2 and 4-9-3;

2018 Rules for Building and Classing Mobile Offshore Drilling Units 1-1-4/9.7, 1-1-A2, 1-1-A3, 4-2-2 and 4-2-4/11.9;

2018 ABS Rules for Building and Classing Steel Vessels Under 90 Meters (295 feet) in Length: 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-4-2, 4-6-1/13;

2018 ABS Rules for Building and Classing Offshore Support Vessels (OSV Rules): 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-4-1, 4-6-2, 4-6-4/7.7, 4-8-3/5.3.1, 4-8-3/Table 2 and 4-9-3;

2016 ABS Guide for Ballast Water Treatment (Up-dated in Feb 2017) (ABS BWT Guide);

**National:**

NA

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**International:**

"Guidelines for approval of ballast water management systems (G8)" adopted by IMO resolution MEPC.174 (58) on 10 October 2008.

EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-18:2009;

**Government:**

NA

**EUMED:**

NA

**OTHERS:**

NA