



Certificate No. 03-001722/031430

## TYPE APPROVAL CERTIFICATE

This is to certify that this product complies with the Rules for the classification of ships, Part 1 - General requirements, Chapter 3 - Type approval of products.

TYPE AND DESCRIPTION OF PRODUCT:

ENGINE CONTROL SYSTEM

**MAN B&W ME-ECS v. 1903-4.xx**  
Features – ME, ME-B, GI & LGI Engines

MANUFACTURER:

**MAN Energy Solutions**  
**Teglholmegade 41**  
**DK-2450 COPENHAGEN SV**  
**DENMARK**

THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

**Croatian Register of Shipping:** Rules for the classification of ships,  
Part 9. – Machinery, Part 13. – Automation

**IACS UR E10**

FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.

APPROVAL IS VALID UNTIL: **2024-03-11**

Place and date: Split, 2020-03-12

Seal

Marinko Popović, dipl.ing.

NOTE: This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Croatian Register of Shipping of any modification or changes to the product in order to obtain a valid certificate.

**DETAILED PRODUCT DESCRIPTION:**

ME-ECS is an electronically controlled system for the hydraulic-mechanical fuel injection and exhaust valves actuation for MAN B&W 2-stroke diesel engines. It is consisted of several control units:

**Main units for ME-ECS**

MOP – Main Operating Panel (engine control room)	ELFI – Electronic Fuel Injection
LOP – Local Operation Panel (engine side)	ELVA – Exhaust Valve Activation
MCU – Master Control Unit (ALS integrated)	CPS – Crankshaft Position Sensors
BCU – Backup Control unit (ALS integrated)	SAV – Starting Air Valve
ECU – Engine Control Unit	RCS – Remote Control System
EICU – Engine Interface Control Unit	Triton – Main Operator Panel
ACU – Auxiliary Control Unit	Triton – Base Module
CCU – Cylinder Control Unit (including MPC-10)	Triton – Power Supervision Module
SCU – Scavenging Air Control Unit	Triton – CPU Module
MPC – Multipurpose Controller	Triton – ID Key
SBU – Switchboard Unit	Triton – Modbus Module
HPS – Hydraulic Power Supply	Triton – Digital I/O Module
HCU – Hydraulic Cylinder Unit	Triton – Analog I/O Module
SACU – Secondary Fuel Auxiliary Control Unit	SPSU – Secondary Fuel Plant Safety Unit
SPCU – Secondary Fuel Plant Control Unit	SCSU – Secondary Fuel Cylinder Safety Unit

**APPLICATION / LIMITATIONS:**

Engine start, stop and reversing  
Control of fuel injection, exhaust and start valve activation  
Automatic speed control  
Control of cylinder lubrication

Monitoring (for alarm and safety systems)  
Scavenging air pressure control (optional)  
Autotuning (optional)

**TYPE APPROVAL DOCUMENTATION:**

		<i>Type Approval Test</i>	<i>Documentation</i>
<b>ME-ECS</b>	15-16 <sup>th</sup> April 2013 Copenhagen	doc. 3099296-9 doc. 3099297-0	General System Information of ME-ECS Type Approval Test report for ME-ECS, SW 1304.
	24-25 <sup>th</sup> January 2018 Takamatsu	doc. 3099296-9 doc. 3099645-7	General System Information of ME-ECS Type Approval Test report for ME-ECS, SW 1710.
	9-10 <sup>th</sup> October 2019 Tamano	doc. 3099296-9 doc. 3099694-7.2	General System Information of ME-ECS – Rev. 06 Type Approval Test report for ME-ECS, SW 1903-2.
<b>ME-GI ECS</b>	5-6 <sup>th</sup> May 2015 Copenhagen	doc. 3099295-7 doc. 3099636-2	General System Information of ME-GI Type Approval Test report for ME-ECS for ME-GI engines, SW 1502.
<b>ME-LGI ECS</b>	15-17 <sup>th</sup> March 2016 Tamano	doc. 3099567-8 doc. 3099642-1	General System Information of ME-LGI Type Approval Test report for ME-ECS for ME-LGI engines, SW 1601.
	30-31 <sup>th</sup> January 2020 Changwon	doc. 3099567-8 doc. 3099787-1	General System Information of ME-LGI – Rev. 04 Type Approval Test report for ME-ECS for ME-LGI engines, SW 1903-4
<b>ME-B ECS</b>	17-19 <sup>th</sup> July 2013 Korea	doc. 3099313-8 doc. 3099629-1	General System Information of ME-B Type Approval Test report for ME-B ECS, SW 1212.

Programme for the Type Approval Test of MAN B&W ME-ECS v. 1903-4, Document No. 3090685-1 Rev.4.5 and Programme for Type Approval Test of MAN B&W ME-ECS Second Fuel Extension, Document No. 3093265-0 Rev. 2.6, approved by CRS letter 495/TSE/DD/ZS/031430 dated 2020-03-12.

The entire list of electronic components for ECS 3093398-0 is reviewed by CRS. New components are added and approved up to including Rev.11 dated 2019.09.20 based on submitted relevant Environmental Test reports.

**MARKING OF PRODUCT:**

The Manufacturer and Type Designation of the product, serial number, date of manufacture, supply voltage and software version.

**CONDITIONS FOR CERTIFICATION:**

For each application on board CRS classed vessels complete technical documentation and drawings shall be submitted for examination and approval prior installation on board.

Each engine FAT test must include ME-ECS Integration Test with particular engine.