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Information about maintenance services for your main engine control systems

Dear Customers,

We hope this message finds you well.

For many years, and thanks to the support and trust of loyal customers like yourself, our main engine control systems have been widely used as control equipment for MAN-, WinGD- and UE-licensed marine vessel engines.

However, should any issue related to the main engine control system arise to prevent the system from working correctly, not only the vessel operation timetable will be affected but also the crew will experience an increased burden and stress as they try to cope with the situation. Regular inspection and maintenance are essential to maintain the system in correct operating condition, but aging issues will inevitably arise after many years of service. In recent years, service parts production for some of our older models is being discontinued and causing parts availability issues.

For continued safe and effective use of your system, use of the following maintenance services at periodic intervals is recommended.
Refer to the information below to plan future maintenance activities for your systems.

1. Maintenance of M-800 main engine remote control systems

The proposed maintenance scope includes electrical components for the remote main engine control systems that allow controlling the engine from the bridge or the engine monitoring station.
We recommend procuring general inspection and replacement with new parts for control system components, telegraphic devices, potentiometers and power supply components (including AC-DC and DC-DC converters) that cannot be easily serviced by the onboard crew.
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- Every 2.5 years: General inspection
- Every five to 12.5 years: Electrical component replacements with new ones

1-1) Potentiometers and encoders

Potentiometers for telegraphic communication and control devices are one of the equipment groups that can be potentially affected by aging. Fluctuation in electrical resistance (especially resistance performance degradation in the normal operating position of the component) can cause telegraphic communication failure or other main engine control issues.

1-2) Power supply components

Power supply components that are found across the entire control system are another equipment group that can be affected by aging. For example, output voltage drop in a power supply channel may cause failure or malfunction of telegraphic communication, control or safety devices.

1. AC-DC converters

   The AC-DC converter receives power from the main power source and converts it to 24 VDC to power the control system. In the event that the AC-DC converter fails to provide the required output voltage, 24 VDC from the onboard emergency power supply system will be used as a backup power source for the control system (a redundant power supply architecture).

2. DC-DC converters

   The DC-DC converter provides the DC power that is used inside the control system (DC ± 15 V, 5 VDC). The DC-DC converter receives 24 VDC from the AC-DC converter and outputs it after converting it into a lower voltage. Some systems use a standalone power supply unit and others use a circuit board-based device for DC-DC conversion.

1-3) Electronic circuit boards and units (CPU/RPM/SHD/HUB/TB UNIT)

These electronic components are an essential part of our remote main engine control system. However, you may experience failure or malfunction of their control and safety circuits due to aging-related deterioration. We recommend having the electronic circuit boards and units replaced every ten years. Note that our remote main engine control system model M800-V and all later models are designed in the distributed modular architecture, which does not allow replacing individual circuit boards and requires the whole units to be replaced with new ones.

1-4) LCD display (BDP/CDP)

This refers to the display unit used in our latest remote main engine control systems. The LCD display unit allows controlling the system, monitoring various operating conditions and viewing error information. Due to aging-related deterioration of the backlight components, you may experience usability issues such as poor legibility of the information shown on the LCD screen. We recommend replacing the LCD display unit every ten years.

1-5) Electric shaft handles

It is difficult to recommend the same replacement interval for all the vessels as the installation setup significantly varies from one vessel to another, and the following are the general guidelines. For the wing operation handles, which are used in harshest environment and are often attacked by severe corrosion, a complete replacement is recommended every two to five years.

Other electrical components, such as those for ventilation fans, buzzers, limit switches, proximity switches, relays, isolation amplifiers and batteries, are also recommended to be replaced at periodic intervals. Note that the component configuration may differ from one remote main engine control system model to another. Refer to the maintenance list for your system model for further detail.

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2. Maintenance of MG-800 electric governor systems

The electric governor system is an important element that optimizes the main engine output and thereby improves the fuel efficiency of the engine. It is recommended to obtain inspection every 2.5 years and to receive component replacements at periodic intervals.

- Every 2.5 years: General inspection
- Every five years: Replace CPU circuit boards and power supply components
- Every 7.5 years: Replace the actuator drive unit servo drivers
- Every ten years: Replace the LCD displays for the governor actuators and control units

3. Maintenance of pneumatic maneuvering systems

Rubber elements that are subject to significant aging-related deterioration, such as gaskets, spacers and springs, are recommended to be replaced every 2.5 to five years. Especially for the high-pressure lines that can deteriorate very quickly, it is recommended to receive an overhaul every 2.5 years.

4. Maintenance of hydraulic valves

Hydraulic valves that are installed to an electronic MAN engine (FIVA, ELFI, etc.) will require preventive maintenance as their cumulative operating hours get longer. It is recommended to receive overhauls and complete replacements at periodic intervals.

- General inspection: It is recommended to have the pilot valves tested to check for internal hydraulic fluid leaks and also to receive an overhaul.
- Every five years (On-site overhaul or onboard overhaul): Replace the pilot valves and inspect the stroke sensors and main valves.
- Every ten years: Complete valve replacements

<What are included in the On-Site overhaul>

1) Examining the FIVA valve parts to see if they can continue to be used (visual inspection)
2) Disassembly and washing of parts for continued use
3) Replacing the pilot valves and other consumables with new ones
4) Sensor calibration and operation tests using a test bench

<What are included in the onboard overhaul>

1) Examining the FIVA valve parts to see if they can continue to be used (visual inspection)
2) Disassembly and washing of parts for continued use
3) Replacing the pilot valves and other consumables with new ones
4) Running cycle tests on the onboard MOP screen

Note: For complete replacements, note the MAN license agreement allows only MAN (as the licensor) and its engine licensee to provide complete replacement valves.

5. System replacement

For system products where more than twenty years have passed after their production discontinuation or other products that include parts that are difficult to procure due to production discontinuation, upgrading to the current model is recommended.

- Governor system replacement (EAR-500 and EAR-1000 actuator models (to be replaced together with the AFS servo driver))
- Governor control unit replacement (MCG-100, -200, -300, -402 and -700 models)
- Telegraphic system replacement (telegraphic circuit boards for MT-800 and MT-800-II models)
- Telegraphic logger replacement (ML-800, -800 II and -800 III models)
- LCD display replacement (fluorescent backlights)

Note: For the replacement of governor systems and governor control units, a governor control unit equipped with a Fuel Save Mode that can provide fuel saving effects is optionally available.

6. Maintenance list-based proposal

Kindly provide us with the list of vessels under your management and their preferred dock entry dates, and we will propose a possible maintenance plan in return to help you schedule maintenance activities for your vessels.

Information including the vessel name, the IMO number, the shipbuilder's name and the hull number is helpful to propose the best maintenance plan based on your vessel's past maintenance history.

Review this message to help you plan future maintenance activities for your vessels.

For maintenance service quotations and other inquiries, feel free to contact us at the following. Our nearest service center/station or approved service agency will get in touch with you in return.

<Contact point>

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Thank you for being a valued customer. We will always be here to help you.

Sincerely yours,

After Sales & Marketing Group, Service Department
Marin Control Systems Company
Nabtesco Corporation