U.S. Department of Homeland Security

United States Coast Guard

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September 9, 2019

Hanla IMS Company, Ltd.
Attn: Jun Tae Lee
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Busan, Republic of Korea

ALTERNATE MANAGEMENT SYSTEM ACCEPTANCE - UPDATE

The Coast Guard has completed its review of the Alternate Management System (AMS) application submitted by Hanla IMS Company, Ltd., for the EcoGuardian ballast water treatment system (BWTS). This letter, which is an update to a previous AMS acceptance letter dated January 22, 2016, grants AMS acceptance in accordance with the requirements of 33 CFR 151.2026 for the EcoGuardian BWTS models as type approved by the Korean Register on behalf of the Republic of Korea's Ministry of Oceans and Fisheries and detailed in type approval certification 2018-98 issued December 6, 2018.

EcoGuardian models with the following treatment rated capacity (TRC), as expressed in cubic meters per hour (m^3/hr), are accepted for use as an AMS in U.S. waters:

- EcoGuardian System EG0130 and EG0130-Ex with a TRC of 130 m^3/h;
- EcoGuardian System EG0250 and EG0250-Ex with a TRC of 250 m^3/h;
- EcoGuardian System EG0350 and EG0350-Ex with a TRC of 350 m^3/h;
- EcoGuardian System EG0500 and EG0500-Ex with a TRC of 500 m^3/h;
- EcoGuardian System EG0800 and EG0800-Ex with a TRC of 800 m^3/h;
- EcoGuardian System EG1000 and EG1000-Ex with a TRC of 1,000 m^3/h;
- EcoGuardian System EG1500 and EG1500-Ex with a TRC of 1,500 m^3/h;
- EcoGuardian System EG2000 and EG2000-Ex with a TRC of 2,000 m^3/h;
- EcoGuardian System EG2600 and EG2600-Ex with a TRC of 2,600 m^3/h;
- EcoGuardian System EG3000 and EG3000-Ex with a TRC of 3,000 m^3/h;
- EcoGuardian System EG4000 and EG4000-Ex with a TRC of 4,000 m^3/h; and
- EcoGuardian System EG6000 and EG6000-Ex with a TRC of 6,000 m^3/h.

The EcoGuardian models are assigned the following AMS identification number:

AMS-2019-Hanla-EcoGuardian-001

Coast Guard acceptance of the EcoGuardian BWTS as an AMS does not accord or imply conformance to or compliance with any other Federal, state, or local water discharge effluent limitations that may apply to the vessel on which the AMS operates or the regulatory regimes and locations within which it operates. The owner and operator of the vessel must comply with all applicable laws, regulations, and treaties, including the Clean Water Act and associated provisions of the Vessel General Permit (VGP); the Federal Insecticide, Fungicide, and Rodenticide Act of 1972, as amended (FIFRA); other Coast Guard safety regulations and requirements; and other applicable laws and regulations.

In accordance with 33 CFR 151.2026 (a)(5), the AMS application required the submittal of a type approval application for the BWTS. The type approval information submitted with the AMS application does not have any bearing on the type approval status of the BWTS, nor does Coast Guard acceptance of the EcoGuardian BWTS as an AMS indicate that the BWTS meets requirements for Coast Guard type approval.

The following conditions apply for the operation of the EcoGuardian BWTS in U.S. waters:

1. The AMS manufacturer must comply with all general conditions of certification stipulated in the type approval certificate issued by the Ministry of Oceans and Fisheries of the Republic of Korea, as referenced above. Revocation of type approval by the approving authority will result in revocation of this AMS acceptance. Copies of all reports required under the stated conditions of use must be submitted to the Office of Environmental Standards (OES-3) at the following address or email:

   COMMANDANT (CG-OES-3)
   U.S. Coast Guard Stop 7509
   2703 Martin Luther King Jr. Ave SE
   Washington DC 20593-7509
   e-mail: environmental_standards@uscg.mil

2. Installation and repairs of the AMS must be performed in accordance with the manufacturer's instructions and approved by the flag administration or its representative. As type approved by the Ministry of Oceans and Fisheries of the Republic of Korea, several electrolyzer chambers can be installed in parallel to achieve higher flow rates.

3. Operation and maintenance must be conducted in accordance with all specifications and limiting conditions stipulated on the type approval certificate and with the manufacturers instructions, including any limitations posed by the environment (for example, water quality, temperature, salinity, or other parameters) or vessel operations (for example, voyage duration, pumping rates, or other constraints). The following specific conditions apply:

   a. **Flow rates:** The flow rate of ballast water through the system should not exceed the TRC for the installed EcoGuardian model, as specified on the type approval certificate.

b. **Differential pressure across the filter:** The filter operates automatically in the ballast mode. Automatic back flushing begins if the differential pressure across the filter reaches 0.4 bar. Manual back flushing is possible using (1) the start button on a control box attached to the filter or (2) the start button on the main control panel. If the differential pressure across the filter exceeds 0.7 bar, a warning alarm is sounded by the control system, and the system will shut down.

c. **Ballast Water Salinity**: The electrochlorination unit of the EcoGuardian BWTS is designed to operate at a seawater salinity of 10 PSU or more. A conductivity sensor installed at the inlet of a side-stream monitors the salinity of the influent flow to the electrolyzer. If the salinity of the incoming ballast water is lower than 10 PSU, the influent flow to the electrolyzer must be supplied from a suitable tank previously filled with seawater. The electrolyzer of the EcoGuardian BWTS generates disinfectant using 1% of the total ballast water. The vessel's ballast water management plan must specify the ballast water tanks and associated equipment used to store seawater as source water for the EcoGuardian treatment process.

d. **Ballast Water Temperature:** The operations manual specifies a water temperature operating range between 10 and 40 °C. In low temperature operations above 10 °C, the influent flow to the electrolyzer must be replaced with the seawater from the cooling water system of a motor ship or the dump condenser system of a steam turbine ship. The vessel's ballast water management plan must specify the equipment and source water used in low temperature operations.

e. **Design dose of active substances:** A side stream of the ballast water passes through the electrochlorination unit to generate total residual oxidant (TRO) consisting of highly concentrated sodium hypochlorite (NaClO), which is then injected back into the main ballast line. After injection, the highly concentrated oxidant solution is mixed and diluted with the main ballast water line before entering the ballast tanks. The maximum designed dose concentration is 9 milligrams per liter (mg/L) TRO as chlorine (Cl_2); the minimum allowable dose is 7.2 mg/L. Dose is controlled by using the in-line TRO sensor. Based on readings from the TRO sensor, the EcoGuardian BWTS adjusts the current supplied to the electrochlorinator to determine the production rate of hypochlorite ions.

f. **Maximum allowable discharge concentration (MADC):** The TRO concentration of discharged ballast water must be less than 0.2mg/L. During de-ballasting, the ballast water passes through the neutralization unit prior to discharging overboard. The EcoGuardian BWTS uses an aqueous solution of sodium thiosulfate injected into the de-ballasting line to neutralize residual TRO. The injection rate of the neutralizer solution is controlled by monitoring the de-ballasting flow rate and residual TRO concentration. The EcoGuardian neutralization unit is designed to maintain a MADC of less than 0.2 mg/L TRO as Cl_2 by determining the neutralizer injection rate based on the stoichiometric ratio of TRO to sodium thiosulfate at 1:2.5 parts.

A historical record documenting that the system has been operated within these criteria, including a record of any alarm conditions, any deviations from the manufacturer's operating instructions, or any conditions and requirements noted above, shall be available for review onboard the vessel.

4. Because the EcoGuardian BWTS has not been adequately tested in freshwater, its use as an AMS is limited to the treatment of marine and brackish water with a practical salinity unit (PSU) concentration greater than 1.

5. If installed on a U.S. flag vessel, it must be shown that the system and installation comply with or provide an equivalent level of safety to the requirements of 46 CFR Subchapter F (Marine Engineering) and Subchapter J (Electrical Engineering). All electrical equipment located within hazardous areas must be explosion proof or intrinsically safe as certified by an independent laboratory recognized by USCG per 46 CFR 111.105-7.

6. Use of the AMS must be specified in the ship's ballast water management plan (BW plan), required by 33CFR 151.2050(g). The BW plan must identify: (1) the ballast water management practices to be used in the event the AMS cannot be used, and (2) the personnel responsible for the operation, maintenance, and repair of the BWTS. An up-to-date record of the operation, maintenance, and repair of the BWTS must be maintained onboard the ship.

7. Any change in design, materials, manufacturing, or intended operational conditions of this BWTS without prior notification to, and acceptance by, the U. S. Coast Guard will automatically invalidate this AMS acceptance. Prior to any such change, the manufacturer of an AMS must notify the Commanding Officer, U. S. Coast Guard Marine Safety Center (MSC), at the following address or e-mail:

   Commanding Officer (MSC)
   Attn: Marine Safety Center
   U.S. Coast Guard Headquarters
   2703 Martin Luther King Jr. Ave. SE
   Washington, DC 20593-7509
   e-mail: msc@uscg.mil

   The notification must include (1) a description of the change, the reason it is required, and its intended advantages; (2) an explanation of any effect of the change on installation, operation, maintenance, or repair requirements; and (3) an indication of whether or not the original configuration of the BWTS will be discontinued.

8. If the installed AMS does not operate properly when treating ballast water intended for discharge in U.S. waters, the person directing the movement of the vessel must ensure that the problem is reported to the nearest Coast Guard Captain of the Port (COTP) or District Commander as soon as practicable. The Coast Guard shall be notified of any

treatment system or component failures, any irreparable or recurring damage to components of the AMS, frequent process upsets or out-of-bounds operating conditions, occurrences of inadequate supply of seawater for low salinity operations, or other situations or process-related conditions that may reduce treatment effectiveness. The vessel may continue to the next U.S. port of call, subject to the directions of the COTP or District Commander.

9. All transport and handling of chemicals required for proper operation of the AMS must be conducted in accordance with 46 CFR 147 (Hazardous Ships' Stores), 49 CFR 171-180 (Hazardous Materials Regulations), and 46 CFR 98.30 (portable tanks), as appropriate.

10. Use of the AMS must be reported in the ship's ballast water management reports submitted to the National Ballast Information Clearinghouse, as required by 33 CFR 151.2060, as follows:

    a. Report the AMS identification number, located toward the beginning of this letter and in bolded text, in "Vessel Information" section in the space labeled "Onboard BW Management System" and;

    b. In the "Ballast Water History" section, for each tank for which the AMS was used, select the "Event" as "Onboard Treatment" for one of the reported tank events (e.g., Discharge, Onboard treatment, Source).

The Coast Guard may suspend, withdraw, or terminate the acceptance of this BWTS as an AMS in accordance with 46 CFR 2.75-40, 2.75-50(a) and 2.75-50(b), respectively.

A copy of this letter shall be provided to each vessel with this AMS installed and shall be available for review when the vessel is operating in U.S. waters.

I thank you for your dedicated efforts to seek out AMS acceptance, and we look forward to working with you throughout the type approval process. If you have any questions concerning this letter, you may contact Ms. Debbie Duckworth of my staff at (202) 372-1429 or debbie.duckworth@uscg.mil.

Sincerely,

S. T. BRADY
Captain, U.S. Coast Guard
Office of Operating and Environmental Standards