U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

2703 Martin Luther King Jr. Ave. SE
Washington, DC 20593-7509
Staff Symbol: CG-OES
Phone: 202-372-1429
Fax: 202-372-8382
Email: Debbie.Duckworth@uscg.mil

5760
December 8, 2016

PANASIA Co., Ltd.
Attn: Mr. Hyuno Kim
#55, Mieumsandan3-ro
Gangseo-Gu
Busan, Korea

ALTERNATE MANAGEMENT SYSTEM ACCEPTANCE – REVISION #2

The Coast Guard has completed its review of the Alternate Management System (AMS) application submitted by PANASIA Co., Ltd. for the PANASIA GloEn-Patrol (GloEn-Patrol) ballast water treatment system (BWTS). Two prior AMS acceptance letters, dated April 29, 2013 and February 12, 2015, correspond to earlier models of the GloEn-Patrol BWTS type approved by the Republic of Korea's Ministry of Land, Transport and Maritime Affairs and having a ballast water treatment rated capacity (TRC) of 6,000 m^3/h. *This revised letter grants AMS acceptance in accordance with the requirements of 33 CFR 151.2026 for additional GloEn-Patrol BWTS models, as detailed in the Republic of Korea's type approval certificate No.2016-17 issued on May 20, 2016.* This letter remains valid for the duration that AMS acceptance is authorized in accordance with 33 CFR §151.2026(c) unless the AMS determination has been suspended, withdrawn, or terminated.

The following GloEn-Patrol models are accepted for use as an AMS in U.S. waters:

- Models P50 with a TRC of 50 m^3/h;
- Models P150 or P150-Ex with a TRC of 150 m^3/h;
- Models P250 or P250-Ex with a TRC of 250 m^3/h;
- Models P300 or P300-Ex with a TRC of 300 m^3/h;
- Models P350 or P350-Ex with a TRC of 350 m^3/h;
- Models P500 or P500-Ex with a TRC of 500 m^3/h;
- Models P700 or P700-Ex with a TRC of 700 m^3/h.
- Models P750 or P750-Ex with a TRC of 750 m^3/h;
- Models P800 or P800-Ex with a TRC of 800 m^3/h;
- Models P900 or P900-Ex with a TRC of 900 m^3/h;
- Models P1000 or P1000-Ex with a TRC of 1,000 m^3/h;
- Models P1200 or P1200-Ex with a TRC of 1,200 m^3/h;
- Models P1500 or P1500-Ex with a TRC of 1,500 m^3/h;
- Models P2000 or P2000-Ex with a TRC of 2,000 m^3/h;
- Models P2500 or P2500-Ex with a TRC of 2,500 m^3/h;

- Models P3000 or P3000-Ex with a TRC of 3,000 m^3/h;
- Models P3500 or P3500-Ex with a TRC of 3,500 m^3/h;
- Models P4000 or P4000-Ex with a TRC of 4,000 m^3/h;
- Models P4500 or P4500-Ex with a TRC of 4,500 m^3/h;
- Models P5000 or P5000-Ex with a TRC of 5,000 m^3/h;
- Models P6000 or P6000-Ex with a TRC of 6,000 m^3/h.

The non-Ex (non-explosion proof) models were type approved by the Republic of Korea under type approval certificate number 2-2010 issued on November, 29, 2010. The Ex (explosion proof) models were type approved by the Republic of Korea under type approval certificates numbers 2015-02 and 2015-03 with both certificates issued January 7, 2015. Several units can be installed in parallel for higher flow rates. The flow rates through individual treatment units must have flow control and arrangement must be approved by Republic of Korea on a case by case basis.

The GloEn-Patrol BWTS is assigned the following AMS identification number:

AMS-2016-PANASIA- GloEn-Patrol-001

Coast Guard acceptance of the PANASIA GloEn-Patrol 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 GloEn-Patrol BWTS as an AMS indicate that the BWTS meets requirements for Coast Guard type approval.

The following conditions apply for the operation of the PANASIA GloEn-Patrol BWTS in U.S. waters:

1. The AMS manufacturer must comply with all general conditions of certification stipulated in the type approval certificates issued by 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 Environmental Standards Division (OES-3) at the following address or email:

COMMANDANT (CG-OES-3)
United States Coast Guard Stop 7509
2703 Martin Luther King Jr. Ave SE
Washington DC 20593-7509
Tel: 202-372-1402
e-mail: environmental_standards@uscg.mil

2. Because the AMS 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.

3. 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.

4. Operation and maintenance must be conducted in accordance with all specifications and limiting conditions stipulated on the type approval certificate and with the manufacturer's 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 treatment rated capacity (TRC) for the installed system. The available models of this BWTS have TRCs ranging from 50 meters^3/ hour to 6,000 meters^3/ hour. Several units can be installed in parallel for higher flow rates. The flow rates through individual treatment units must have flow control and arrangement must be approved by Republic of Korea's Ministry of Land, Transport and Maritime Affairs on a case by case basis. A historical record of flow rate is available via readouts from the control panel.

   b. **UV Intensity:** The designed UV dosage for this BWTS is between 250 and 350 mJ/cm^2. If the UV dosage falls below 250 mJ/ cm^2, an alarm is sounded by the control system. System shutdown will occur if the dosage goes below 230 mJ/ cm^2.

   c. **Differential pressure across the filter:** The pressure differential across the filter should not exceed 0.5 bar. The PANASIA GloEn-Patrol ballast water system is set to automatically back flush if the differential pressure across the filter exceeds 0.45 bar for longer than 3 seconds. An alarm is sounded by the control system if a differential pressure across the filter equal to or above 0.588 bar is detected. System shutdown will occur if a high differential pressure level of 0.784 bar is detected across the filter for more than 10 seconds.

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.

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 the U.S. Coast Guard, per 46 CFR 111.105-7.

6. Use of the AMS is specified in the ship's ballast water management plan (BW plan), as required by 33 CFR 151.2050(g). The BW plan must identify the following: (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 the following: (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 BWTS 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, 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, as provided by 33 CFR 160.

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 installed AMS 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. J. KELLY
Captain, U.S. Coast Guard
Office of Operating and Environmental Standards