

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
October 20, 2016

PACT Environmental Technology Co., Ltd.
Attn: Mr. David Leung
5/F, No. 700 Luban Road
Shanghai 200023
P.R. China

ALTERNATE MANAGEMENT SYSTEM ACCEPTANCE – REVISION #1

The Coast Guard has completed its review of the Alternate Management System (AMS) application submitted by PACT Environmental Technology Company, Ltd. (PACT), for the PACT Marine Ballast Water Treatment System (BWTS), as well as additional materials submitted with new type approval certificates issued by the China Classification Society (CCS) on behalf of the People's Republic of China. The original AMS acceptance letter, dated March 20, 2015, lists one model, the P-300 PACT Marine BWTS, with a treatment rated capacity (TRC) of 300 cubic meters per hour (m^3/h). *This revised letter grants AMS acceptance in accordance with the requirements of 33 CFR 151.2026 for additional PACT models, as detailed in CCS type approval certificate No. SH15T00059_01 issued on April 15, 2016, and expiring June 29, 2018.*

The following PACT Marine models are accepted for use as an AMS in U.S. waters:

- P-200 with a TRC of 200 m^3/h
- P-300 with a TRC of 300 m^3/h
- P-500 with a TRC of 500 m^3/h
- P-750 with a TRC of 750 m^3/h
- P-1000 with a TRC of 1,000 m^3/h
- P-1250 with a TRC of 1,250 m^3/h
- P-1500 with a TRC of 1,500 m^3/h
- P-2000 with a TRC of 2,000 m^3/h
- P-2500 with a TRC of 2,500 m^3/h
- P-3000 with a TRC of 3,000 m^3/h
- P-4000 with a TRC of 4,000 m^3/h

The PACT Marine BWTS is assigned the following AMS identification number:

AMS-2016-PACT-Marine-001

- b. **Differential pressure across the filter:** This BWTS is equipped with a coarse filter to remove large organisms and large marine debris and a 40-micron (μm) screen filter to remove smaller organisms and smaller marine sediments. The 40- μm screen filter is cleaned by an automatic back flushing process. When the differential pressure across the filter element exceeds 0.5 bar, the back flushing process should initiate automatically to clean the filter. To ensure effective back flushing, the inlet water pressure should not be less than 1.6 bar. The back flushing process can also be initiated by a timer located in the control unit. The operation manual for all models recommends a flush cycle every 30 minutes. The duration of the flush cycle should be adjusted for the appropriate gear box ratio and filter model. A historical record of filter pressure differentials can be obtained via readouts from the control panel.
- c. **UV intensity, transmittance, and dosage:** The operation manual for all models of the PACT Marine BWTS specifies a design UV dosage range of 300 to 350 milli-Joules per square centimeter (mJ/cm^2). The system must operate at a minimum UV dose of 300 mJ/cm^2 to operate in accordance with the requirements of the CCS type approval certificate. The system's control unit automatically determines the UV dose based on intensity measurements from a sensor located in the UV reaction chamber. The system can adjust UV dose within the UV reaction chambers in response to changes in ballast water conditions (e.g. turbidity) or ballast water flow rates. The system adjusts UV dose by increasing or decreasing power input to the UV lamps, which leads to an increase or decrease in UV light intensity within the UV reaction chamber. Minimum acceptable power input to the UV lamps is 64% of total power available to the UV reactor.

The PACT BWTS employs a mechanical clean-in-place (CIP) apparatus that automatically removes film buildup from the quartz UV lamp sleeves once every 2 hours or whenever cleaning is manually initiated by the BWTS operator. The PACT BWTS also has a high temperature alarm and will initiate shutdown whenever the temperature of the ballast water being treated in the UV reactor exceeds 50° Centigrade. In addition, an alarm will actuate at the operator station if the UV dose within the UV reactor falls below 310 mJ/cm^2 . If the detected UV dose falls below 300 mJ/cm^2 , an alarm will actuate at the operator station and the system will initiate shutdown. A record of UV dose information is available via data readouts from the control panel.

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 PACT Marine 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.

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 number of tanks treated by the AMS in the space labeled "Underwent Alternative Management";
 - b. Report the AMS identification number, located toward the beginning of this letter and in bolded text, in the space labeled "Please specify alternative method(s) used, if any," and;
 - c. Identify the management method as "ALT" under the heading "Method (ER/FT/ALT)" for each tank for which the AMS was used.

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