



5760
September 19, 2016

Cathelco, Ltd.
Attn: Robert Field
Marine House, Dunston Road
Chesterfield, Derbyshire
England S41 8NY

ALTERNATE MANAGEMENT SYSTEM ACCEPTANCE

The Coast Guard has completed its review of the Alternate Management System (AMS) application submitted by Cathelco, Ltd. for the Cathelco ballast water treatment system (BWTS) and additional material submitted for this revised acceptance letter. This letter grants continued AMS acceptance in accordance with the requirements of 33 CFR 151.2026 for eight Cathelco BWTS models, as type approved by the Bundesamt für Seeschifffahrt und Hydrographie (BSH), the Federal Maritime and Hydrographic Agency of Germany, and as detailed in BSH type approval (TA) certificates No. 0800S41-4443/000/1.0 (for the A2 model) issued on April 30, 2014, and expiring April 30, 2019 and No. 0800S41-4443/000/1.1 (for the A1, A4, A6, A8, A10, and A12 models) issued on July 23, 2014, and expiring July 23, 2019. *This revised letter grants AMS acceptance in accordance with the requirements of 33 CFR 151.2026 for the addition of the Cathelco/Mini model with treatment rated capacity (TRC) of 34 to 87 cubic meters per hour (m^3/h), as type approved on October 15, 2015, under type approval certificate No. 0800S41-4431/001.*

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

- Cathelco Mini, with a TRC of 34 to 87 m^3/h
- Cathelco Model A1 with a maximum TRC of 150 m^3/h ;
- Cathelco Model A2 with a maximum TRC of 200 m^3/h ;
- Cathelco Model A4 with a maximum TRC of 400 m^3/h ;
- Cathelco Model A6 with a maximum TRC of 600 m^3/h ;
- Cathelco Model A8 with a maximum TRC of 800 m^3/h ;
- Cathelco Model A10 with a maximum TRC of 1000 m^3/h ;
- Cathelco Model A12 with a maximum TRC of 1200 m^3/h .

The Cathelco BWTS is assigned the following AMS identification number:

AMS-2014-Cathelco-BWTS-01

Coast Guard acceptance of the Cathelco 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 Cathelco BWTS as an AMS indicate that the BWTS meets requirements for Coast Guard type approval.

The following conditions apply for the operation of the Cathelco AMS in U.S. waters:

1. The AMS manufacturer must comply with all the general conditions of certification stipulated in the TA certificates issued by BSH under the authority of the German government, 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. 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.
3. Operation and maintenance must be conducted in accordance with all specifications and limiting conditions stipulated on the TA 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 maximum treatment rated capacity (TRC) for the installed Cathelco BWTS model, as specified on the BSH type approval certificate. In order to avoid overheating of the system's UV lamps, the minimum ballast water flow rate specified in the BSH type approval certificate must be maintained during operation. A historical record of flow rates is available via readouts from the control panel.
- b. **Differential pressure across the filter:** This BWTS has been designed and tested for use with two different filter types - a Filtrex ACB filter and a Hydac RFCA filter. The vessel owner must specify the preferred filter type at the time of BWTS installation, as the two filter types are not interchangeable once the system is installed.
- The Filtrex ACB filter module initiates an automatic back flushing cleaning cycle when a differential pressure of 0.30 bar across the filter is detected. An alarm will alert at all control panels if high differential pressure across the ACB filter equal to or greater than 0.50 bar occurs. A Cathelco BWTS equipped with the ACB filter will go into bypass mode if this high differential pressure across the filter condition persists after a pre-determined number of back flush cleaning sequences.
 - The Hydac RFCA filter module will initiate a back flush cleaning cycle at a default setting of 0.50 bar differential pressure across the filter. If differential pressure across the RFCA filter has not dropped below 0.50 bar after the initial back flush cleaning, an intensive 10 consecutive back flush cycle cleaning process starts automatically. If this multiple back flush cycle cleaning process does not result in a decrease below 0.50 bar for the differential pressure across the RFCA filter, then alarms will trigger at the control panels and the system will automatically switch to bypass mode.

A historical record of filter pressure differentials can be obtained via readouts from the control panel.

- c. **UV intensity, transmittance, and dosage:** The Cathelco BWTS has an allowable minimum UV dose of 190 Joules/square meter (J/m^2). The UV minimum dose of $190 J/m^2$ is calibrated by the control unit based upon UV intensity measurements from a sensor within the reaction chamber; this dose corresponds to a UV light transmittance of 45% for the treated ballast water. Operation of this system in ballast water with a UV transmittance below 45% will result in a UV dose below $190 J/m^2$, which is not in accordance efficacy specifications required by the BSH type approval certificate.

The Cathelco BWTS is designed to operate at maximum UV doses in excess of $900 J/m^2$. If very low turbidity ballast water conditions allow for a UV dose level greater than $900 J/m^2$, this system has the capability to automatically lower UV intensity by lowering power input to the UV lamps. The minimum permissible power level is 60% of the maximum power input. Furthermore, when ballast water conditions are

unfavorable for UV light transmittance (e.g., high turbidity), the Cathelco BWTS can increase UV dose by decreasing the ballast water flow rate through the UV reaction chamber.

This BWTS also employs a non-chemical clean-in-place (CIP) apparatus that removes film buildup from the quartz UV lamp sleeves at the end of each ballasting or de-ballasting cycle (based upon UV intensity measurements at each lamp). The Cathelco BWTS is equipped with minimum flow rate and minimum UV dose alarms, and it is capable of automatically initiating a BWTS bypass sequence when these operating parameters fall below permissible limits. System UV dose, UV intensity, and ballast water flow rate values can be obtained via data readouts from the control panel.

- d. **Temperature:** The temperature of the water during ballast water uptake must be greater than -2 °C and less than 50 °C.

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. 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.
5. Use of the AMS is specified in the ship's ballast water management plan (BW plan), 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.
6. 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 installation, operation, maintenance, or repair requirements; and (3) an indication of whether or not the original configuration of the BWTS will be discontinued.

7. 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, 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.
8. 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.
9. 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 (AMS-2014-Cathelco-001) 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.

Subj: AMS ACCEPTANCE LETTER – CATHELCO
Rev.1

5760
September 19, 2016

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. Regina Bergner of my staff at Regina.R.Bergner@uscg.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "S.J. Kelly", with a long, sweeping horizontal stroke extending to the right.

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