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# Alfa Laval – PureBallast USCG TA Strategy Update

Following up on the initial advice to the market dated 22nd December 2015 and the decision of not accepting the Most Probable Number (MPN) test method to verify the performance of different UV technology-based ballast water treatment systems from U.S. Coast Guard (USCG) on 14th December, 2015.

As a result of this decision, Alfa Laval has been delayed by an estimated 6 to 9 months in attaining USCG TA for PureBallast 3. We are disappointed with the decision from USCG, since for technical and biological reasons we believe that this is a setback for the environment but also for our customers in making informed decisions.

**Alfa Laval will appeal the USCG decision and conduct the needed tests for approval**
As previously advised in December 2015, Alfa Laval will follow two routes to attain certification. Firstly by actively following the requirements of the CMFDA/FDA (stain) requirements and apply using a technical solution that addresses the needs for certifying the system.

Secondly to appeal the decision and continue the support in education of the MPN method which remains under review by the ETV technical panel, where an optimized and standardized system can be used in the global market. The appeal will be formally sent to USCG in the first half of February, 2016.

These actions undertaken are to support our current and future customers when making an investment decision, for them to secure compliance with both IMO and USCG regulations installing a BWMS.

**Status of Alfa Laval's CMFDA/FDA tests for USCG TA**
Our current milestone plans have been met in relation to the extensive engineering and electrical testing requirements by USCG. They include the complex and logistically challenging ship board tests which have passed the CMFDA/FDA requirements. Outstanding for completion is the revision and updating of the land based tests for CMFDA/FDA requirements.

| Verification factors | Usual Time Frame | Alfa Laval Progress |
|---|---|---|
| Electrical Tests Voltage variation | 1 to 2 months | Complete |
| Frequency variation | 1 to 2 months | Complete |
| Vibration Tests | 1 to 2 months | Complete |
| Inclination tests | 1 to 2 months | Complete |
| Temperature tests | 1 to 2 months | Complete |
| Humidity | 1 to 2 months | Complete |
| Electrical, Mechanical and Environmental test | 6 months | Complete |
| IP Ratings and Safety assessment | 2 months | Complete |
| Ship Board Biological efficacy test | 9 to 18 months | Complete |
| Land based test | 6 months | Requirement to revalidate results under Staining |

Due to the information received in December, Alfa Laval reacted with engaging in a separate round of updated testing prior to the New Year and result are with our engineering and biological teams for assessment of parameters and recalibration of the system to follow the CMFDA/FDA requirements.

Our initial tests in December were performed with cultivated and robust organisms that require a high UV dose to be inactivated at a factor of 2½ times the required inlet volume, to stress test our product prior to modelling and calibration tests in late January and February.

Our intention is to confirm the testing regime and technical claims with the USCG and independent test facility in March, prior to entering into land based certification testing based on CMFDA/FDA in the 2nd quarter of 2016.

We expect the final results from the testing over the July/August. We will then enter into the application phase for the USCGTA under the CMFDA/FDA method.

| Month | Activity |
|---|---|
| December 2015 | Initial tests for validating biological testing |
| January 2016 | Detailed testing and parameter confirmation and system calibration |
| February | Detailed plan for alignment with USCG requirements submitted to USCG |
| March | Confirmation and acceptance of plan with USCG and test facility |
| April - June | Certification tests |
| July – Aug | Reporting |

We will continue to update our customer as each event and milestone is met.

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