



## BIO-SEA/BIO-UV on the way to USCG Approval in 2018

**BIO-UV/BIO-SEA** company, with more than 15 years of experience in the UV water treatment (drinking water, waste water, industrial processes,...), masters perfectly the design of UV reactors to ensure the requested performance according to the technical environment (sea water, wastewater treatment plant...). We design and produce the UV systems directly in our factory in France, ISO 9001:2000 certified since 2010.

Many other international certifications were obtained since the company was created (NSF, ONORM, UL, IMO statutory approval, BV class approval, etc...).

For ballast water treatment, where waters have diverse and complex characteristics, it appeared necessary **to design 5 years ago a performing system compliant with the IMO and USCG Regulations**, in order to deal with a large spectrum of water quality (fresh, brackish, marine), taking into account possible low transmittance.

The UV reactor that was designed (in bronze aluminum and titanium) is corrosion-resistant and delivers high performance with only one single medium pressure UV lamp of 22kW. The high UV dose is automatically adapted, in real time, to the quality of water to be treated.

This **BIO-SEA by BIO-UV** design allows the reactors to be connected in parallel, giving a great flexibility in terms of flow rate management but also for easier integration in retrofits.

The performance of our system has already been validated through many IMO and USCG tests campaigns (MPN and/or CMFDA), undertaken during the past 4 years with various laboratories (DHI, GO CONSULT, MERC...).

These performances have also been confirmed via numerous newbuilt projects and retrofits installations, with shipowners such as CMA CGM, and commercial / service partners such as Damen Group, able to offer turnkey retrofits projects.

Regarding the specificity of the USCG type approval, thanks to the modular design of our **BIO-SEA by BIO-UV** system and its high UV dose, we can insure to shipowners and to our commercial and technical partners, that the **BIO-SEA by BIO-UV** system, as originally designed, will be compliant in EVERY type of water, in accordance with USCG's latest decisions, even in low transmittance waters (challenging waters, fresh waters...).

Therefore it is and will be possible to remain competitive while being compliant with the IMO and USCG requirements.

Given the knowledge and historical experience in the treatment of micro-organisms by UV and in performance certifications (ÖNorm, NSF, DVGW...), the MPN method accepted by the IMO sufficiently ensures the risk reduction of invasive species in the marine environment, as requires the BWM Convention. The actual issue concerns the rather limited scope of performance (water qualities, transmittance levels, QA test plan, details on certificates ...) of some of the systems approved before strengthened certification requirements.

**Shipowners and their advisors do therefore need to be very cautious on the selection of systems and the conditions of the performed tests.**

**The BIO-SEA by BIO-UV systems have been granted IMO Type Approval in 2013, and have obtained USCG acceptance as AMS.**

**Being already in line with the IMO and USCG discharge standards with MPN method after a test campaign conducted in 2015, BIO-UV undertakes in 2016 a series of complementary tests to demonstrate the compliance of the current system regardless of the methods chosen by the USCG.**

**Therefore in the next few months, our systems will continue to be used worldwide, in EVERY type of water, and even at low transmittance.**

**The BIO-SEA by BIO-UV systems remain competitive, modular, chemical-free, with no risk of coating corrosion in ballast tanks, and environmental-friendly.**

We do encourage shipowners to select and install now **BIO-SEA** systems, already IMO certified and AMS accepted. They can be assured of the reliability of their BWTS, through the stability of its design, the extent of its performance range, the compliance with regulations, while remaining an cost-effective solution...

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