

Guideline for the issue of inwater cleaning permits in the ports of Bremen

Preamble

This guideline is intended to provide guidance and define the conditions and criteria for the issue of authorisation for inwater hull cleaning in the port of Bremen.

The nationally applicable legal and technical requirements for water protection must be complied with as a rule. Inwater cleaning is classified as use of water resources pursuant to Section 9 Water Resources Act¹ [WHG] and requires a permit under water law.

— It must be noted that the cleaning of hulls with antifouling coatings containing biocide cannot be approved, and that cleaning may only be performed on abrasion-resistant, biocide-free underwater coatings.

Basic cleaning is also not permitted. The ban on basic cleaning means that a vessel which is covered with macrofouling may not be cleaned in the water and that cleaning is only permitted in the dry dock. Once this is completed, regular inwater cleaning may be scheduled and carried out at the biofilm stage within the framework of fouling management.

The official regulations in this area and clear specifications may act as incentives for coating manufacturers, shipping companies and diving companies to continue developing new systems and expand their use.

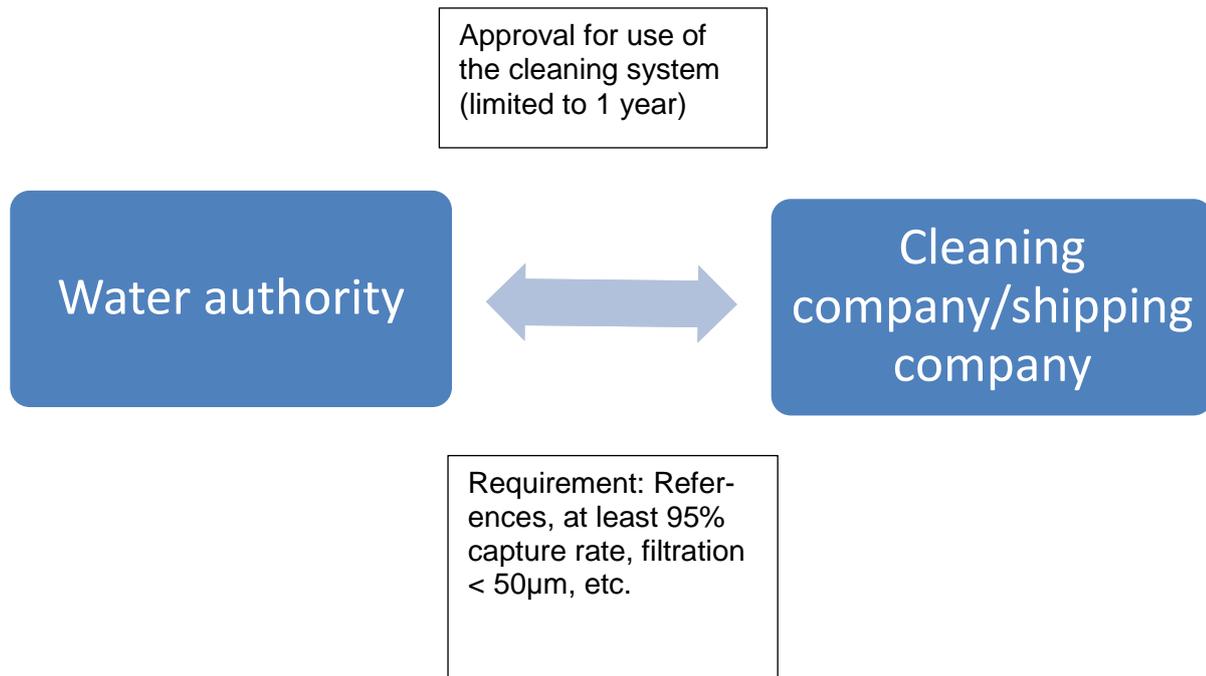
Provided that all conditions are satisfied, a permit under water resources law is issued, in which the water authority allows use of the system for inwater cleaning in principle. The permit shall contain a condition precedent for a specific cleaning operation. This means that the data describing the characteristics of the vessel unit that is scheduled for cleaning must be submitted in advance. The authority should issue approval within one week. The permit holder is required to monitor their own operations during cleaning itself.

Approvals for the cleaning system shall be limited to one year. Evaluation is scheduled once this period has elapsed. This is used by the authorities and institutions involved (water authority, port authority, nature conservation, bremenports) to evaluate and assess the track record. The subsequent procedure will then be coordinated by the parties involved.

¹ Water Resources Act of 31 July 2009 (Federal Law Gazette I p. 2585), last amended by Article 1 of the Act of 19 June 2020 (Federal Law Gazette I p. 1408)

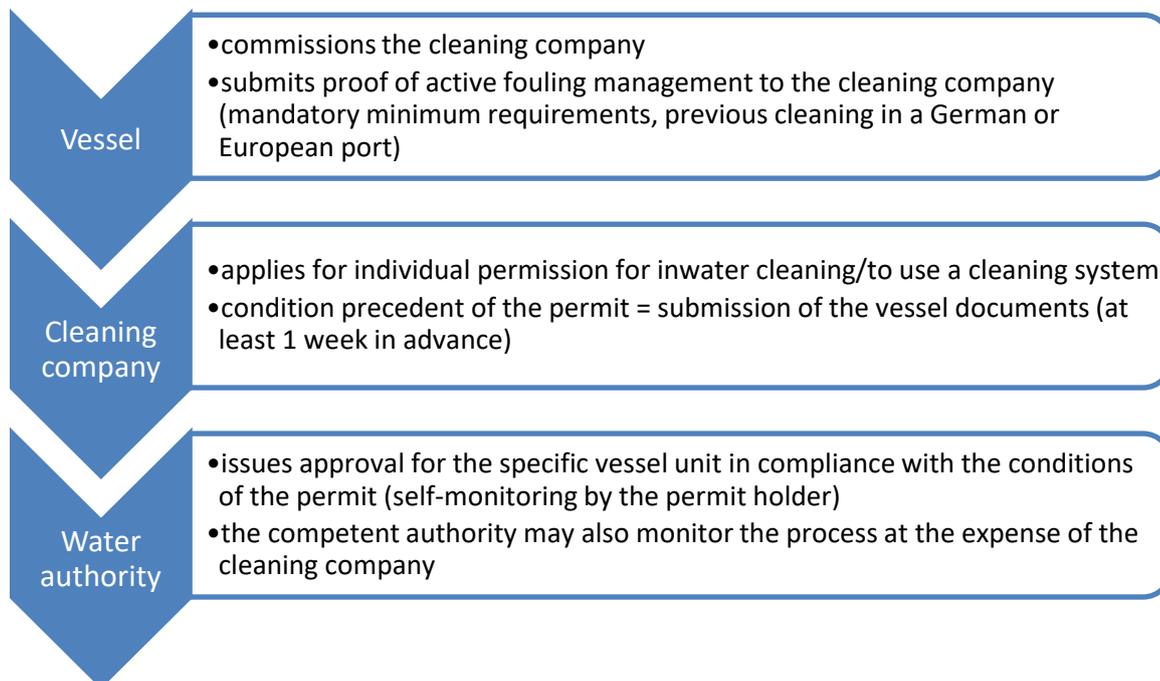
Eligibility for obtaining a permit for inwater cleaning – procedure

Permits under water resources law are applied for by the cleaning company as a rule. The cleaning company should also coordinate the applications process if regular cleaning is included within the shipping company's fouling management system.



Given that it is not possible for the water authority to approve the cleaning system (comparable to type approval according to the Ordinance on Installations for the Handling of Substances Hazardous to Water [AwSV]), permission is granted to the cleaning company to use the cleaning system to carry out an inwater cleaning. Prior to the commencement of cleaning and as a condition precedent, the water authority must be notified of the specific cleaning process used on each individual vessel so that it may issue approval after review of the vessel data.

Application for permission to use a cleaning system (UCS) with notification of the vessel unit



Where a cleaning company meets the above requirements, a permit may be granted on a case-by-case basis after review of the application documents. The first step is to conduct a thorough review of the system's effectiveness. Notification of each vessel that will be cleaned and its subsequent inspection and clearance by the water authority is included in the permit as a condition precedent.

The following requirements and conditions must be fulfilled at all times:

- *that only the previously verified technology is used in accordance with the documents as submitted and examined*
- *notification of any and all changes in the staff structure/qualification*
- *contractual commitment to a specific vessel unit (type of vessel, if applicable) that meets the above requirements and is therefore cleaned regularly*
- *appointment of a competent person on site*

Application requirements for the approval of inwater cleaning in the ports of Bremen

1. Requirements for approving use of the system

a.) Qualified company of specialists

The cleaning company shall prove its competency by providing references from at least 10 previous cleaning assignments. Moreover, proof of staff qualification (diving certificates, training, etc.) shall be provided, as well as diving licences according to EU standards.

It is at the discretion of each port to keep a list of cleaning companys using capture, filtration and separation systems that have been inspected and approved in other ports and to publish it as guidance for arriving vessels. Based on current knowledge, the list may include:

- DG Diving Finland
- TechHullClean, Spain/Germany
- FranMarine, Australia
- Nordseetaucher (only propeller cleaning to date), Germany

(additional companys are listed at <https://www.balticcomplete.com/maps>)

The above list is intended merely as guidance, as each application is decided on a case-by-case basis.

b.) Efficient capture and filtration/separation system for the removed fouling

Minimum requirements for the technical systems

The cleaning company shall submit the findings of external studies on the effectiveness of their cleaning, capture and treatment systems for different levels of fouling. The deciding factor is effectiveness at the biofilm stage, but also in areas of macrofouling occurring locally on the hull. Until now, antifouling coatings with biocides involving the electrolytic release of copper have been used almost exclusively in niche areas such as sea chests and in bow and stern thruster tunnels, etc. Experience has shown, however, that macrofouling frequently occurs nevertheless in niche areas. This means that the capture and separation methods used must be capable of treating macrofouling where it occurs. It is equally necessary to assume that the captured fouling is contaminated with pollutants and must be disposed of as hazardous waste.

The effectiveness of the technology used shall be validated by reference samples previously generated at suitable points of the vessel.

All examination findings submitted must have been produced by an independent, qualified institute/laboratory

Validation can be provided by institutions such as classification associations, regulatory authorities for the shipping sector or independent laboratories. The institution must accompany the following points in this regard:

- Capture of at least 95% of the removed fouling by means of a suction device that is effective on both flat and curved surfaces.
- Filtration or separation of the extracted water containing the fouling so that only organisms < 50 µm can pass. The same applies to the retention of coating particles.
- Once filtration/separation is complete, the returning water must be disinfected by means of a downstream UV system (by killing organisms < 50µm). The filter residues must be stored and treated in such a way that no living organisms can escape.

The following systems that already meet these requirements are, for example:

Filtration methods by DG Diving

Filtration systems by TechHull Clean

Separate filtration systems by DAMEN (pre-filtration barge)

By way of a reference, each of these companies can provide proof of function, e.g. using the BallastWise monitoring system. BallastWise is a recognised monitoring system for testing the functionality of ballast water treatment equipment. BallastWise detects and counts living heterotrophic and autotrophic microorganisms in two size ranges: 10–50 µm and >50 µm, using high-resolution cameras, LEDs and image analysis algorithms.

Once analysis is complete, a single-page document is generated automatically detailing the number of detected organisms, which facilitates the issue of an official report. The report ascertains whether the number of organisms is within the limits specified in the IMO Ballast Water Management Convention and by the US Coast Guard.

The system is recognised by the Federal Maritime and Hydrographic Agency [BSH] as a German authority and is already in use (references from GL/DNV or LLoyd). DAMEN has references from the Ministry of Transport in the Netherlands, while others have them, for instance in Denmark, from DHI).

If certification can be provided in accordance with the Ballast Water Performance Standard, it should also refer to the modification for the capture of fouling after cleaning. Cleaning companys that only possess effective capture and extraction technology can apply for cooperation with mobile or stationary treatment facilities/companies that are able to treat the captured fouling in barges or single-hull tankers at suitable locations in the port and send it for disposal. Ballast water treatment facilities (BWT) or treatment facilities owned by the shipyard that are designed to process large quantities of water are particularly suitable for this purpose. The authorisation circumstances (approval of the wastewater treatment facilities as disposal facilities) must be taken into consideration in this regard. National certification is not required if the facilities are certified and listed with the IMO, but the conditions described here to obtain permission for its use in cooperation with a cleaning company do apply. The systems that are certified at this time – both with and without active substances – can be accessed at:

<https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Ta-ble%20of%20BA%20FA%20TA%20updated%20January%202020.pdf>

The requirements defined in the approval procedure for ballast water treatment systems can be accessed for intended cooperations between cleaning companys and BWT companies at:

https://www.bsh.de/DE/THEMEN/Schifffahrt/Umwelt_und_Schifffahrt/Ballastwasser/Zulas-sungsverfahren/Anlagen/Downloads/BWMS_Code-dt.pdf?_blob=publicationFile&v=4

BWT systems shall be selected as a matter of preference that do not use biocides/active substances and release them into the wastewater. For cleaning companies that do not have

their own separation technology, some ballast water treatment companies offer compact versions comprising a mobile treatment system with pre-filtration mounted on a special barge (pre-filtration barge). These systems also do not require additional certification, but they must have been approved under water resources law at the ports in which they are used.

In some cases, cooperations may also be accepted in which the cleaning company captures the cleaned fouling and feeds it without loss through the sea chests and into the on-board ballast water treatment system – on condition that disinfection is performed by means of UV radiation.

Once the submitted documents concerning the system have been checked, the water authority grants permission for use of the system, subject to fulfilment of requirements and conditions.

2. Condition precedent – individual permission for the vessel unit within the framework of the permit

The cleaning company must notify the water authority of the intended cleaning operation at least 1 week prior to the vessel that requires cleaning entering the port.

Biocide-free hard coating and pre-cleaning are defined as basic requirements.

Appropriate validations must be submitted to the water authority via the applicant:

Vessel data concerning the fouling management strategy can be submitted to the approving authority by the shipping company or the cleaning company. The following report templates are accepted in this regard:

- *IMO Biofouling Management Plan and Biofouling Record Book*
- *Marine Invasive Species Program Annual Vessel Reporting Form (AVRF) submission requirements (MISP.IO),*
- *Australia Vessel Check*
- *New Zealand Vessel Check*
- *Best Fouling Management Practice Guide, Baltic Sea*
- *DHI Vessel Check*
- *The vessel/shipping company's specific fouling management system*
- *Requirements according to the BIMCO standard*

The above templates provide sufficient preliminary information to assess whether integrated fouling management is maintained for the vessel and whether the hull and niche areas are cleaned regularly. Regular vessel cleaning is a basic condition for issue of a permit to conduct UWC in the ports of Bremen/Bremerhaven.

All of the above fouling management templates must be submitted to the water authority by the cleaning company with the following contents as core information at least 1 prior to entry:

(The individual ports specify the precise form for electronic transmission. Entry of the relevant data in the SIS system is a conceivable method.)

- *Vessel type (design, hull specifics, niche areas)*
- *Underwater coatings on the hull and niche areas stating all layers, especially if a sealer has been applied to antifouling products containing biocides and this coating has not been removed.*

At present, both corrosion protection coatings and special, cleanable hard coatings are used for the regular cleaning of hulls (refer to the overview:

<http://www.limnomar.de/index.php?&modul=gruppe&grp=2&pid=47>

For example, the following are applied in practice beneath these coatings: Cleanable hard coatings (CHC) and biocide-free foul release coatings (FRC), but also epoxy-based corrosion protection coatings.

- *In view of the fact that there are currently no reliable and effective marine growth protection systems (MGPS) for niche areas available on the market, biocidal coatings or biocidal processes must be used in niche areas until further notice. The measures applied for protecting the niche areas from fouling must be stated*
- *Operating profile, service speed*
- *Waters navigated in the last 12 months, ports visited, time at sea, time at anchor, duration of stay per port*

- *Cleaning history for the last 12 months, with submission of documentation for the last 3 cleaning operations (fouling status before and after cleaning)*
- *Where no documentation is available, video documentation of the fouling status or the absence of fouling on the hull from a sea area with good visibility situated not further away from the port of call than 50 nautical miles, as the North Sea ports do not provide visibility that is adequate to satisfy the documentation quality requirements.*

Once the vessel data has been reviewed, the water authority grants approval for the vessel requiring cleaning. (Processing time 1 week)

3. Monitoring

The permit holder shall be required to monitor operations on its own responsibility and ensure compliance with the conditions. Of pertinence in this regard is the interaction between the cleaning system and the vessel type, as well as the location of cleaning. In this regard, the effectiveness and good working order of the extraction and separation equipment must be monitored on site during each cleaning operation.

Monitoring requirements

- All tests must be carried out by an independent qualified institute/laboratory that is commissioned by the permit holder within the framework of its self-monitoring duties.
- The competent authority shall carry out its own monitoring at the expense of the company if the occasion arises.
- The filtration/separation technology shall be able to filter out the captured fouling up to a spherical particle size of 50 µm. In view of the fact that this will also detect any abrasion of polymer particles from the underwater coating, it is necessary to ensure during the cleaning process that 3 samples are collected from the wastewater flow at the beginning, in the middle and at the end of the cleaning process, which can then be analysed for organisms and paint particles < 50 µm. Modern methods for microplastic determination, BallastWise and/or microscopic examinations must be used for this purpose. Random PCR tests shall be used to determine the taxonomy.
- 20 l of wastewater shall be collected in a canister from each filtration/separation unit at the beginning, during and before completion of the cleaning and then poured over a plankton net with a mesh size of 50 µm. The water in the net cup shall be examined microscopically or with BallastWise to determine the number, survival rate and size of aquatic organisms. Moreover, the quantity of organic and non-organic particles and paint particles shall be estimated and their average size measured.
- At the same time, samples of the port water at the ship and samples of the wastewater shall be taken at the beginning, during and before completion of the cleaning to estimate the effectiveness of the capture and separation technology and the TOC content, and the dry weight of the filterable substances shall be determined. The TOC content and the filtered substances (filtrate) obtained from the port water may only exhibit up to 10% deviation.
- The wastewater samples must also be analysed for copper and/or TBT content if a unit is cleaned that has a sealer under the biocide-free top coat with antifouling coatings that contain copper or even TBT.

- It is mandatory that cleaning be immediately interrupted in the event that the capture and/or separation system malfunctions. Cleaning shall not continue until this malfunction has been rectified.
- Methods such as, e.g.: BallastWise (www.microwise.eu) shall also be accepted to conduct random checks on the good working order of the capture and separation system.