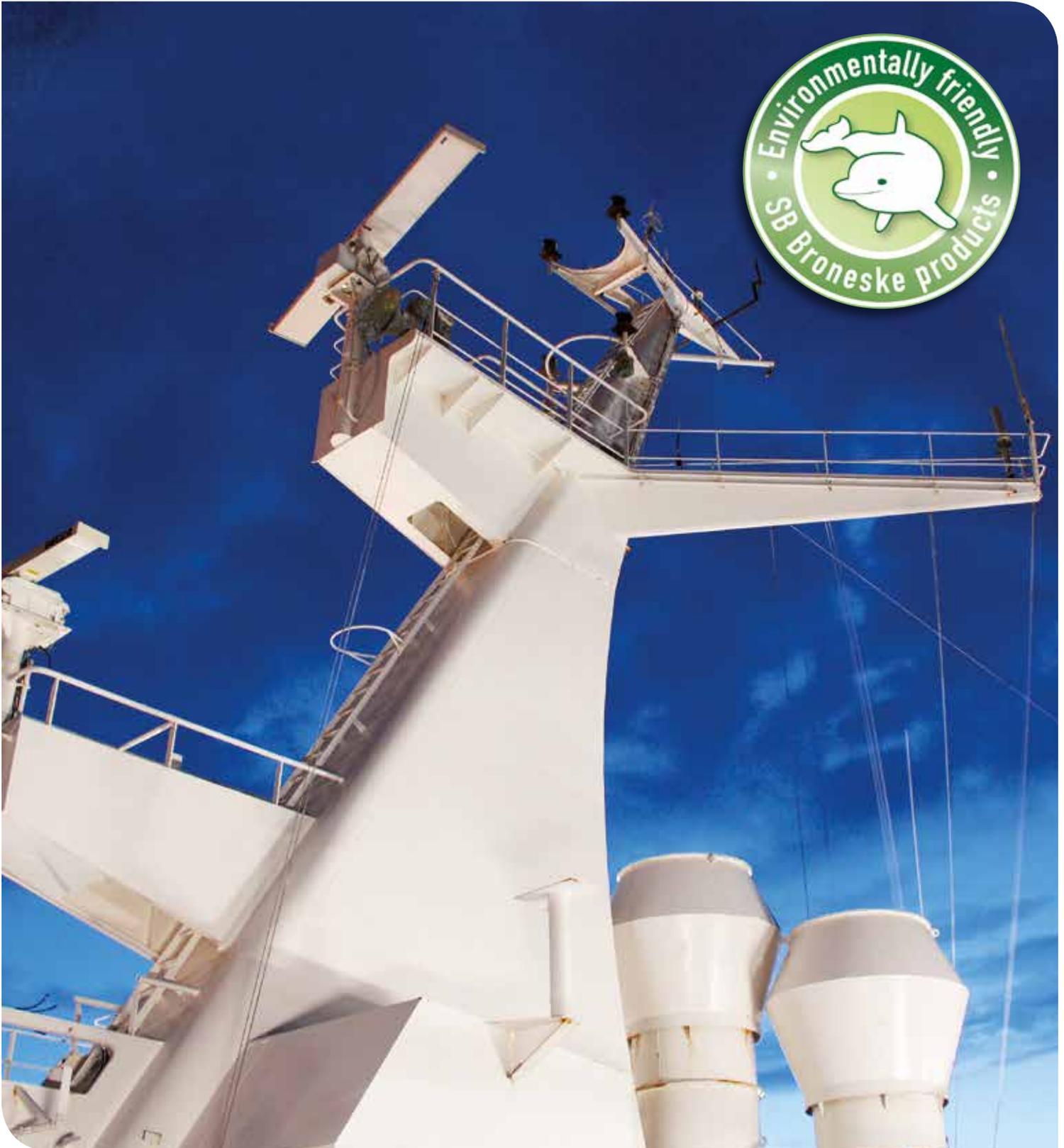


ELASTIC SUPPORT – MADE IN GERMANY

Reinstallation Service for Maritime Industry



2 Company Profile



INVENTOR

Welcome to Schwingungstechnik-Broneske GmbH

In 1972, our company's founder, Erwin Broneske, introduced a revolutionary elastic support system to the German shipbuilding industry. His idea was to isolate diesel engines from the hull structure by way of applying the first modern vibration mounts for the maritime industry. During more than 40 years of existence, this idea has come a long way and today SB Broneske is an integral part of the worldwide shipbuilding industry.

The idea of taming vibrations and reducing noise levels on board of vessels and contributing to their undisturbed operation is still the heartbeat of SB Broneske and the elastic support of the exhaust pipe system remains our main focus. We consider ourselves as elastic supports specialists and our scope and experience ranges from the support of on-board machinery to different on-shore applications such as power plants and wind turbines.

We produce all of our state-of-the-art physical products in our local factory in Quickborn near Hamburg, Germany. This enables us to always meet our own as well as our customer's high quality demands. However, our business is not solely based on the unmatched quality of our equipment, it equally depends on our vast expertise in this field which we pass on to our clients in every single project by way of free engineering services. We thus aim to accompany every project as closely as possible from as early as the design of the exhaust system to the final installation of our equipment.

Please read the following pages to find out how you and your shipbuilding projects can benefit from SB Broneske.

Retrofit of Exhaust Pipe Systems

Current situation

The emission caused by shipping is increasingly becoming more of a burden on the environment – especially for coastal regions. For this reason, the International Maritime Organization (IMO) already signed an international agreement for marine protection named MARPOL (from marine pollution) in 1973. This contract had been complemented in 1978. A step-by-step reduction of the emissions' appointments is regulated in the Annex VI (MARPOL 73/78).

Furthermore the IMO specifies the so-called Emission Control Areas (ECA) for which very tight emission limits were applied. The Emission Control Areas (ECA) are areas where

noxious substances are especially defective for humans and the environment.

According to the agreement with effect from 1st January 2015, only 0.1 % sulfur is allowed to be present in the fuel when willing to navigate through such an ECA. This value is 90% less than the present maximum permissible value. At the moment the achievement of this value is only possible with distillates, but they are too expensive. However, upgrading of emission control systems represents a commercially sustainable solution. This upgrading of vessels with such systems is also called "Retrofit".



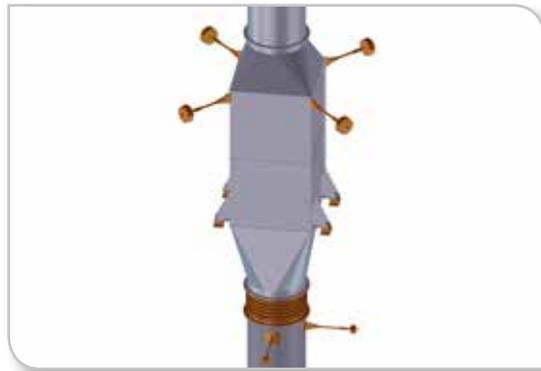
■ Emission Control Areas

Sustainable solutions

Besides the numerous internal engine measures to reduce the emissions, the trend is towards external engine measures. The so-called exhaust after-treatment systems are one of the most important groups of the external engine measures. The following systems have been established in shipping:

- Diesel oxidation catalyst (DOC) is used to reduce particles, carbon monoxide and hydrogen
- Selective catalytic reduction (SCR) mainly reduces nitrogen oxides by a selective chemical reaction
- Particulate filter (PF) are used to reduce soot particles arising during the combustion

- Flue-gas scrubbing is a complex but effective method which mainly is used for desulfurization and denitrification of the exhaust gas
- Electrostatic precipitator (ESP) is a system for removing particles by using the force of an induced electrostatic charge



How SB Broneske can support you

Retrofit measures are often costly and time-consuming for ship owners. Therefore the profitability of retrofitting does highly depend on the longevity of the system. The application of SB Broneske elastic supports reduces the vibrations and thus not only the structure borne noise, but significantly contributes to a longer lifetime of the system.

During more than 40 years of existence, SB Broneske has already gained enormous experience in the field of retrofitting and reconstruction of exhaust systems. Many standard products of SB Broneske have been specifically developed for retrofit measures and modified accordingly.

Our specially developed vibration mounts for heavy loads are able to bear up to 25 tons per vibration mount, so even larger systems such as dry- or wet-scrubbers can be supported effortlessly.

In addition to the elastic support SB Broneske also provides fixed and flexible deck or bulkhead penetrations, rain caps and stainless steel or rubber expansion bellows for the exhaust pipe system. Whether Stainless steel, Incoloy, Molybdenum, Duplex or other alloy materials, the products can be customized according to the customers' requirements.



Fix Points for heavy loads

You can also benefit from the individual and free quotations as well as from the technical advices from our experienced engineers. SB Broneske uses its immense experience and know-how in the field of elastic support to guide its customers through a range of free services enabling us to follow any project from as early as the preliminary design of the system to the installation.



Anchorage Points for heavy loads

We invite you to meet our free of charge services such as layout proposal, vibration analysis, design office check list, labelling system, installation instructions and customization. Now SB Broneske also offers detailed installation drawings for the exhaust pipe system and its elastic support components. This is an additional service and will be offered for a fixed price per item.



Please scan the qr-code and order our new company brochure to meet new SB Broneske services and products.



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