



## WHO IS “DVZ” ...

for over 40 years, “DVZ” is a synonym for tailor made, sustainable and holistic solutions for waste water treatment in the maritime sector.

More than **10,000** of our systems “**MADE IN GERMANY**” are in reliable service on board a wide variety of ships, thus making their contribution to preserving the ecological balance of the seas and oceans.

Innovative key technologies such as the highly efficient bioreactor DVZ-JZR (Jet-Zone-Reactor) and the unique membrane units of the DVZ-BMSU (Biomass Separation Unit) raise our systems to a new level for waste water treatment on board.

We offer turn key systems that are tailored to the needs of our customers. Thanks to a highly compact and modular design (process stages can be divided), our systems find their place in the engine room even in cramped conditions.

We are equally at home in the new-building sector as we are in replacing or partially supplementing existing systems (refitting).

- founded in 1981
- family owned
- two locations near Bremen, Germany
- experienced team of 50 people
- certified according to ISO 9001:2015 and ISO 45001:2018

### OUR CORE MARKETS:

- Super and Mega Yachts
- Navy Vessels
- Special and Support Ships
- Ferries, RoPax and Multi-purpose Vessels
- Offshore Platforms and OSV

## “MARINE PROTECTION IS CLIMATE PROTECTION” ...

a statement that we can endorse and from which we can derive our ambitions to contribute to this. It is essential to keep our marine ecosystem in balance.

Our ambitions here are quite simply defined: to offer innovative solutions and systems that reliably and safely perform their service. We extend this by defining our claim to not only meet the existing regulations for the discharge of treated ship sewage, but to continuously undercut them in their limit values.

### OUR PRODUCT RANGE:

- Biological Sewage Treatment Plants
- Oily Water Separators
- Buffer and Collecting Tanks
- Black and Grey Water Management
- Fat Traps
- Oil in Water Monitoring
- Lifting Units and Pump Stations
- Vacuum Systems
- Pumps and Macerators
- After Sales & Services
- “Tailor Made” Engineering





## THE JET-ZONE-REACTOR “DVZ-JZR”

The highly efficient bioreactor **DVZ-JZR** (Jet-Zone-Reactor) represents an innovative aeration technology for sewage treatment and operates according to the injector principle.

Due to the high throughput performance and the very compact construction of the reactor this treatment technology has very low space requirements. Up to 75 % of the space requirements of a conventional sewage treatment plant can be saved by using the DVZ-JZR technology.

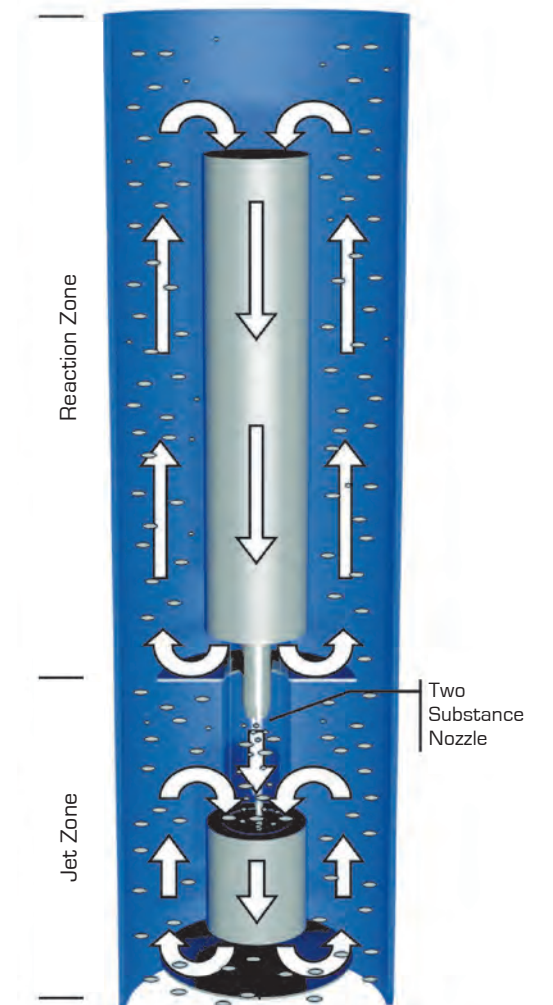
Its special construction without moving parts ensures zero maintenance and high operational safety.

The reactor is divided into two parts: the jet zone and the reaction zone, which also determines the dwell time.

The sewage to be treated is introduced together with activated sludge via a special two-substance nozzle system with integrated aeration into the lower part of the jet zone. The bacteria contained in the waste water and the biological sewage substrate are intensively mixed with very fine air bubbles.

The multiple deflection of the medium creates a loop flow in the jet zone, resulting in optimal loading of the biomass with substrates. Part of the three-substance mixture flows from a baffle plate into the upper reactor zone (reaction zone), where the bacteria form larger floc agglomerates and react until they are exhausted.

- Optimised aeration performance per kWh, even with heavily polluted waste water
- Extremely small space requirement
- Maintenance-free and high operational safety due to special design without moving parts
- Immensely high volume-related material transfer
- Not susceptible to highly variable loadings in the waste water





## THE BIOMASS SEPARATION UNIT “DVZ-BMSU”

The membranes of the Biomass Separation Unit “DVZ-BMSU”, which are made of a special titanium alloy, can rightly be described as almost indestructible. Due to its 100 % stainless steel construction and the deliberate avoidance of materials such as plastics and ceramics, this unique membrane technology is insensitive to high pressures and temperatures, as well as critical pH ranges. A key feature that also makes the modules of the “DVZ-BMSU” unique is “CIP” (Clean-in-Place). Here, the modules are individually decoupled from the treatment process and run through a cleaning process. During this, the sewage treatment plant remains in operation (min. two membranes).

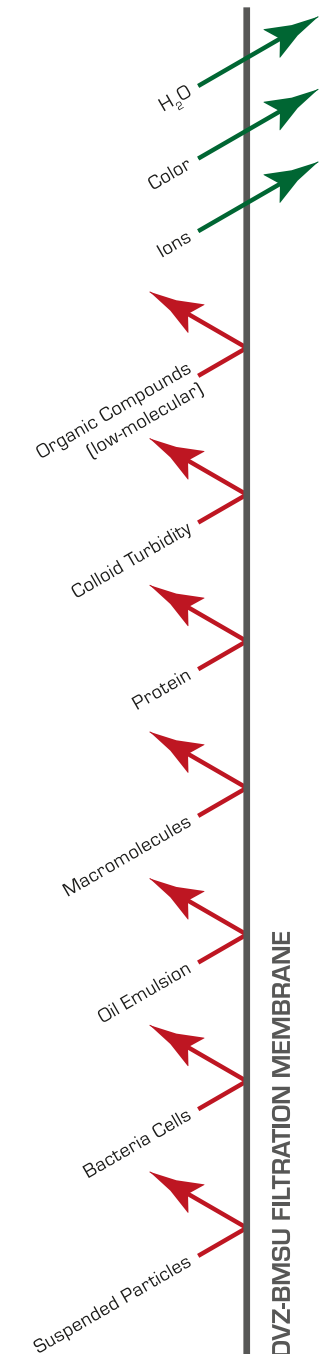
The membrane modules are arranged outside the reactor chamber or tanks so that they are always easily accessible, easy to maintain and can be quickly replaced in exceptional cases thanks to a special quick coupling system. It is never necessary to open the treatment plant, as it is the case with submerged membranes, for example.

Due to the possibility of returning the membrane modules to “new delivered condition” through this cleaning process, an extremely long service life is realised (>20 years achievable) and the necessity of continuously changing the membranes is eliminated.

By using the “DVZ-BMSU”, which operates on the basis of the cross-flow principle, we achieve a continuous permeate quality where we consciously speak of clear water instead of “just” clean water!

The addition of disinfectants for final treatment, such as chlorine and even UV treatment, is not necessary in any case.

“DVZ-BMSU” units can also supplement existing waste water treatment plants as an additional process stage or installed downstream.





## DVZ-JZR “BIOMASTER”®

### BIOLOGICAL SEWAGE TREATMENT PLANT

Modern, innovative, highly efficient and reliable sewage treatment... this is what our DVZ-JZR “BIOMASTER”® combines in one high level system.

The interaction of our key technologies DVZ-JZR (Jet-Zone-Reactor) and DVZ-BMSU (Biomass Separation Unit) forms the unique sewage treatment system DVZ-JZR “BIOMASTER”®, which sets new benchmarks in sewage treatment.

A wide range of options tailored to the sewage treatment system, such as a fully automatic pre-filter unit or an anti-foam solution, result in a holistic solution.

The high flexibility and the modular design allow the system to be optimally adapted to customer specifications and the conditions in the engine room.

Process stages and other components can be divided to the extent that final assembly in the engine room is possible, eliminating the need to open the hull to replace the treatment plant.

This also makes it possible to (re)equip existing tanks with the DVZ-JZR (Jet-Zone-Reactor) and thus convert them into the first process stage.

“I found the DVZ-JZR to be the best Sewage Treatment Plant which I have operated and would not hesitate to recommend it as the preferred unit on board any [...] luxury yacht.”

[Citation: Chief Engineer, Luxury Yacht]





## DVZ-JZR "BIOMASTER"®

### BIOLOGICAL SEWAGE TREATMENT PLANT

#### THE KEY FEATURES:

- Type Approval in accordance with IMO Resolution MEPC.159 (55), IMO Resolution MEPC.227 (64) incl. clause 4.2 (P and N removal) and MARPOL Annex IV
- Fulfills the stringent requirements for Great Lakes, Alaska and Special Areas
- Highly flexible and scalable. Process steps and system components can be divided and assembled separately
- Highly efficient Jet-Zone-Reactor DVZ-JZR with immense Biomass concentration tolerance, defined retention time and high purification effect
- Biomass Separation Unit DVZ-BMSU with the unique and indestructible Stainless Steel Membranes; mounted outside for easiest cleaning, changing and maintenance without system opening (min. two membranes)
- Ultra Compact Stainless Steel Design with smallest possible footprint (up to 75 % space saving compared to conventional ship sewage treatment plants)
- No chemicals for treatment or disinfection necessary
- Neither internal moving parts, nor sensitive against shock, vibration and movement

"The DVZ units are the best performing Marine Sewage Systems in our fleet and will be our first choice for any additional refits in the future."

[Citation: Director Marine Projects]





## DVZ-SKA "BIOMASTER"<sup>®</sup>-PLUS

### BIOLOGICAL SEWAGE TREATMENT PLANT

With the Biomass Separation Unit DVZ-BMSU in combination with an optimised fixed-bed reactor, the DVZ-SKA "BIOMASTER"<sup>®</sup>-PLUS is the solution for commercial vessels of all kinds.

A proven and reliable solution for clear water, with high user-friendliness and operational safety.

#### THE KEY FEATURES:

- Type Approval in accordance with IMO Resolution MEPC.159 (55), IMO Resolution MEPC.227 (64) and MARPOL Annex IV
- Fulfills also the stringent Great Lakes and Alaska requirements
- Biomass Separation Unit DVZ-BMSU with the unique and indestructible Stainless Steel Membranes; mounted outside for easiest cleaning, changing and maintenance without system opening (min. two membranes)
- No chemicals, secondary treatment or disinfection necessary
- Well-known DVZ Stainless Steel Design
- Neither internal moving parts, nor sensitive against shock, vibration and movement





## DVZ-EPS "BIOMASTER"<sup>®</sup>-ECON

### BIOLOGICAL SEWAGE TREATMENT PLANT

Essential but reliable sewage treatment, optionally with chlorination/dechlorination or UV disinfection as the final process stage.

The basic solution, naturally in the well-known DVZ Stainless Steel Design.

#### THE KEY FEATURES:

- Type Approval in accordance with IMO Resolution MEPC.227 (64) and MARPOL Annex IV
- Optimized Multi-Step Process
- Chlorination/dechlorination and/or UV disinfection as final process stage
- Well-known DVZ Stainless Steel Design
- Neither internal moving parts, nor sensitive against shock, vibration and movement





## DVZ-JZR “BIOMASTER”®-CRF

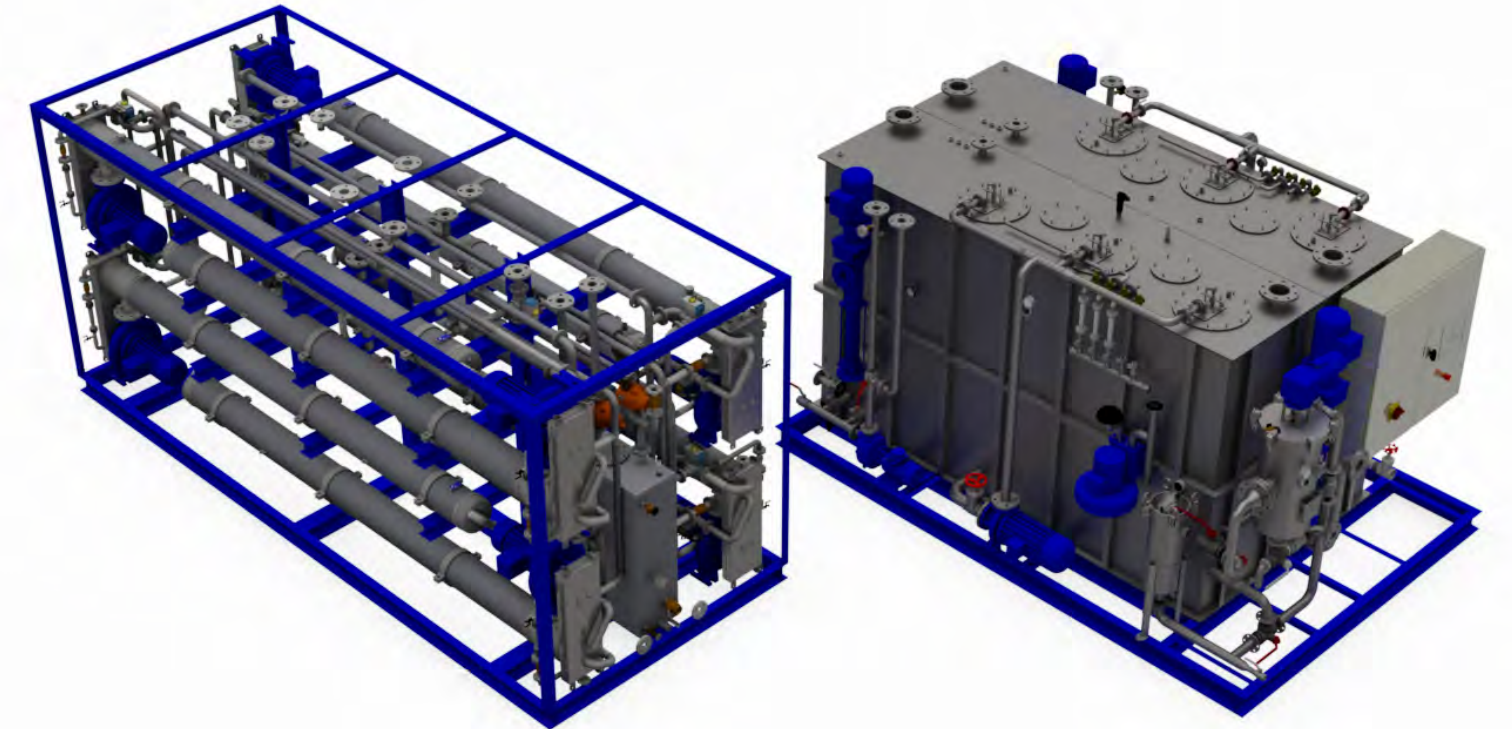
### CUSTOMIZED SEWAGE TREATMENT SYSTEM FOR HIGHER PASSENGER NUMBERS

Scalable, divisible and customisable like no other, the DVZ-JZR “BIOMASTER”® system is also the perfect solution for higher passenger numbers such as on (smaller) cruise ships, RoPax and ferries.

Due to the variable number of Jet-Zone-Reactors DVZ-JZR and Biomass Separation Units DVZ-BMSU, the system can easily be adapted to the requirements on board. Because of the divisibility of the biological reactor stage and the membrane units, the DVZ-JZR “BIOMASTER”® also adapts to the available space in the ship's hull in this application.

#### THE KEY FEATURES:

- Type Approval in accordance with IMO Resolution MEPC.159 (55), IMO Resolution MEPC.227 (64) incl. clause 4.2 (P and N removal) and MARPOL Annex IV
- Fulfills the stringent requirements for Great Lakes, Alaska and Special Areas
- Highly flexible and scalable. Process steps and system components can be divided and assembled separately
- Highly efficient Jet-Zone-Reactor DVZ-JZR with immense Biomass concentration tolerance, defined retention time and high purification effect
- Biomass Separation Unit DVZ-BMSU with the unique and indestructible Stainless Steel Membranes; mounted outside for easiest cleaning, changing and maintenance without system opening (min. two membranes)
- Ultra Compact Stainless Steel Design with smallest possible footprint (up to 75 % space saving compared to conventional ship sewage treatment plants)
- No chemicals for treatment or disinfection necessary
- Neither internal moving parts, nor sensitive against shock, vibration and movement





## DVZ-JZR "BIOMASTER"<sup>®</sup>-OFFSHORE

### FULLY SHELTERED BIOLOGICAL SEWAGE TREATMENT PLANT WITH BUFFER TANK

In close cooperation with our customers, we realise turnkey sewage treatment systems for offshore platforms for the oil and gas production.

Based on our proven waste water treatment technologies, we develop and design holistic solutions along the highest requirements for material, processing, documentation and offshore standards.

We supply systems for new construction as well as for conversion or retrofitting of existing sewage treatment plants and its peripherals.





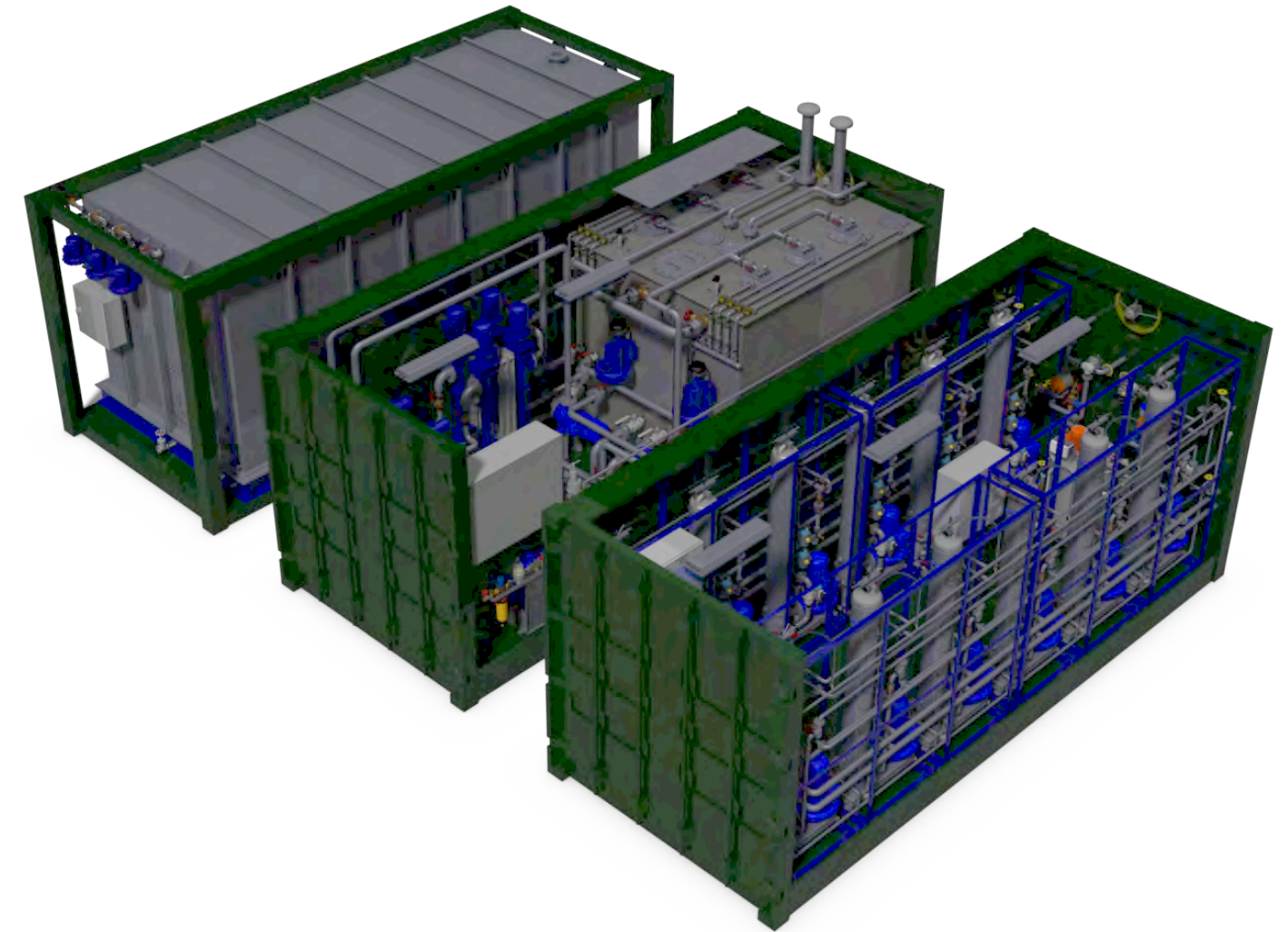
## DVZ-JZR "BIOMASTER"<sup>®</sup>-MCS

### MODULAR CONTAINER SEWAGE TREATMENT PLANT

Worker camps, disaster areas, military camps, events and touristic areas, refugee camps, port facilities, oil and mining camps, industrial waste water, relief or upgrading of existing sewage treatment plants, (small) municipalities ... reliable Sewage Treatment Technology wherever it is needed!

The DVZ-JZR "BIOMASTER"<sup>®</sup>-MCS is the combination of the highly efficient Jet-Zone-Reactor DVZ-JZR and the unique Biomass Separation Unit DVZ-BMSU, packaged as a modular and scalable system in ISO sea containers; turnkey and ready to connect/use.

A waste water treatment solution that ensures clear water even in harsh environments. Optional downstream process steps allow treatment up to the status of "Potable Water".





## DVZ-FSU "OILCHIEF"®

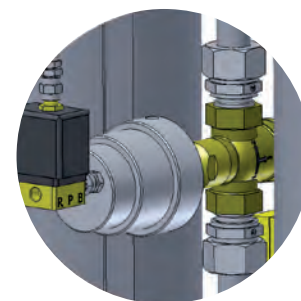
### OILY WATER SEPARATOR

Reliable and proven oil-water separation for the treatment of oily bilge water has been firmly associated with the DVZ brand since its foundation.

For this purpose, our systems are continuously adapted to the requirements and supplemented with optional functions and modules.

#### THE KEY FEATURES:

- Type Approval in accordance with IMO Resolution MEPC.107 (49)
- In compliance with LDNV TAP 771.60, Clean Design
- Optional with type approved FSU® By-pass Function
- Capacity from 150 l/h up to 10.000 l/h
- Jet-wash oil drainage
- Compact design and easy installation
- Pump can optionally be used as separate transfer pump
- Also available in DVZ Stainless Steel Design



▲ OPTIONAL TYPE APPROVED  
3-WAY BYPASS-VALVE





## DVZ-FT

### FAT TRAP

Grease and oil from the galley shall not lead into a sewage treatment plant as they have a negative impact on the treatment process and can lead to clogging.

DVZ-FT Fat Traps ensure reliable separation of fats and oils and are available in various sizes.

#### THE KEY FEATURES:

- Easy installation
- Compact design
- Serval types and capacities
- Heating device (optional)
- Galvanized or Stainless Steel
- Also available with Automatic Grease Discharge (page 39)





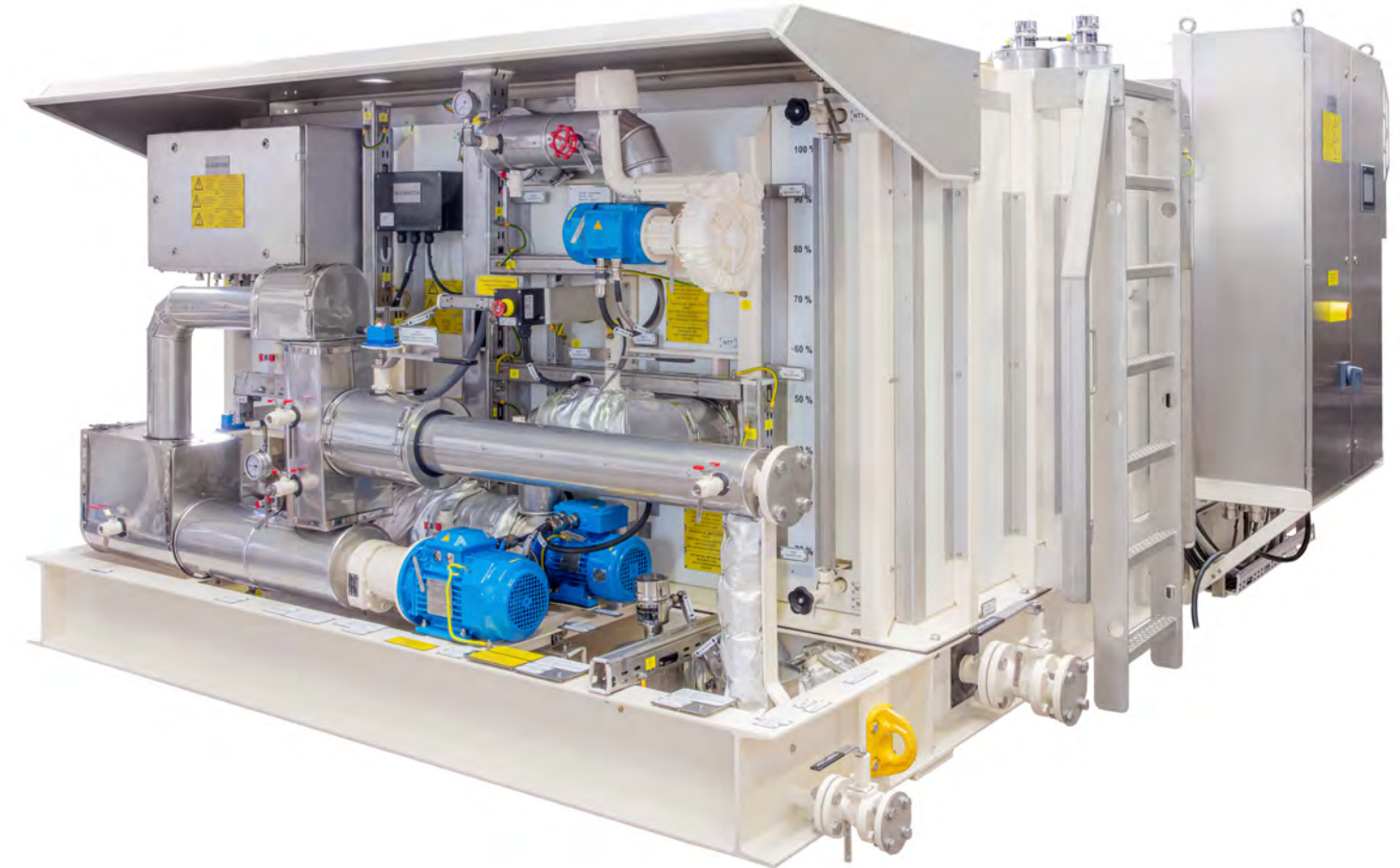
## DVZ-SCT

### SEWAGE COLLECTING AND HOLDING TANKS

Our understanding of holistic solutions naturally does not stop at the connection points of our waste water treatment systems.

Of course, we also develop and manufacture collecting and holding tanks in a wide variety of sizes and designs.

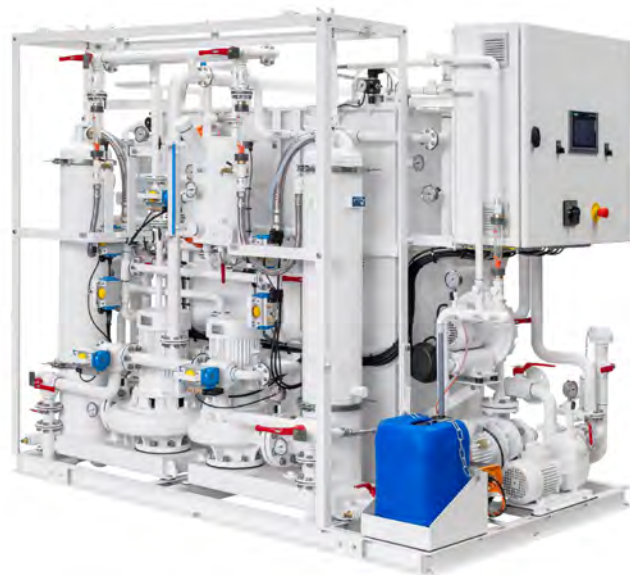
Like our systems, the tanks are tailored to the customer's requirements, so we always supply "complete units", including macerators, pumps, control cabinets and the corresponding control connections.



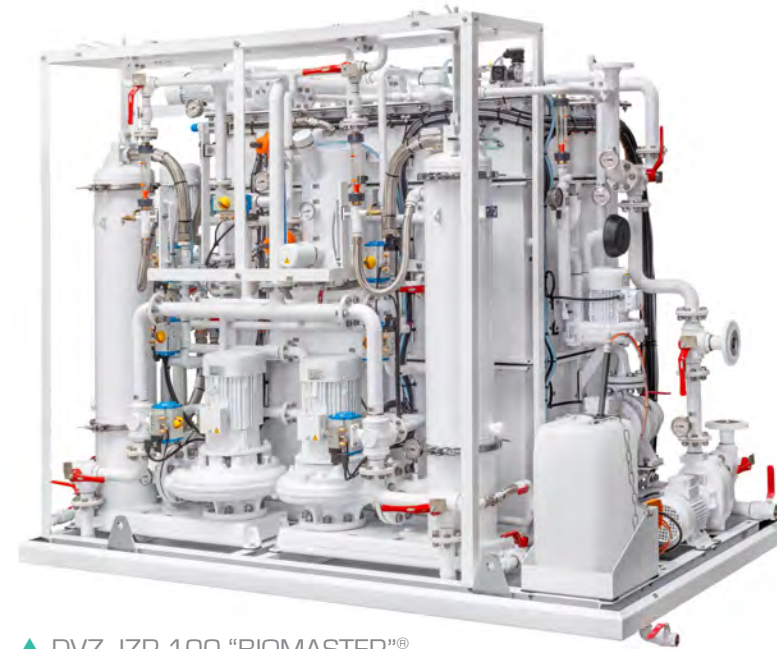


# THE PERFECT SOLUTIONS FOR LUXURY YACHTS

We have applied the exclusive demands of luxury yachts to our systems: materials, efficiency, maintenance, reliability, high gloss finish ... top level and the most innovative technology down to the last corner of the engine room!



◀ DVZ-JZR 100 "BIOMASTER"®



▲ DVZ-JZR 100 "BIOMASTER"®



▲ DVZ-JZR 10 "BIOMASTER"®



▶ DVZ-JZR 50 "BIOMASTER"® WITH DVZ-SCT 3000 AND VACUUM UNIT



▶ DVZ-JZR 100 "BIOMASTER"®



## THE PERFECT SOLUTIONS FOR REFITTING

Whether as a replacement for an outdated system, as an addition to an existing plant or to bring the sewage treatment on board up to the latest technical and efficient standard ... DVZ systems fit to almost all conditions due to their high flexibility and are therefore the **perfect solution for refitting**.



◀ DVZ-JZR 50 "BIOMASTER"<sup>®</sup>  
ULTRA COMPACT VERSION

▶ DVZ-JZR 100 "BIOMASTER"<sup>®</sup>  
TAILORES TO THE SHAPE OF THE HULL



▲ DVZ-JZR 150 "BIOMASTER"<sup>®</sup>  
AS A "CORNER SOLUTION"



▲ DVZ-JZR 150 "BIOMASTER"<sup>®</sup>  
TAILORED FOR VERY SMALL  
AND NARROW SPACE IN  
THE ENGINE ROOM



▲ DVZ-JZR 150 "BIOMASTER"<sup>®</sup>  
WITH INDIVIDUALLY ARRANGED  
PROCESS STAGES



▶ BIOMASS SEPARATION UNIT  
DVZ-BMSU FOR IMPROVEMENT  
OF OLDER SEWAGE TREAT-  
MENT PLANTS



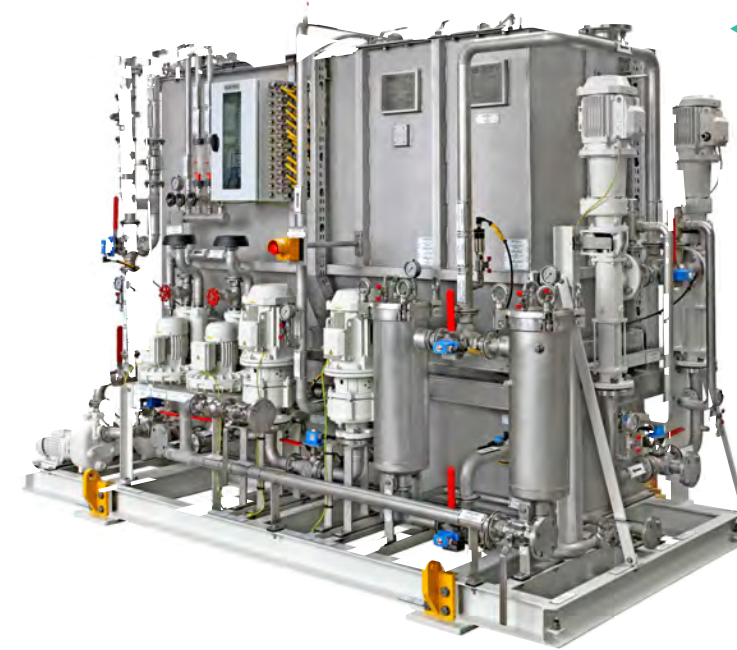
# OFFSHORE SOLUTIONS

Highest demands on material, processing, documentation and different offshore standards. We also have extensive experience and references in the offshore sector.

DVZ systems are in reliable use on several offshore platforms worldwide.



▲ DVZ-JZR 300 "BIOMASTER"®-OFFSHORE



◀ DVZ-JZR 200 "BIOMASTER"®-OFFSHORE (JET-ZONE-REACTOR)



◀ DVZ-JZR 300 "BIOMASTER"®-OFFSHORE



▲ DVZ-JZR 200 "BIOMASTER"®-OFFSHORE (BMSU)



# DVZ COMMERCIAL VESSEL SOLUTIONS

DVZ systems are in service on board of all types of commercial vessels and are renowned for their reliability and performance. Here, too, we have the perfect solution for every requirement in our portfolio.



▲ DVZ-JZR 400 "BIOMASTER"®



▲ DVZ-SKA 30 "BIOMASTER"®-PLUS

▼ DVZ-JZR 150 "BIOMASTER"®



▼ DVZ-SKA 150 "BIOMASTER"®-PLUS



▼ DVZ-JZR 50 "BIOMASTER"®





# CUSTOMIZED TO NAVY REQUIREMENTS

Every Navy has its own requirements; also for waste water treatment systems. Amagnetic, shock resistance, special coatings ... DVZ systems adapt to customer requirements.



▼ DVZ-JZR 400 "BIOMASTER"®



▲ DVZ-FSU 2500 "OILCHIEF"®



◀ DVZ-JZR 100 "BIOMASTER"® WITH SPLIT PROCESS STEPS



▶ DVZ-JZR 500 "BIOMASTER"® BUILT FOR A LANDBASED MILITARY CAMP



◀ DVZ-JZR 100 "BIOMASTER"® WITH REDUNDANT PUMPS AND BLOWERS



# CUSTOMIZED AND SPECIAL SOLUTIONS

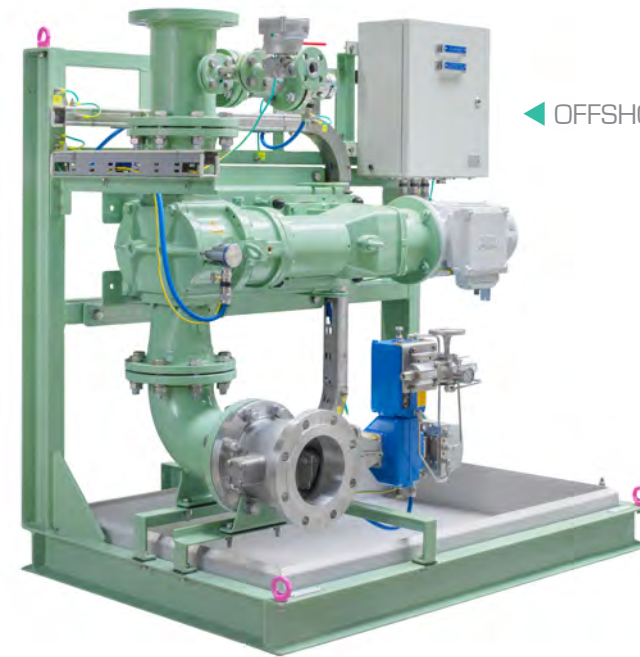
Our understanding of holistic solutions naturally also includes the areas “around our systems” and even special requests from our customers are implemented with the same high standards with which we manufacture our waste water treatment systems.



▼ DVZ-FT WITH AUTOMATIC GREASE DISCHARGE



► DVZ-AAP OIL IN WATER ALARM AND MONITORING



◀ OFFSHORE MACERATOR STATION

▼ DVZ-PRS PRESSURE REDUCING STATION



► DVZ-AF 250 AUTOMATIC FILTER UNIT



▼ DVZ-AMU AIR MAINTENANCE UNIT





## WE ARE AT YOUR DISPOSAL

### AFTER SALES SUPPORT & SERVICE

DVZ systems are low-maintenance and are manufactured exclusively with materials and components that meet our high quality requirements. However, a spare part or wearing part may become necessary.

Our After Sales Support & Spare Parts department is at your disposal at **+49 4242 169 38 0**.

Of course, an e-mail to [service@dvz-services.de](mailto:service@dvz-services.de) will also be answered as quickly as possible.

Even with worldwide shipping, we ensure that the required spare or wear part arrives quickly and safely.

Our solution-oriented team of continuously trained service technicians, supplemented by a global network of service agents, is ready to go in a short time to support our customers and users on board.





## SUSTAINABILITY ...

### NOT BECAUSE IT'S JUST POPULAR.

Sustainability is too often simply equated with “environmental protection” However, we see this as an overarching concept and understand it as a principle of action for the use of resources, which not only focuses on an ecologically sustainable course of action, but also completes it with social and economic sustainability and makes it holistic.

Just as we live sustainability in our company, we also communicate it to our business partners. However, sustainability is far from being a simple sales argument for us. We use resources and consume them. Making this happen consciously, carefully and responsibly is an integral part of our daily business.

Everyone at DVZ supports our sustainability ambitions, actively helps shape them and takes responsibility for them.

We support the United Nations Agenda 2030 with its 17 Sustainable Development Goals (SDGs). From this, we took four of these goals (6, 9, 12, 14) in 2018 as the basis of our sustainability ambitions and implemented them as orientation goals.

In 2021, these were supplemented by two further goals (8, 17) and SDG 13 was included as generally overarching.

We distinguish between the goals that we support directly through our sewage and waste water treatment systems and those to which we contribute through our business activities and our approach in our sector.





INNOVATIVE TECHNOLOGY FOR CLEAN OCEANS

## DVZ-SERVICES GMBH

BOSCHSTRASSE 9 • 28857 SYKE

Phone: +49 4242 169 38-0

E-Mail: [info@dvz-services.de](mailto:info@dvz-services.de)

Web: [www.dvz-services.de](http://www.dvz-services.de)

