

FILTERS

specifically designed for
Ballast Water
Treatment



MossHydro



Traditional filters have proved inadequate for filtering Ballast Water...

MossHydro offers cutting-edge filter solutions to BWTS suppliers...

Ballast Water Treatment is extremely challenging.

Filters are a key component in most Ballast Water Treatment Systems (BWTS). But field tests and operational experiences show that many of the existing filters have inadequate self-cleaning abilities, resulting in serious clogging problems. This may cause:

- Significant unexpected downtime – increasing costs.
- Unscheduled maintenance.
- Higher energy costs.
- Inadequate water treatment with risk of severe downstream process failures.

A few BWTS suppliers promote systems without filters. Instead, they depend heavily on chemicals and electrochemical processes which may cause new environmental problems.

However, many operators prefer a chemical-free BWTS.

MossHydro was established to provide BWTS suppliers with reliable filters based on highly automated manufacturing capacity and filtration expertise.

MossHydro supplies filter housings made from Duplex stainless steel.

Modern and highly automated manufacturing processes allow us to offer:

- Duplex housings at a price comparable to that of carbon steel.
- Unique production quality.
- Weight savings in the range of 50 – 70% compared with competing carbon steel housings.
- Very short delivery time.

MossHydro's aim is to exceed customer's expectations for quality, reliability and performance.



How can MossHydro make the best filter solutions for Ballast Water Treatment Systems...



Can we make the most robust and reliable filters?

...improve self-cleaning ability and operational performance?

...reduce footprint, height and weight?

...offer the necessary capacity, the right quality and timely delivery as this market heats up and deadlines close in?

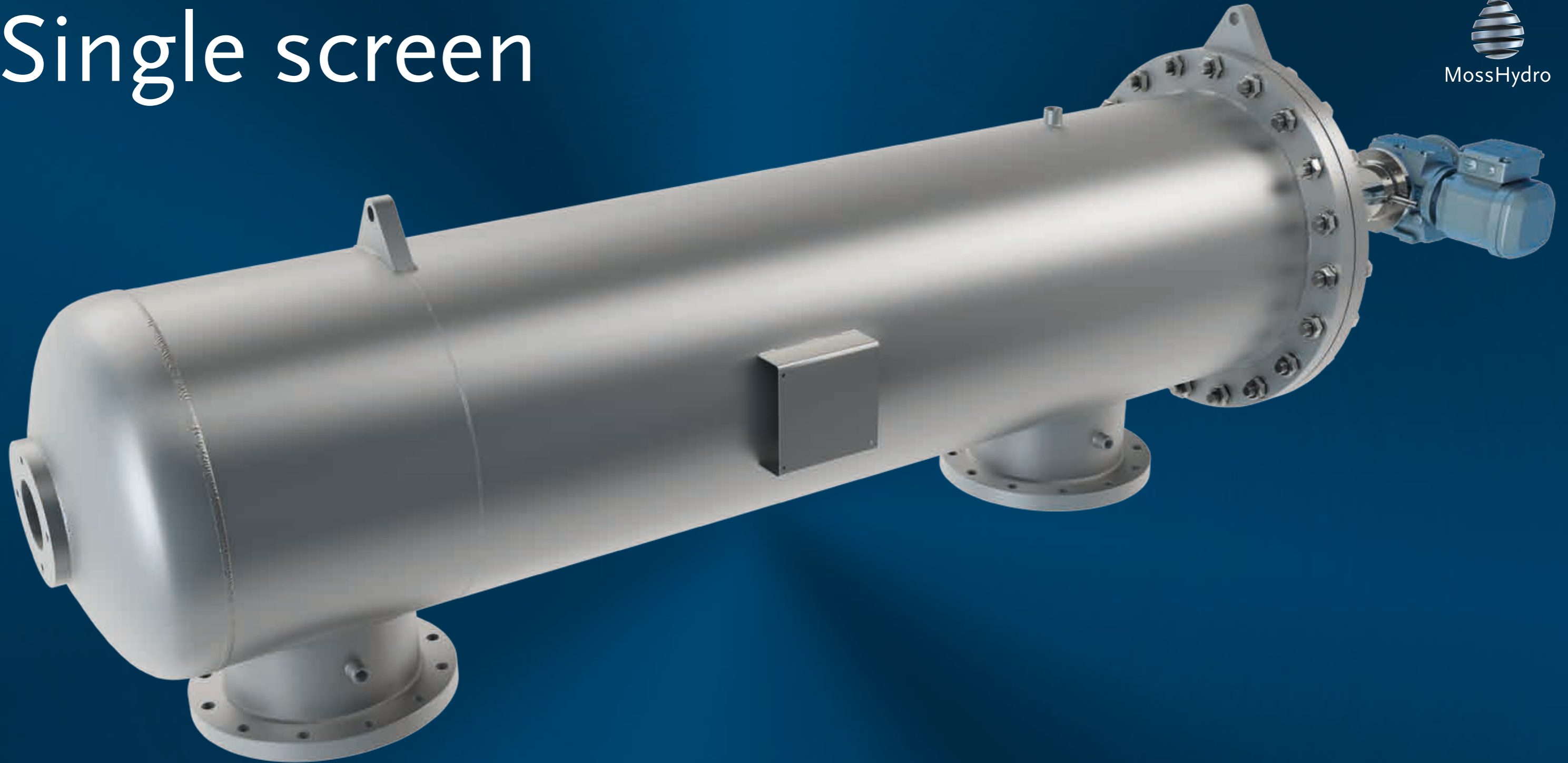
...reduce maintenance needs?

...provide in-depth expertise in filtration, Ballast Water Treatment and ship operations?

...and still be competitive?



Single screen



Robust and reliable filters designed specifically for the challenges of Ballast Water Treatment

- Best available technology for self-cleaning.
- Duplex stainless steel housing – designed for the lifetime of the ship!
- Dramatic weight savings – less than half the weight of conventional filters.
- Reduced and simplified maintenance.

MossHydro's Duplex stainless steel housings enable weight reduction of 50-70%:

- The tensile and yield strength of Duplex stainless steel is substantially higher than for conventional materials.
- No sand blasting, no primer, no coating and no rubber lining - due to its inherent corrosion resistance.
- No corrosion protection is needed.
- A lighter overall solution allows easier installation, foundation and support.
- Therefore less maintenance and potential damage to filter housing.

Flexibility: Inlet/outlet and backwash flanged connections are easy to adapt to customer needs

- Fully automated filter.
- Communication with any BWTS/Vessel automation system.
- Support for performance data storage.

MossHydro single screen filters are available for flow rates up to 1250 m³/h

Configuration and flow rates: A range of other flow rates can be achieved by parallel combinations of two (paired) or more (battery) of the standard units

Single screen



Available for installation in gas hazardous (Ex) areas

Compact design
No key in drive shaft
Less greasing of the bushing and drive shaft

Easy-to-maintain outer bearing, drive shaft coupling and sealing

- Heavy-duty sealing package allows easy disconnection of the backwash collecting pipe and drive shaft.
- Self-lubricating heavy-duty bearing.
- Quick and easy replacement of bearing.
- Tightening bolts isolated from fluid contact.
- Over-tightening not possible....built-in fail-safe functions.

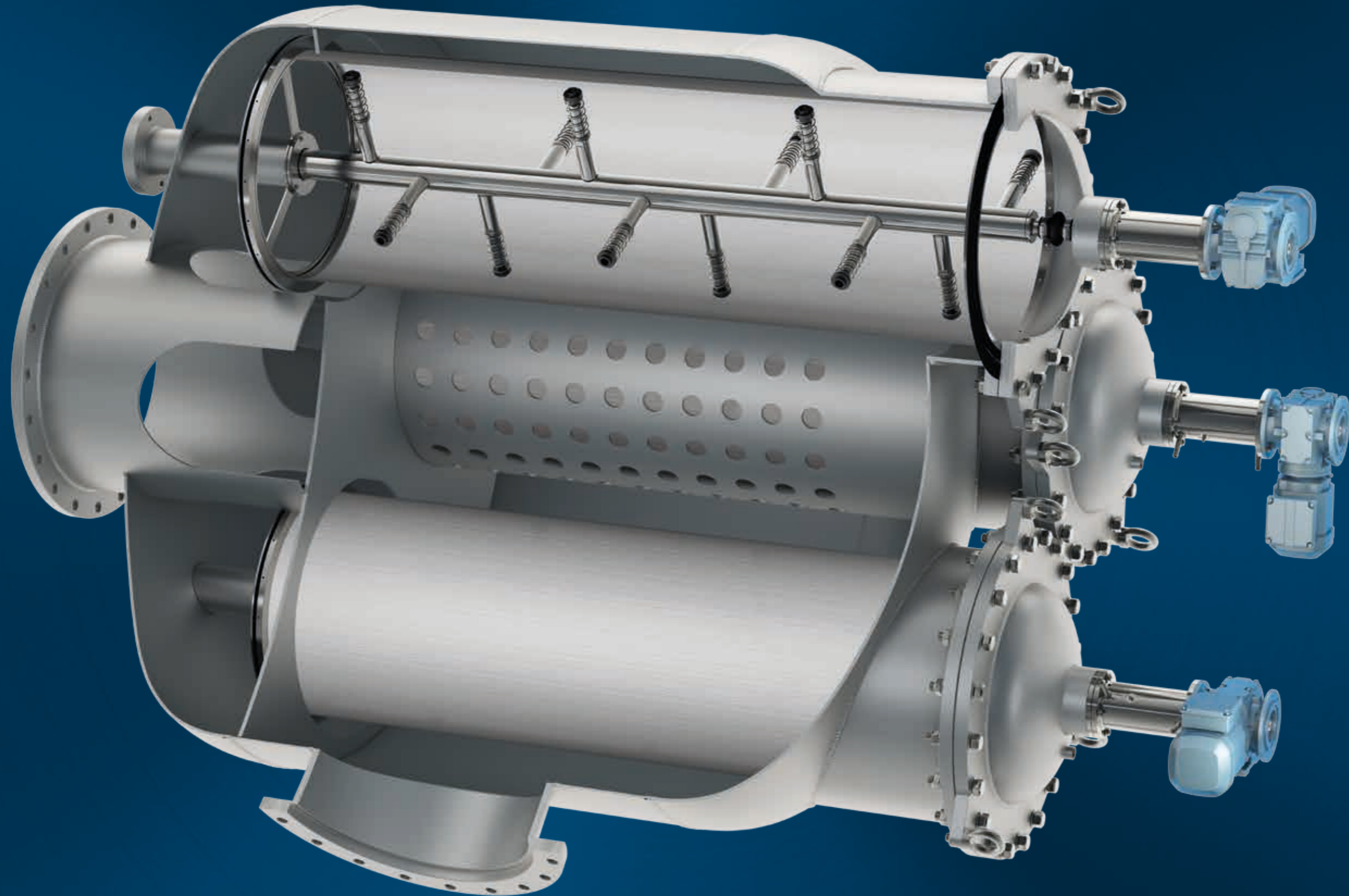
Unique Inner Bearing and sealing of backwash pipe

- Heavy-duty seal for added reliability.
- Self-lubricating heavy-duty bearing.
- Quick and easy installation of the backwash collecting pipe.

Smarter positioning of the backwash outlet offers the following benefits

- Reduced overall length.
- Reduced operational weight.
- No backwash chamber required.
- Uniform flow distribution reduces pressure loss allowing more pressure for cleaning.
- Easier, simpler and faster inspection and service.

Multiple Screen



Ultra compact:
Reduced footprint,
height and weight.

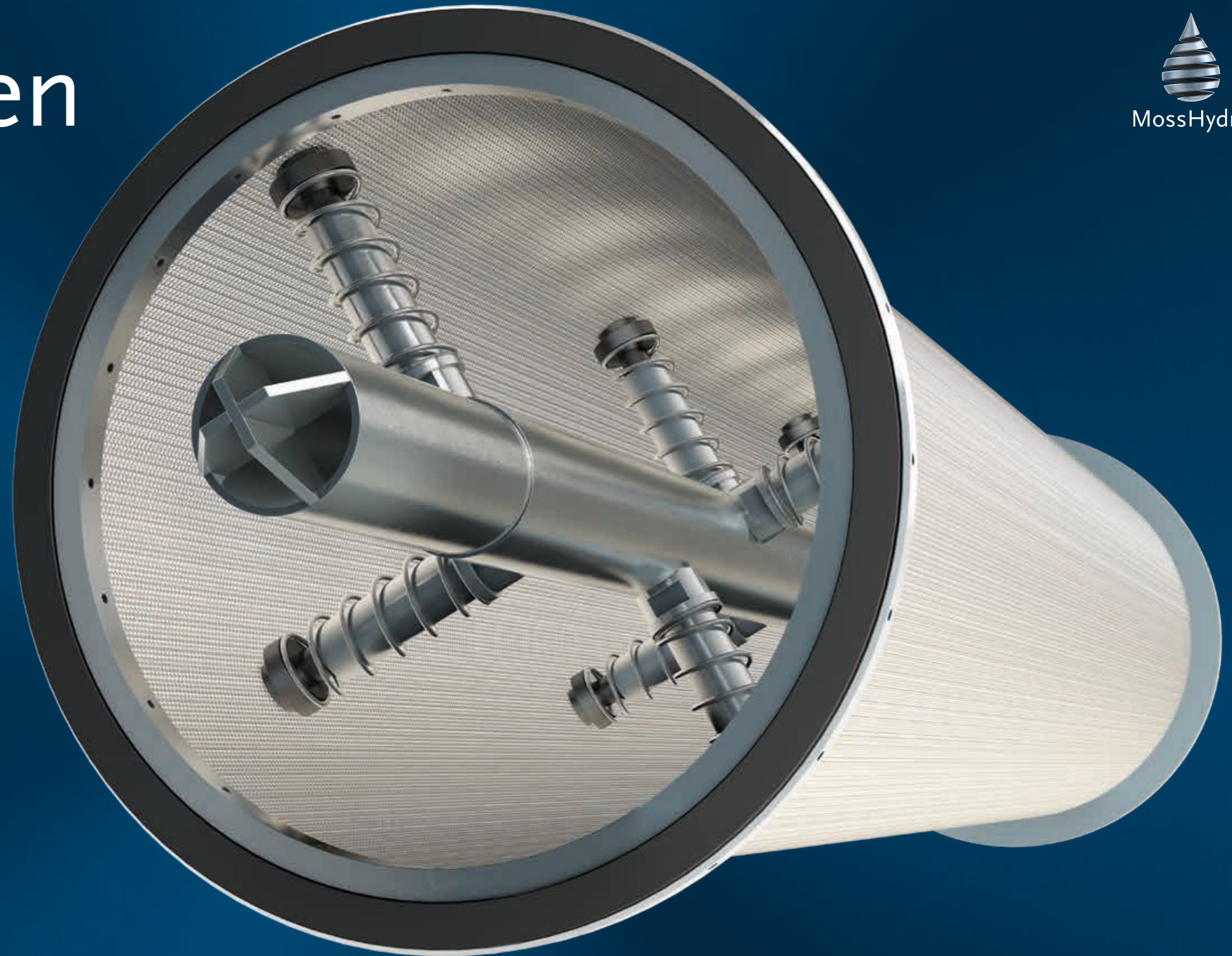
vertical and horizontal
installation available.

Handles flow rates
from 1.500 m³/hr
and higher.

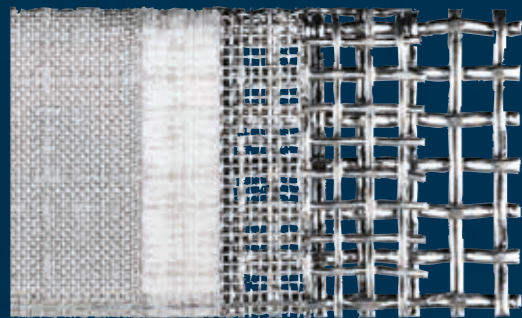
The backwash
self-cleaning sequence
can be adapted to
a wide range of
operational conditions.

Also available for
installation in
gas hazardous
(Ex) areas.

Filter screen



Minimal wear and tear results in improved performance and less maintenance.



Robust multilayer screen

The weave wire filtration layer is sandwiched between multiple layers for additional robustness and structural integrity:

- **Inner support layer** designed to provide minimal wear and tear.
- **Metal weave wire filtration layer** - fine filtration layer removing size-dependent matter from the water.
- **Outer support layers** - grid providing structural integrity.

Efficient filter dynamics

Filter screens using shaped weave wire have a very large effective filtration area compared with wedge wire candle filters. This results in:

- Very low filtration speeds – reducing pressure losses and ensuring laminar and uniform flow.
- Improved retention of flexible and compressible organics (phyto and zoo-plankton).

- Filtration efficiency maintained over time as the inner support layer protects the filtration layer against wear and tear.
- Screen is made of stainless steel.

Cleaning Head

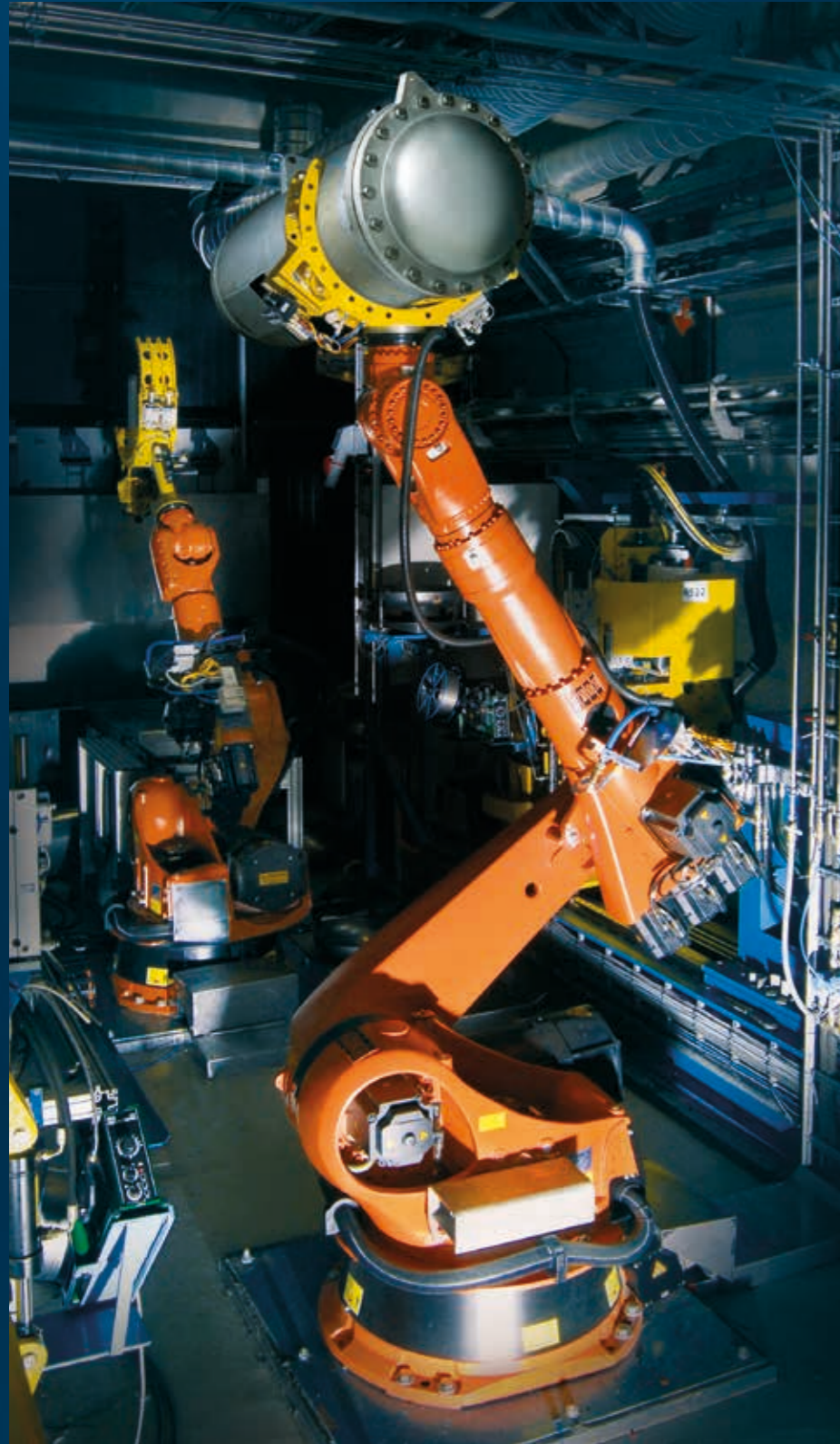


If the filter clogs, the ship stops!

MossHydro offers Best Available Technology for self-cleaning of the filter screen. This is the most critical requirement for smooth operation. MossHydro uses a self-adjusting pressure balanced cleaning-head.

- Easy identifiable wear indicator on cleaning head.
- The inner support layer is designed to reduce wear and tear of the filtration layer and the cleaning head.
- Improved sealing of the cleaning head.
- Optimized cleaning of the filter screen due to increased backwash fluid velocity.
- No tools required for maintenance.
- Proven self-cleaning technology.
- BAT - Best Available Technology.

Highly robotized and automated manufacturing



Established in 1932 and family owned for 3 generations. The production facility used by MossHydro covers 20.000 m² and employs some 200 workers.

The factory has manufactured 3 million pressure vessels. The world's first serial production facility for stainless steel pressure vessels - operating for more than 40 years.



MossHydro competitive edge

- Robotized manufacturing enables extraordinary precision with high tolerances, high welding quality and consistency.
- Delivery capacity meeting any customer demand.
- MossHydro filters – a new dimension in filter quality and built for the lifetime of the ship.

It is one of Scandinavia's most modern and efficient environmental friendly factories with unmatched daily production capacity for filter housings.

Over the decades the factory has received Nordic awards for exceptional environmental efforts.

High-volume producer dedicated to Stainless Steel pressure vessels



MossHydro offers
mass production
capacity

Securing delivery ability
to an emerging and
rapidly growing market

Short production time
– safeguarding our
ability to meet the
strictest deadlines



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