WÄRTSILÄ

Wärtsilä Water Quality Systems

Takes in the good water and gets rid of the bad

PRODUCT DATASHEET

Our Wärtsilä Water Quality Systems are a family of self-contained water conditioning units for sea water lubricated stern tube applications. They have been designed to increase the life of both seal and bearing products by filtering the water supply to remove any particulates or abrasives present in the raw water supply.

INCREASED COMPONENT LIFE

The Wärtsilä Water Quality Systems have been designed to provide filtered water for open lubricated stern tube systems. This enables increased component life, reduced wear and comes with a range of pumped or filtered supply systems.

ADVANCED DESIGN

Each Wärtsilä Water Quality System comes with skid mounted instrumentation connected to a control panel and all interconnecting wiring. It also comprises of weld neck fittings and associated backing rings for each pipework termination. These allow interconnection to the vessel's pipework to be conducted via welded joints. With the use of an advanced water quality system, customers can benefit from the ability to monitor water flow, pressure and temperatures.

EFFICIENT FILTERING

Raw water is fed via the sea chest or other external source on the vessel and upstream, pre-strained water is supplied to the Wärtsilä Water Quality System. The entrained particles as a result of this are removed and ejected overboard.

The resultant water is pumped into the stern tube to provide flushing and lubricating water to the stern shaft seal and stern shaft bearings in each shaft line. Once it's passed down the stern tube, the conditioned water is simply passed back to the source.

Increase the longevity of your equipment.

FEATURES	ADVANTAGES	BENEFITS
Cyclonic/strainer system.	Automatically discharges particulate debris.	Increases the availability of shaft seals, bearings and other components.
Dual centrifugal pumps.	Prevents the system from over-pressurising, which limits risk and redundancy.	Minimises the need for safety valves.
Full monitoring control panel.	Easy-to-use touchscreen Programmable Logic Controller (PLC).	Allows complete control over pressures, temperature and water flow.

STANDARD BASELINE MODELS

Model	Flow rate output (litres per minute – LPM)	Nominal electrical supply	Control panel mounting option
Small	Min: **72** Max: **110**	400Vac / 3ph. / 50Hz	Skid mounted
		460Vac / 3ph. / 60Hz	
		400Vac / 3ph. / 50Hz	Remote*
		460Vac / 3ph. / 60Hz	
Medium	Min: **110** Max: **160**	400Vac / 3ph. / 50Hz	Skid mounted
		460Vac / 3ph. / 60Hz	
		400Vac / 3ph. / 50Hz	Remote*
		460Vac / 3ph. / 60Hz	
Large	Min: **170** Max: **260**	400Vac / 3ph. / 50Hz	Skid mounted
		460Vac / 3ph. / 60Hz	
		400Vac / 3ph. / 50Hz	Remote*
		460Vac / 3ph. / 60Hz	

* The remote mounted panel option includes ten metres of interconnecting cabling and a skid mounted junction/terminal box. The panel is designed for wall/bulkhead mounting. Recommended fasters are M8 x 1.25mm pitch (not supplied by us). All electrical control panels are supplied with anti-vibration mounts, irrespective of skid or remote mounting options.

** All pump motors are aluminium framed two-pole designs to IP55 TEFC construction. No other motor options are available within the Baseline range.

SYSTEM PRESERVATION

In order to preserve the long-term operation of the inboard water lubricated stern tube seal and bearings, it's essential to maintain a high-quality flush water supply, free from abrasives. Poor water quality will lead to accelerated wear in key stern tube components and can lead to increased docking frequencies for replacement bearings. Our Wärtsilä Water Quality Systems are designed to work with sea water, brackish and fresh water sources. However, it's important the raw water supply from the sea chest to the inlet has been pre-filtered and supplied at a positive pressure. To aid in all this, our Wärtsilä Water Quality Systems have an inbuilt Programmable Logic Controller (PLC), which controls all instrumentations and purging.

TECHNICAL SPECIFICATIONS

Water Quality System principal components

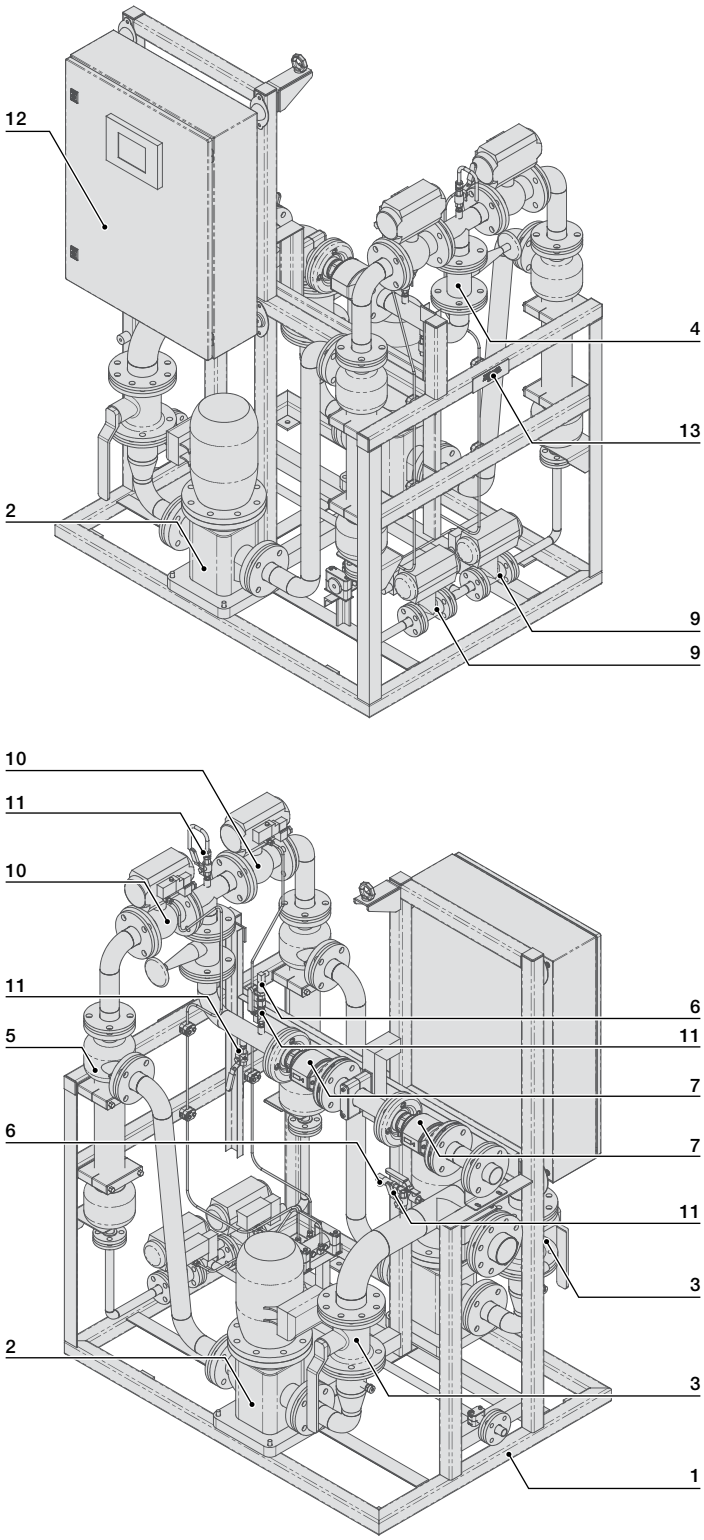


Fig.1 Water Quality System principal components (small system pictorially shown with skid mounted control panel). Other sized units are similar in terms of construction and operational process.

MAINTENANCE REQUIREMENTS

Our Wärtsilä Water Quality Systems are generally maintenance-free, however there are a few regular tasks to ensure long-term performance.

- Keep a daily log of all pressures and flows, including flow during purge cycles.
- Visually check for leaks throughout the system and address any immediately.
- Record all alarms in a separate log.
- Confirm once a week during purge that flow rate is similar to that during commissioning. If it's higher, check for blockages.
- Inspect process water quality for particulates.
- Every three months, run the system in local mode to confirm operation of both pumps.
- Do not run the system unless all normally provided devices are in place.
- Each year, conduct a thorough internal and external inspection of the hydrocyclone units, flow meters, pressure transmitters, ball valves and pump shafts.

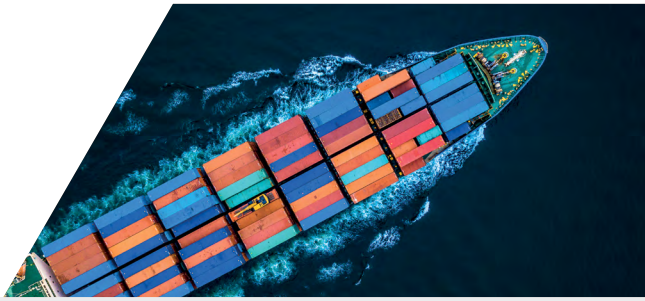
1 Skid (fabricated framework / chassis)
2 Pump (2 off)
3 Ball valve (2 off) - pump upstream isolation
4 Globe valve [flow trimming] (1 off)
5 Hydrocyclone separator (2 off)
6 Pressure transmitter (2 off)
7 Flow transmitter (2 off)
8 Compressed air manifold (1 off)
9 Actuated ball valve (2 off) - purge line
10 Actuated ball Valve (2 off) - hydrocyclone discharge isolation
11 Ball valve DN 12 (5 off) - (N/C test point and N/O instrument isolation)
12 Control panel (1 off) - dependent upon model type this may be skid or remotely mounted
13 Serial number plate (1 off)

Wärtsilä Water Quality Systems

TECHNICAL SPECIFICATION			METRIC	IMPERIAL
WÄRTSILÄ WATER LUBRICATED INBOARD SEALS	WÄRTSILÄ ENVIROGUARD PSE	Size range – propeller shaft diameter	70 – 460mm	
		Minimum cooling and lubricating water requirements	1 litre per hour per mm of shaft diameter	
		Maximum cooling and lubricating water requirements	1.5 litres per hour per	
	WÄRTSILÄ ENVIROGUARD MA, MB AND MD	Size range – propeller shaft diameter	200 – 1000mm	
		Minimum cooling and lubricating water requirements	1 litre per hour per mm of shaft diameter	
		Maximum cooling and lubricating water requirements	1.5 litres per hour per mm of shaft diameter (for estimating purposes only)	
	WÄRTSILÄ ENVIROGUARD MG4	Size range – propeller shaft diameter	460 – 820mm	
		Minimum cooling and lubricating water requirements	2.5 litres per hour per mm of shaft diameter	
		Maximum cooling and lubricating water requirements	3 litres per hour per mm of shaft diameter	
	Flush water supply pressure at seal water flush inlet termination (all seal types) Maximum draft pressure 1 barg (1000 mbarg)			
WÄRTSILÄ WATER LUBRICATED INBOARD BEARINGS	WÄRTSILÄ ENVIROSAFE COMPOSITE BEARING	Size range – propeller shaft diameter	70 – 1100mm	
		Minimum cooling and lubricating water requirements	0.15 litres per minute per mm of shaft	
		Maximum cooling and lubricating water requirements (1.5 times minimum)	0.225 litres per minute per mm of shaft diameter	

PROPOSED SETUP OF OUR WÄRTSILÄ WATER QUALITY SYSTEMS	**Parameter**	**Derived by**	**Example values (litres per minute)**
	Recommended flow	Seal flush flow requirement + bearing flush flow requirement	100
	Normal flow (flow set point at commissioning)	Recommended flow + 10%	110
	Flow to stern tube during purge cycle (purge cycle for 15 seconds every 15 minutes)	Recommended flow – purge flow	80 – 85 (short term – only during the purge cycle)
	Minimum flow alarm	Set at recommended flow	100
	Maximum flow alarm	Minimum of either recommended flow + 50% or maximum pump flow capability	150

An industry leader in shaft line components Wärtsilä Shaft Line Solutions delivers a portfolio of end-to-end services and integrated solutions for the marine markets that builds on our core values: lifecycle efficiency, risk reduction, environmental leadership and design excellence. As an original equipment manufacturer operating in 75 countries, we have the capabilities to support customers on a global scale, and remain committed to providing in-country and round-the-clock expertise.



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