

Aquarius® EC

Ballast water management system

PRODUCT LEAFLET



As international ballast water regulations come into force the Wärtsilä Aquarius® EC ballast water management system delivers compliance in globally encountered environmental conditions. The proven treatment technology incorporates robust features covering operation, maintenance and through life support, ensuring a low risk path to both retrofit and compliance.

TECHNICAL OVERVIEW

Wärtsilä Aquarius® EC is a ballast water management system providing a safe, flexible and economical process for the treatment of ballast water.

Ballast water treatment with a Wärtsilä Aquarius® EC system is achieved through a simple and efficient two stage process. Upon uptake the sea water is first passed through a back washing filter (1st Stage) and then the filtered sea water passes through a static mixer, where the disinfectant generated from the side stream electrolysis unit (2nd stage) is injected to ensure a maximum level of 10ppm in the treated ballast water.

FEATURES & BENEFITS

- IMO & USCG Type Approved System
- Flexible integration for retrofitting
- No salinity or temperature limits
- In situ safe, sustainable and economical disinfectant generation
- Efficient dosing controls
- Intelligent PLC control ensuring safe, automatic and economical operation
- Dedicated BWMS training programme at Wärtsilä land and sea academy
- Explosion proof available for Zone 1 installations

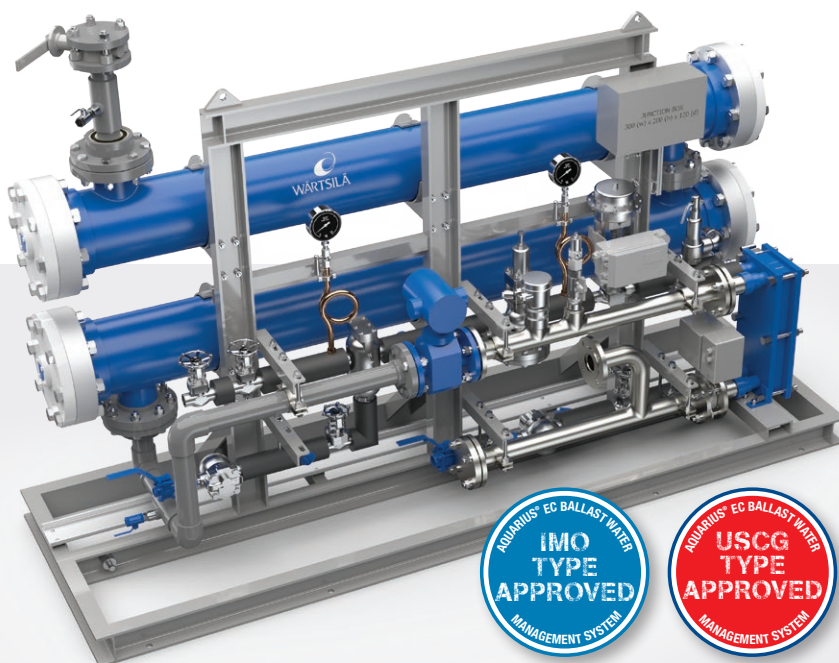
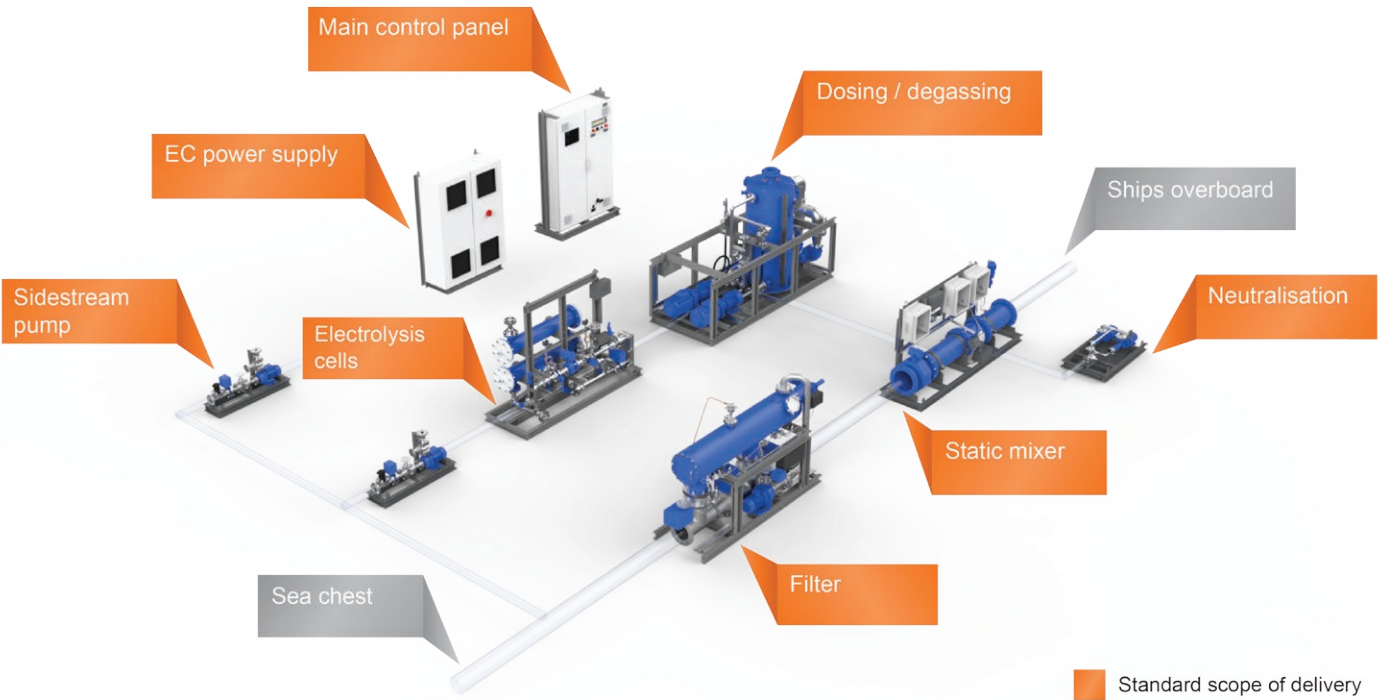


Fig 1. Aquarius® EC Scope of Supply



KEY PARAMETERS

Aquarius® EC System	Maximum Capacity (m³/h)	Total Footprint (m³)	Installed Power (kW)	Nominal Power (kW)	Total Weight (kg)
AQ-550-EC	55 – 550	11.4	38	33	4,695
AQ-1200-EC	120 – 1200	14.5	75	65	6,445
AQ-1650-EC	165 – 1650	15.8	104	90	8,523
AQ-2500-EC	250 – 2500	16.5	161	140	10,115
AQ-3300-EC	330 – 3300	16.5	202	174	10,585
AQ-4000-EC	400 – 4000	16.7	245	211	11,905

NOTE 1: Assumed operating conditions: Installed Power at 15°C & 15PSU Nominal Power at 25°C & 30PSU
NOTE 2: Power panel size to be advised on enquiry

COMPONENT DETAIL

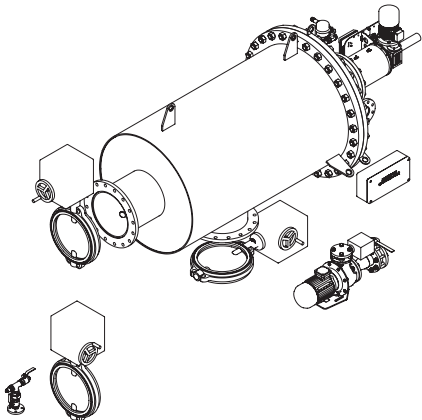
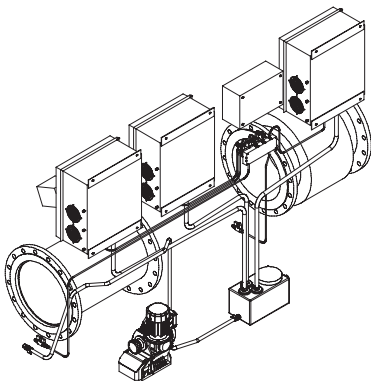
STATIC MIXER

Component Size	Dimensions (metres)			Dry Weight (kg)
	Length	Width	Height	
AQ-550-EC	0.5	0.4	0.4	300
AQ-1200-EC	0.6	0.6	0.6	350
AQ-1650-EC	0.7	0.6	0.6	400
AQ-2500-EC	0.8	0.8	0.8	600
AQ-3300-EC	0.8	0.8	0.8	600
AQ-4000-EC	0.8	0.8	0.8	600

FILTER

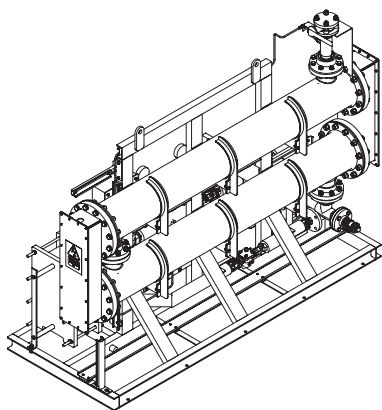
Component Size	Dimensions (metres)			Dry Weight (kg)
	Length	Width	Height	
AQ-550-EC	1.0	0.7	3.0	890
AQ-1200-EC	1.3	1.2	3.3	1,700
AQ-1650-EC	1.7	1.6	3.0	3,558
AQ-2500-EC	1.8	1.8	3.5	4,950
AQ-3300-EC	1.8	1.8	3.8	5,170
AQ-4000-EC	2.2	2.2	3.4	6,430

NOTE: all filters may be installed in vertical or horizontal orientation



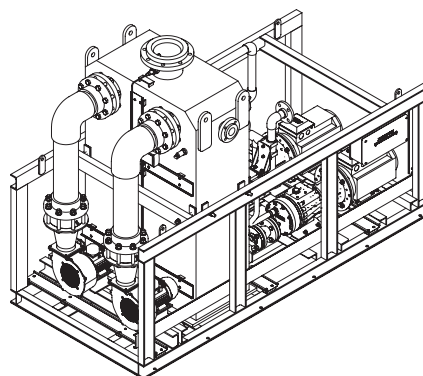
ELECTROCHLORINATION CELLS

Component Size	Dimensions (metres)			Dry Weight (kg)
	Length	Width	Height	
AQ-550-EC	2.5	1.0	1.4	585
AQ-1200-EC	2.5	1.0	1.8	760
AQ-1650-EC	2.5	1.0	2.3	930
AQ-2500-EC	2.5	1.0	1.9	930
AQ-3300-EC	2.5	1.0	2.4	1,180
AQ-4000-EC	2.5	1.0	2.9	1,500



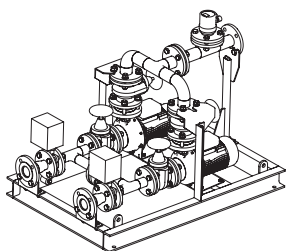
DOSING / DEGASSING

Component Size	Dimensions (metres)			Dry Weight (kg)
	Length	Width	Height	
AQ-550-EC	2.6	1.2	1.9	1,005
AQ-1200-EC	3.5	1.6	1.9	1,650
AQ-1650-EC	3.5	1.6	1.9	1,650
AQ-2500-EC	3.5	1.6	1.9	1,650
AQ-3300-EC	3.5	1.6	1.9	1,650
AQ-4000-EC	2.6	1.6	1.9	1,400



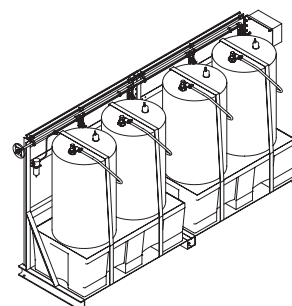
SIDESTREAM PUMP

Component Size	Dimensions (metres)			Dry Weight (kg)
	Length	Width	Height	
AQ-550-EC	1.2	0.8	0.9	220
AQ-1200-EC	1.2	0.8	0.9	280
AQ-1650-EC	1.2	0.8	0.9	280
AQ-2500-EC	1.2	0.8	0.9	280
AQ-3300-EC	1.2	0.8	0.9	280
AQ-4000-EC	1.2	0.8	0.9	280



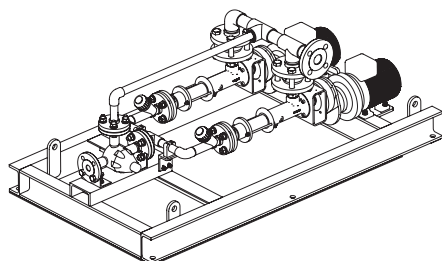
NEUTRALISER DRUM

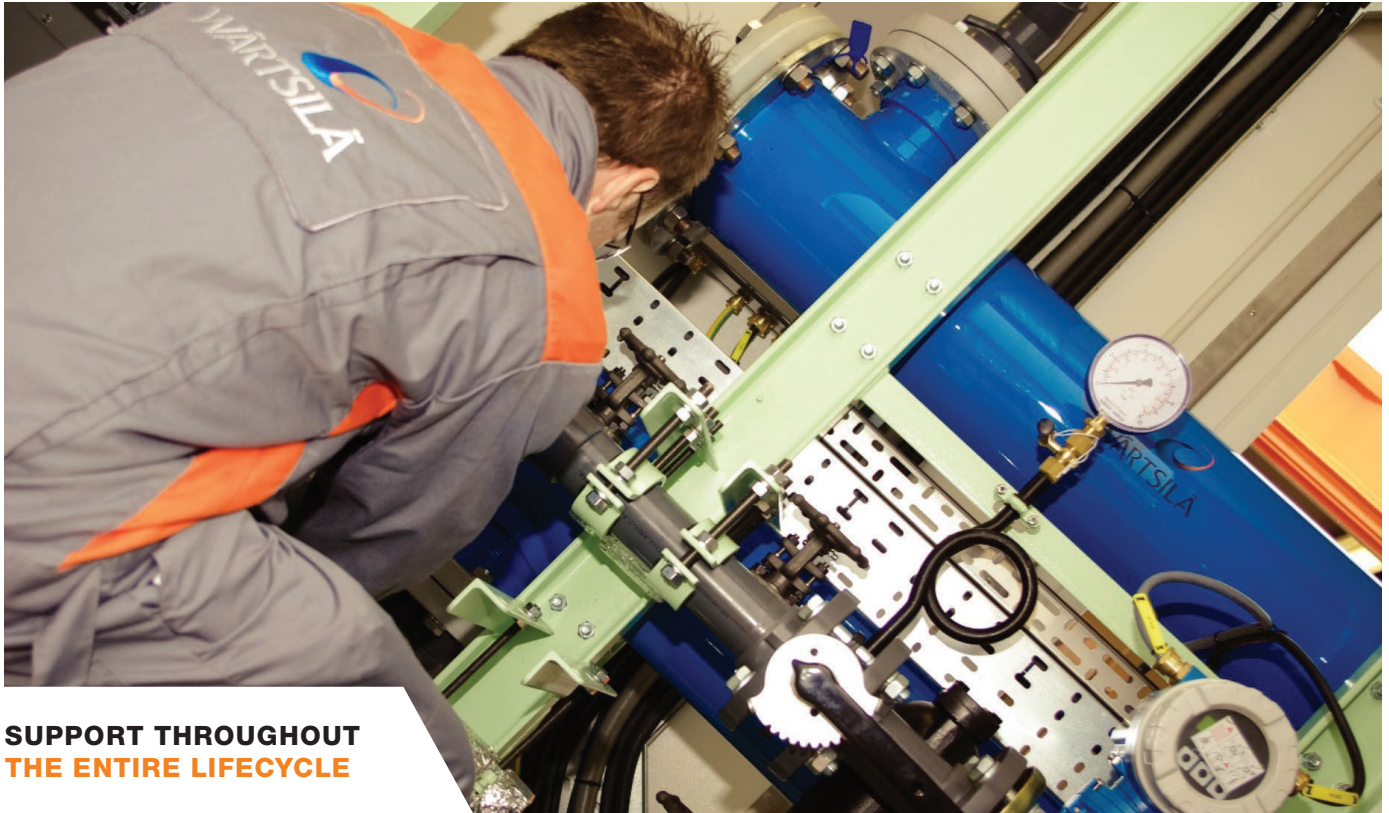
Component Size	Dimensions (metres)			Dry Weight (kg)
	Length	Width	Height	
AQ-550-EC	3.1	0.8	1.6	1,300
AQ-1200-EC	3.1	0.8	1.6	1,300
AQ-1650-EC	3.1	0.8	1.6	1,300
AQ-2500-EC	3.1	0.8	1.6	1,300
AQ-3300-EC	3.1	0.8	1.6	1,300
AQ-4000-EC	3.1	0.8	1.6	1,300



NEUTRALISER

Component Size	Dimensions (metres)			Dry Weight (kg)
	Length	Width	Height	
AQ-550-EC	1.2	0.7	0.5	145
AQ-1200-EC	1.3	0.7	0.5	145
AQ-1650-EC	1.3	0.7	0.5	145
AQ-2500-EC	1.3	0.7	0.5	145
AQ-3300-EC	1.3	0.7	0.5	145
AQ-4000-EC	1.3	0.7	0.5	145





SUPPORT THROUGHOUT THE ENTIRE LIFECYCLE

OPERATING PRINCIPLE

PROVEN FILTRATION

During uptake ballast water passes through a screen filter. The filter removes particulates, sediments, zooplankton and phytoplankton over 40 micron. Automatic filter cleaning ensures and maintains filtration efficiency.

ELECTRO-CHLORINATION

Disinfectant TRO (total residual oxidant) is produced by an EC cell module, comprising of electrolytic cells, specifically designed to generate sodium hypochlorite from sea water.

The sodium hypochlorite generated is pumped into the main ballast line, where it is mixed with filtered ballast water for efficient disinfection, and pumped into the ballast tanks. Ballast water TRO concentration is monitored to ensure the correct hypochlorite dose. During discharge the filter is bypassed and residual concentration of TRO in treated ballast water is monitored before being discharged overboard.

If required, treated ballast water is neutralised by injecting sodium bisulfite into the main ballast line during discharge. Neutralisation effectiveness is continuously monitored to ensure compliance with MARPOL discharge limits.

FLEXIBLE SUPPLY OPTIONS

Tailored solutions to fit the need of the vessel overcoming ship specific arrangement and access. Aquarius® EC can be supplied as loose component kits as above, or alternatively as modular arrangements or bespoke single skid design. In-house expertise in retrofit scanning, engineering & commissioning is available via the Wärtsilä global Services organisation.

PRESSURE DROP

Normal Operation: 0.3 barg
Backwash Set Point: 0.8 barg

CONTROL PANEL (FLOOR MOUNTED)

1340mm Wide x 1950mm High x 412mm Deep
Weight: 250kg

MATERIALS

Supporting Framework:	Mild Steel
Static Mixer:	Powder Coated Mild Steel
Filter:	Epoxy Coated Mild Steel / Duplex 904L Screen
Module Pipework:	Galvanised Steel / Composite
Consumables:	Sodium Bisulfite & TRO Sensor Reagent