




THE MOST WIDELY COVERED SOLUTION FOR BALLAST WATER TREATMENT

CYECO™ BALLAST WATER TREATMENT SYSTEM



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About Us

Shanghai Cyeco Environmental Technology Co., Ltd., is a direct subsidiary of Shanghai Electric Group Company – the largest multinational equipment manufacturing conglomerate in China, and the world's largest manufacturer of steam turbines. Shanghai Electric is listed on the Hong Kong Stock Exchange and the Shanghai Stock Exchange, and was listed in "Top 500 Asian Brands" as the top 5th in Asia and the top 1st in China in the field of machinery industry.

Cyeco is specialised in scientific research, equipment manufacturing and servicing in the field of onshore and marine environmental technology. The company's headquarter occupies over 5,000 m² of land area, with dedicated R&D laboratory, testing platform, service centre and exhibition centre and has a 6S manufacturing facility with over 2,000 m² of field located at the outer skirt of Shanghai. Since its inception, Cyeco has been gradually onward to become the worldwide leader of environmental protection. The company has completed near 1,000 sets of supply and installation on the domestic and international vessels, and has been granted with 49 patents over the past years. We harmonise a prospective and sustainable tomorrow, and devote ourselves into the unceasing service for the excellence.

We provide compliance, not just products

USCG Type Approval

- AMS acquired.
- Employing FDA/CMFDA test method, proven by the USCG.
- Partnering with USCG designated Independent Laboratory DNV GL
- Conducting test at DHI Denmark.

Retrofit Service

- Economic, all necessary engineering in one company.
- Optimised project turn around time.
- Total cost effective package in coordinated timely way.

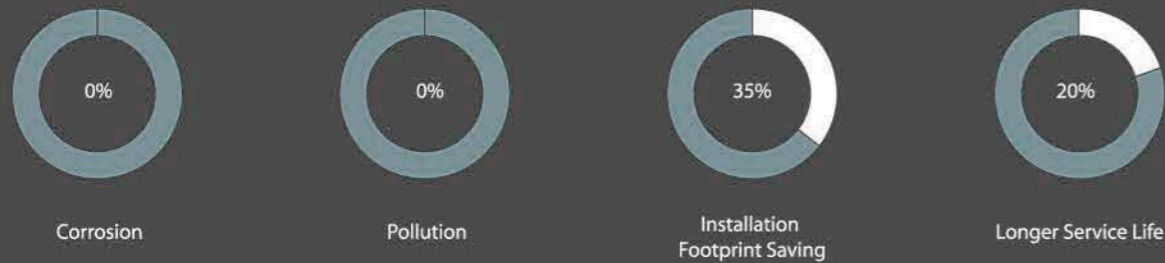
Financing Service

- Competitive interest rate and down payment.
- Negotiable terms.

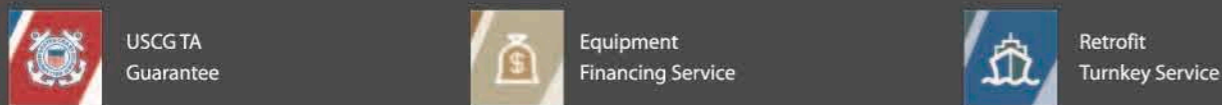
Cyeco™ Ballast Water Treatment System (BWTS)

Safe, compact, easy, reliable and designed for retrofit

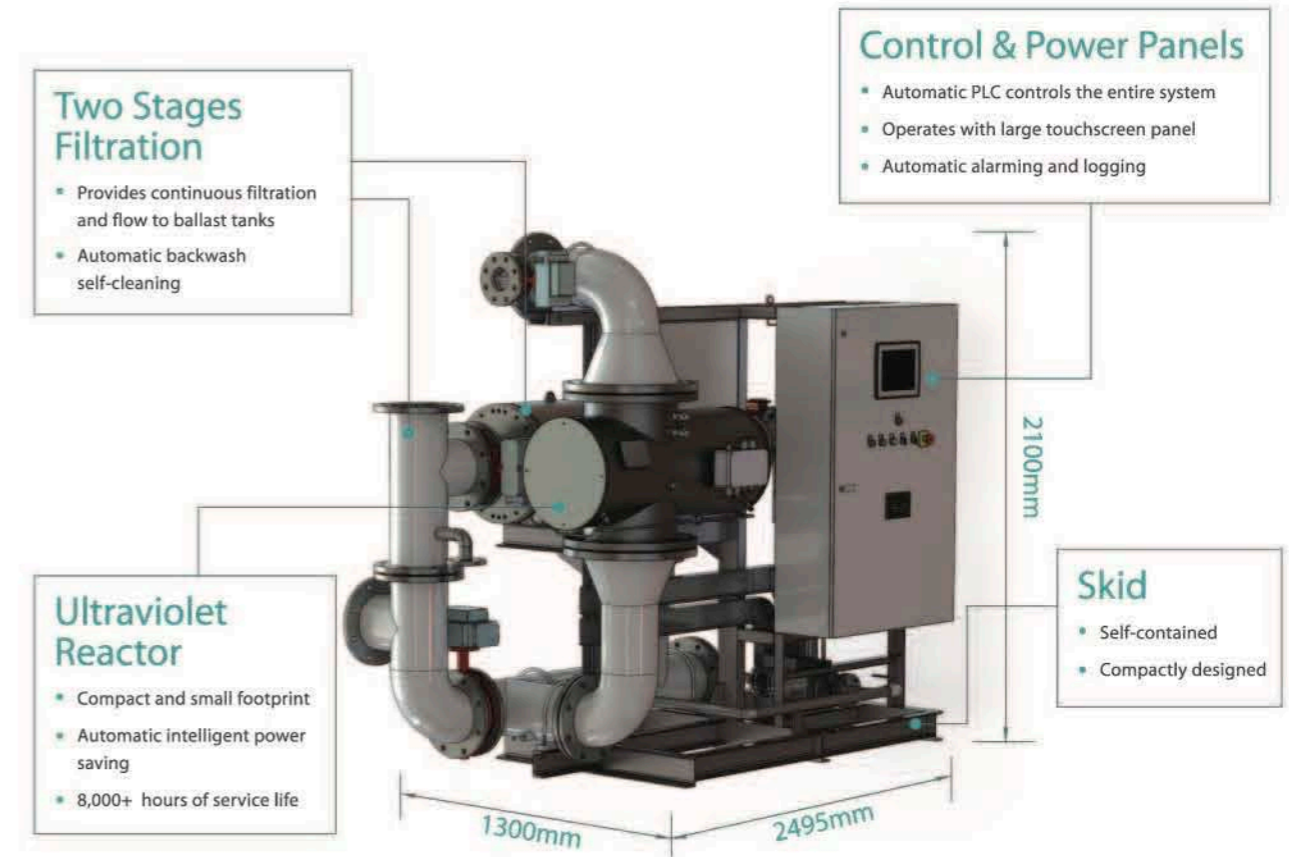
The Cyeco™ BWTS employs three stages of physical treatments with ABSOLUTE ZERO chemical substance involved, while in compliance with the USCG regulation. The system combines two-stages of efficient filtration and Ultraviolet (UV) disinfection technologies. Coupling with its compact and modular design, the system can be easily retrofitted in crowded machinery spaces as well as new ship construction.



Approvals Cyeco™ BWTS has Achieved



the Smallest Footprints on the Market



Most versatile installation solution



Reliable Mechanical Filtration System

Finally, a patented filtration system that is designed for ballast water treatment

The Cyeco™ Mechanical Filtration System combines a 5mm grade coarse filter and a 50 µm fine filter for the filtration treatment. The system's design is ingeniously based on our 20 years of experience in the field of Water and Waste Water Treatment. The coarse filter removes large sediments at the ballast inlet, and the fine filter further purifies the water afterwards for better UV transmittance.

Both filters employ proficient, fully automatic self-cleaning mechanisms, which do not interfere with the ballasting load. The self-cleaning is full automatically controlled by PLC, and can be triggered intelligently when the internal solids accumulate, as well as can be triggered periodically and manually.

- **Specialized** Designed only for ballast water treatment.
- **Enhancing** Reduces solid accumulation in the ballast tanks.
- **Flexible** Provide continuous filtration and flow to ballast tanks.
- **Easy to use** Fully automatic.
- **Reliable** 5 layers of duplex stainless steel wire mesh; 10+ years of service life.

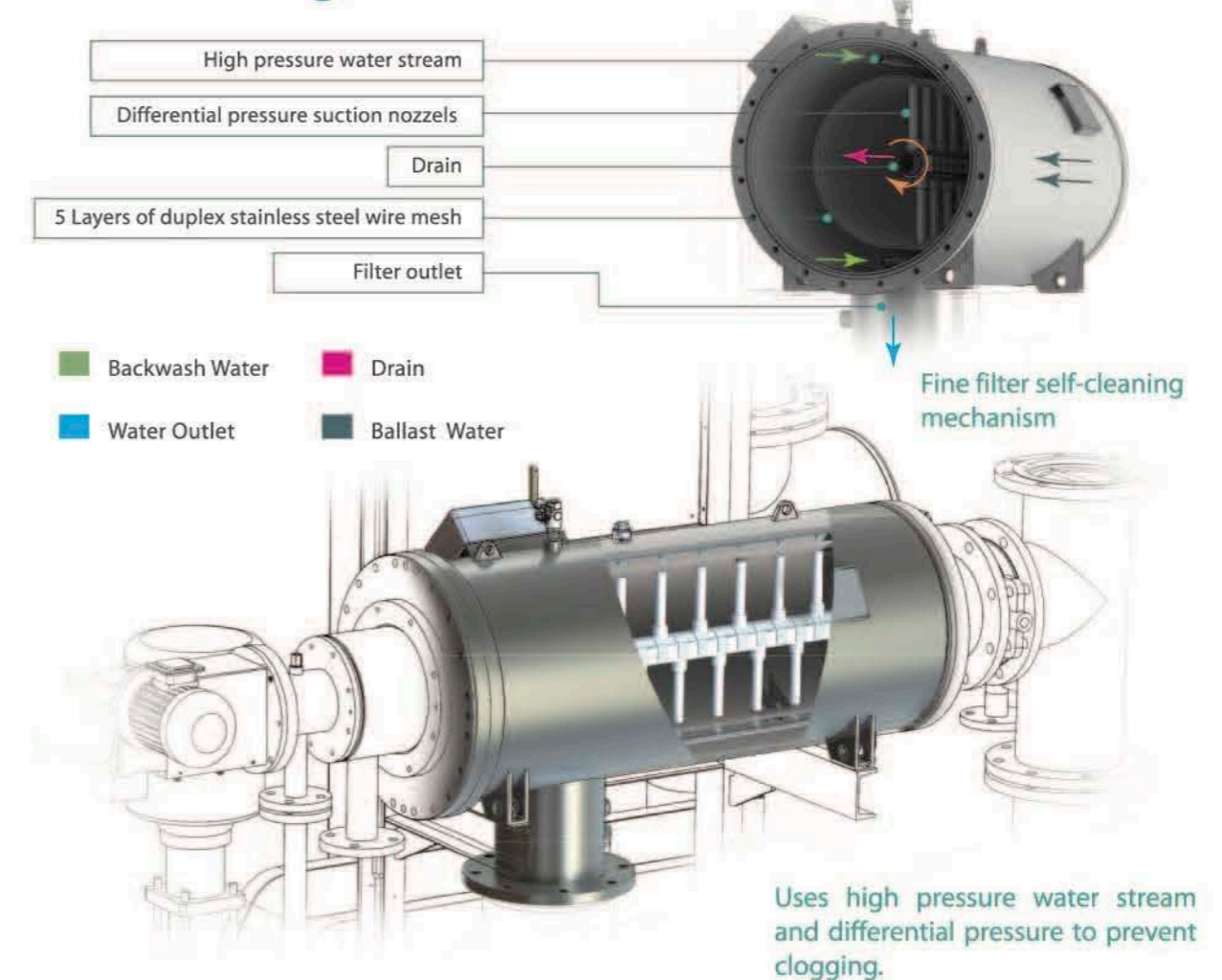
First Stage - Coarse Filtration



Utilises water momentum for passive self-cleaning without power consumption.

- Water Flow
- Residue

Second Stage - Fine Filtration

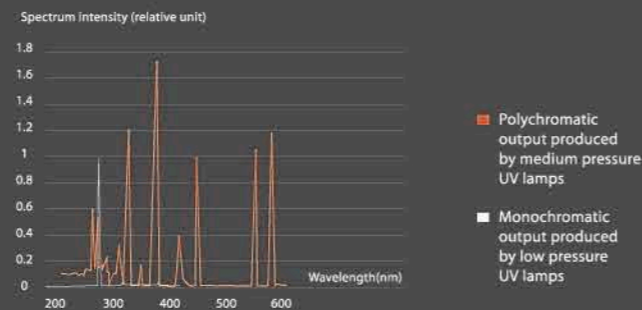


UV Germicidal Disinfection Unit

Smaller Footprint,
Longer Life Span

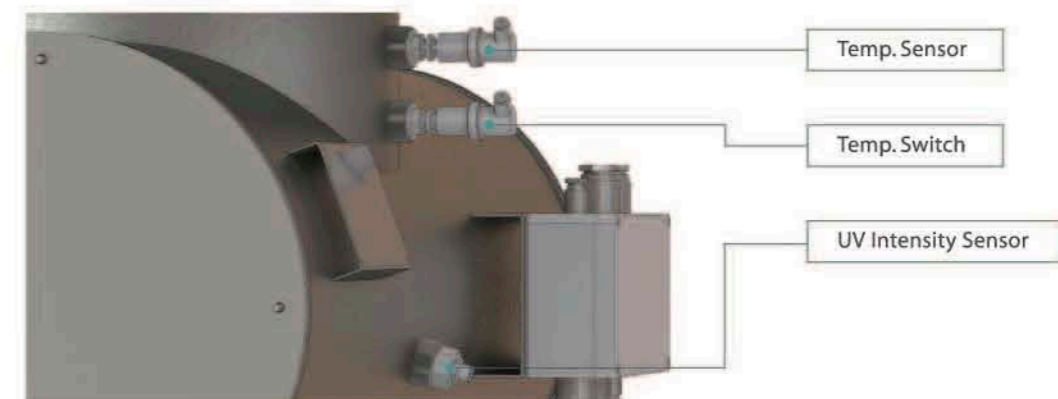
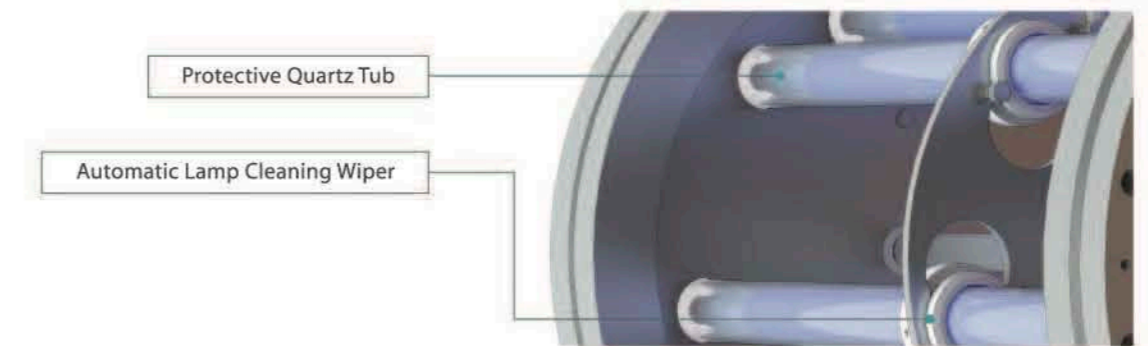
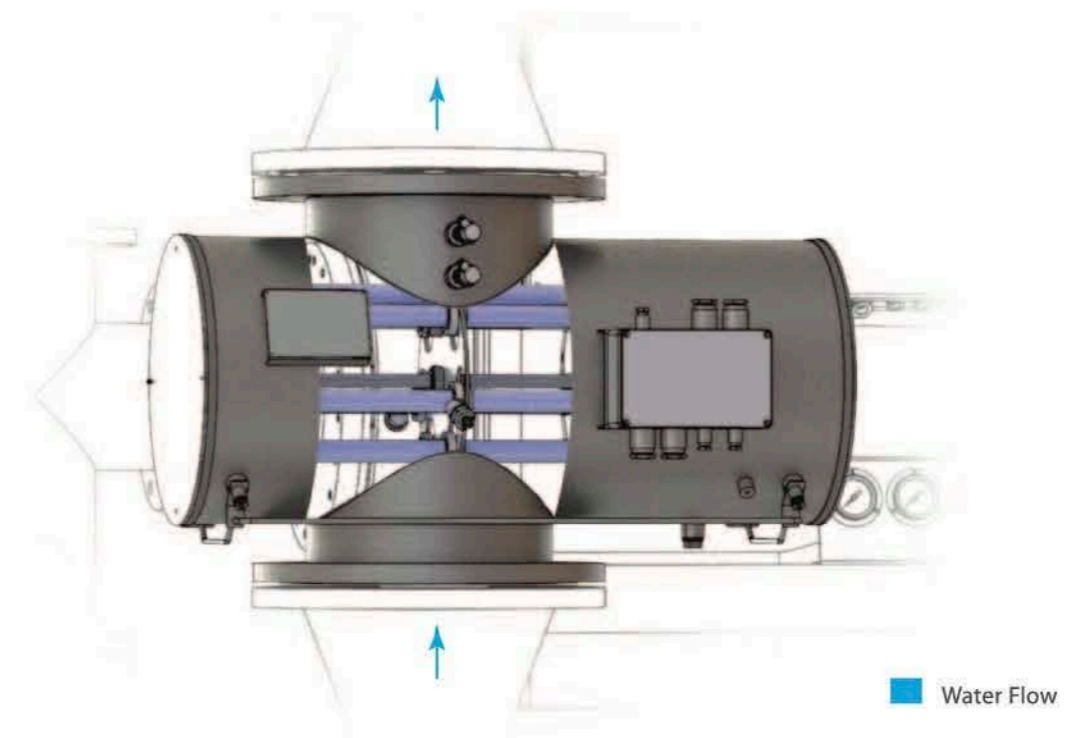
As a heritage of decades of experience in water treatment, Cyeco™ UV reactor has enhanced UV dose distribution from the optimised fluid dynamic design for the most effective UV disinfection. The Cyeco™ UV reactor is fully automatic, requires less space and uses fewer lamps, while providing wider UV germicidal spectrum and longer service life.

Cyeco™ BWTS employs medium pressure UV lamps, which generates polychromatic UV output compare to the monochromatic UV output produced by the low pressure UV lamps.



- Compact Up to 35% space saving
- Automatic Fully controlled by PLC
- Reliable CMFDA /FDA test method for the USCG Type Approval application, 100% in compliance with the USCG regulation and EPA ETV protocol.
- Intelligent Real time monitoring temperature and UV intensity.
- Build to last Which is expected to last for 8,000 + hours, with 5,000 hours guaranteed.

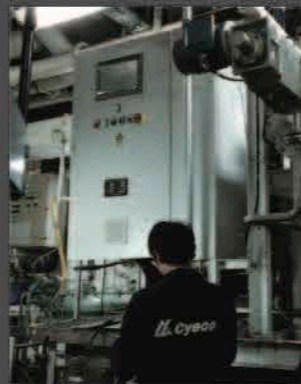
Cyeco™ Medium Pressure UV Reactor



Retrofit Turnkey Solution

The most widely covered turnkey solution available on the market

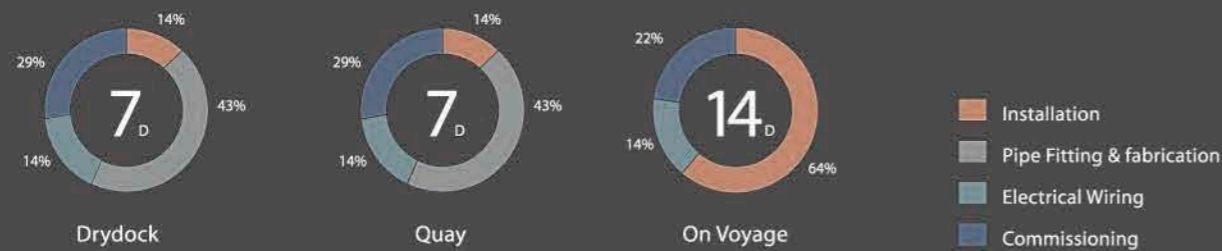
We provide full retrofit turnkey solution with strict quality control. You have the option to let your BWTS packaged with the full retrofit service when delivered, completely leaving the trouble of retrofitting to us, who has accumulated vast experience from completing near 1,000 sets of supply and installation on the domestic and international vessels, and has over 20 years of experience in water treatment plants.



We are obliged to ensure the system's compatibility to your vessel and its operational efficacy, while providing the most economic retrofit solution with the most stringent quality control standard.



Installation Time



Cyeco has completed more than 30 retrofit projects



Virtue ventures

Strive for the excellence

Attention to detail

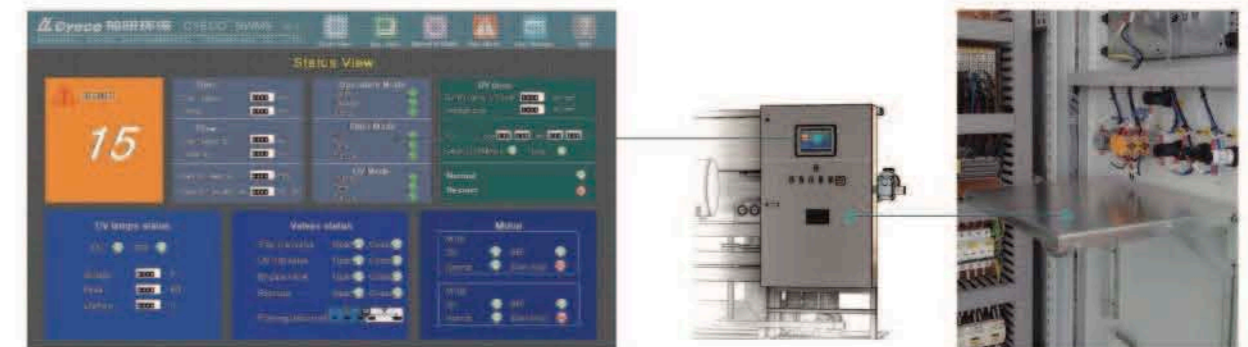


"Fish-scale" external welding

UV lamp protective quartz tubes

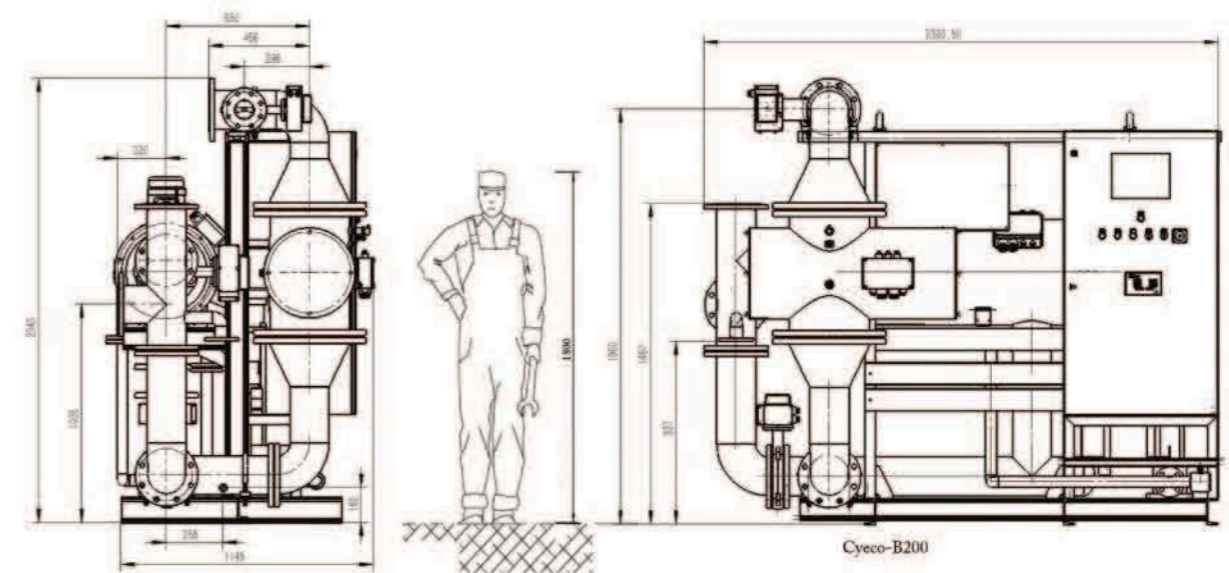
Anti-corrosion PP-lining is fitted for all pipes

User-friendly design



Touch-screen human-machine interface

Side-table for the convenience of inspection



Ergonomic operational height



Xue-long icebreaking research vessel
the Polar Research Institute of China



Cyeco BWTS B250 Installed on Xue-long ice breaking research vessel
September 2013, Shanghai

Thrive for the optimum

Xue-long, which is fitted with Cyeco BWTS, is the first Chinese icebreaking research ship in service, capable of polar research and re-supply. The vessel undertook four China's expeditions to Antarctica during 1999, 2003, 2008, and summer 2010, and provides annual resupply of China's Antarctic Zhongshan Station at Prydz Bay. The vessel also carried out the rescue mission of Akedemik Shokaiskiy in 2013-2014, which had become trapped in ice of the East Antarctic coast, and the search for Malaysian Airlines Flight 370 in 2014.

• Model	Cyeco BWTS B250
• Capacity	250 m ³ /h
• Installation Type	Skid-mounted
• Actual Footprint	Less than 1.8 m ²
• Time Taken	Installation 1 day
	Pipe fitting 5 days
	Electronic wiring 2 days
	Total 8 days

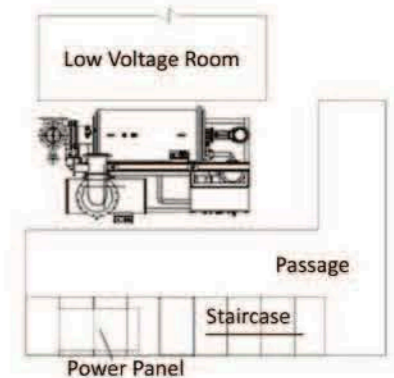
The solution

- In consideration of optimising the pipe layout, the BWTS is installed near ballast water pump.
- The ballast pipe is specially machined to fit the installation environment, see in picture highlight.
- The power panel is installed below the staircase, for avoiding occupying the passage
- The control panel is directly facing the passage, for the convenience of operating and maintenance.



Convenient to operate

- Skid-mounted installation, highly integrated
- Adequate space for electric operation.
- Minimised impact to the surrounding passage.
- Optimal utilisation of the surrounding environment.



Spacious for maintenance

- Adequate space for unloading the fine filter strainer.
- Enough space for UV lamp maintenance.
- Minimised impact to the surrounding electronics.

CYECO™ BWTS SPECIFICATION



MODEL	CAPACITY RANGE (m³/h)	RATED CAPACITY (m³/h)	FILTER MODEL	UV MODEL	POWER (KW)	DIMENSION (LxBxH)		WEIGHT (kg)
						FORM 1	FORM 1	
Cyeco-B200	40~200	200	CF200	CU200	13/24	2320x1235x2050	1160x1160x2500	1355
Cyeco-B250	50~250	250	CF250	CU250	16/30	2400x1236x2100	1200x1160x2550	1495
Cyeco-B300	60~300	300	CF300	CU300	19/36	2495x1300x2100	1300x1250x2550	1645
Cyeco-B400	80~400	400	CF400	CU400	26/48	2495x1500x2150	1500x1300x2600	1725
Cyeco-B500	100~500	500	CF500	CU500	32/60	2615x1500x2150	1500x1300x2700	1775
Cyeco-B600	120~600	600	CF600	CU600	39/72	2700x1520x2250	1650x1420x2900	1895
Cyeco-B750	150~750	750	CF750	CU750	45/72	2700x1550x2280	1900x1580x2900	1925
Cyeco-B800	160~800	800	CF800	CU800	52/84	2990x1550x2300	2025x1726x3010	2225
Cyeco-B1000	200~1000	1000	CF1000	CU1000	65/96	2990x1680x1900	2150x1750x3060	2470
Cyeco-B1200	240~1200	1200	CF1200	CU1200	76/108	3050x1750x1950	2300x1800x3120	2720
Cyeco-B1500	300~1500	1500	2*CF750	2*CU750	90/144	3200x2850x3000	3800x1750x2950	3825
Cyeco-B2000	400~2000	2000	2*CF1000	2*CU1000	130/192	6950x1675x1950	3150x2820x3000	5280
Cyeco-B3000	600~3000	3000	3*CF1000	3*CU1000	195/288	-	4750x2250x3480	8050
Cyeco-B4000	800~4000	4000	4*CF1000	4*CU1000	260/384	7250x3200x3600	6800x2500x3600	10650
Cyeco-B5000	1000~5000	5000	5*CF1000	5*CU1000	325/480	-	8600x2700x3700	13200
Cyeco-B6000	1200~6000	6000	5*CF1200	5*CU1200	380/540	-	9850x2950x3800	14500



BWTS B300



BWTS B800



BWTS B1000



BWTS B1600



BWTS B2000



BWTS B2400



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