



Distributor



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# BSKY™ BWMS

## Ballast Water Management System

Adopt Enhance Physical Technology (EPT) which has international invention patent for ship's ballast water management system (PCT / CN2010 / 07750)

BSKY™ BWMS iscompliance with the IMO, USCG, California and New York State discharge standard.



# About Brightsky

Brightsky Electronic wins the approval of both domestic and foreign technical authorities by virtue of its profound understanding and industrious efforts on marine fire fighting and ballast water treatment technology, and we will achieve sustainable operation in the field with our technical expertise.

- R&D and Electronics Production Building: 36,000M<sup>2</sup>

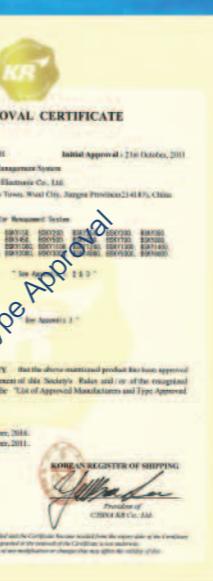
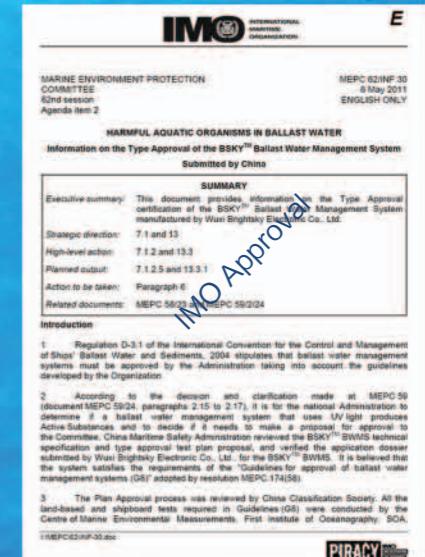


Perfect production site guarantees high product quality



# BSKY™Ballast Water Management System Certification

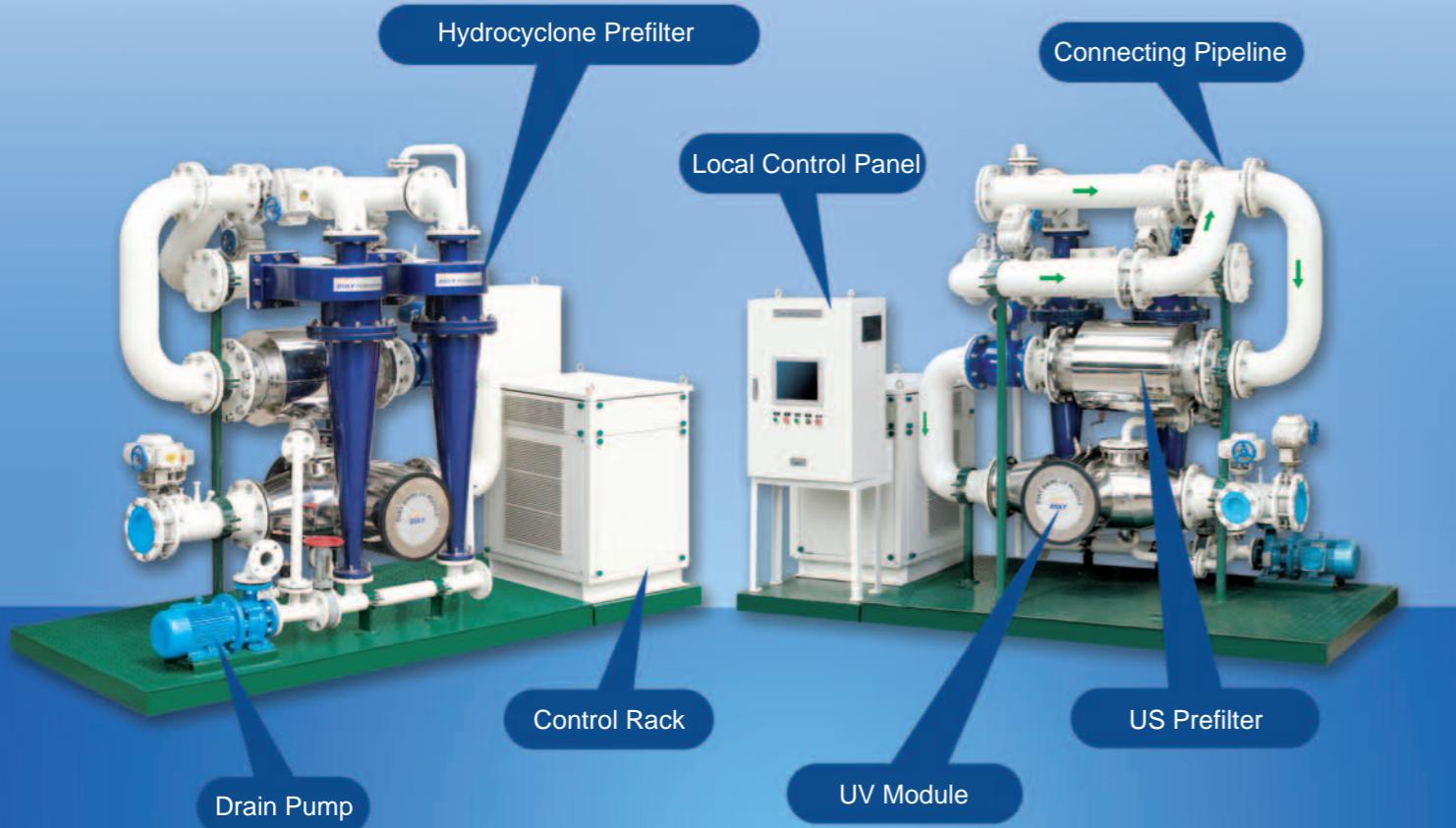
- Proprietary intellectual property rights.
- The United States, Japan, Korea, China and European Union patent.



In progress...

# BSKY™ Ballast Water Management System

- Brightsky Electronic has the complete intellectual property right about BSKY™ BWMS such as America, European Union, Japan, Korea and China patent.
- EPT( Enhanced Physical Treatment ) technology clearly show the best performance in Ballast Water Management with low power consumption.
- Hydrocyclone prefilter has strong separating performance in sediments especially sand and maintenance free filter, which can avoid clogging and also no need to replace filter.
- EPT ( Enhanced Physical Treatment ) technology will not bring any potential risks to environment, ships and crew. Modular design concept of BSKY™ BWMS provides huge flexibility and space saving for engine room or pump room installation.
- EPT ( Enhanced Physical Treatment ) technology have great biological effectiveness, so it can meet not only IMO D-2 requirements but California & New York standards.
- At the same time, we have developed a full series of products with explosion-proof functions from 100m<sup>3</sup>/h~6000m<sup>3</sup>/h,which can be applied to different type of ships.
- Intelligent control system always monitors the running status of BSKY™ BWMS and it will help ship crew easy to operate the BWMS.



## Hydrocyclone — The most suitable for ship ballast water treatment filter technology

- Revolutionary solid-liquid separation device, super strong filtering capability of sediment
- Filter out more than 98% or greater 50 microns plankton and particulate matter
- Free from electric power consumption & maintenance
- Free from cleaning & replacement of filter element

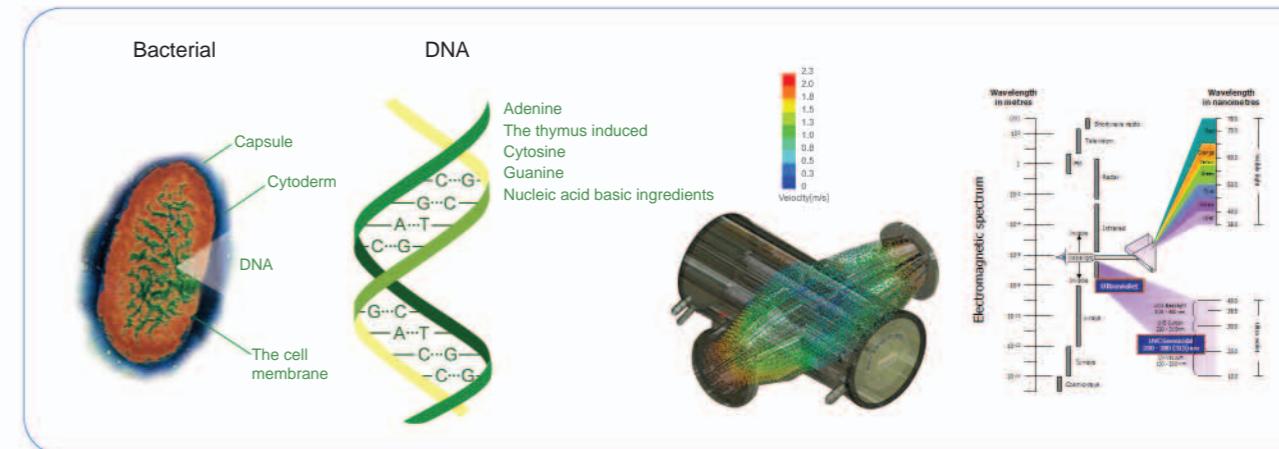


## UV — Proven & Chemical Free Technology

- The design of uniform flow and constant dose are very important factors to be the most mature and reliable physical sterilization technology. The performance of disinfection by UV module of BSKY BWMS won't be influenced by the change of water salinity temperature and turbidity.
- No by-products & no active substances.

## UV module of BSKY BWMS have several advantages

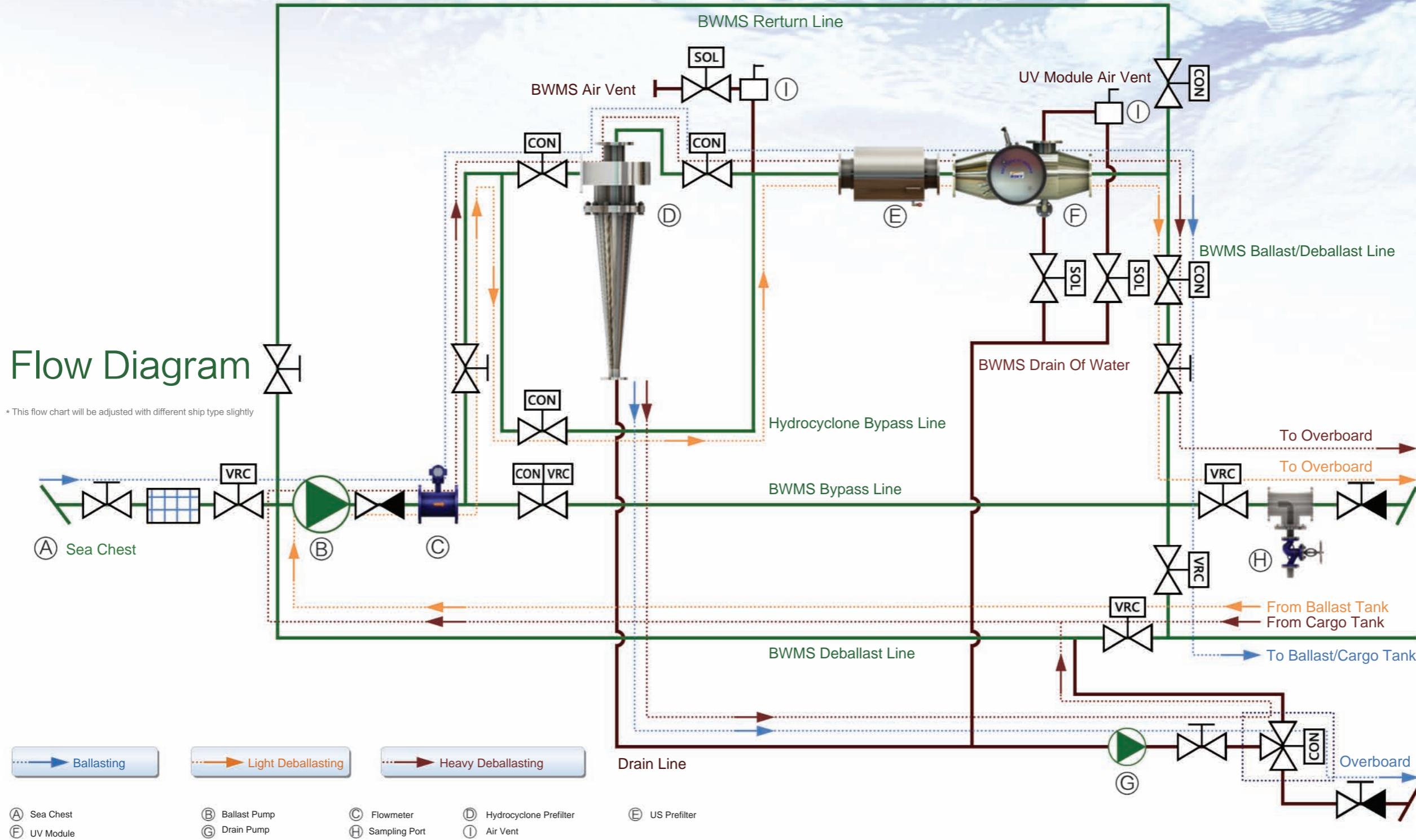
- Easily replace UV lamp.
- Automatic cleaning device.
- Explosion-proof module(EXDIIBT4...)
- Very detailed alarm monitoring system including UV lamp life time.
- Supply safety function for UV lamp breaking.



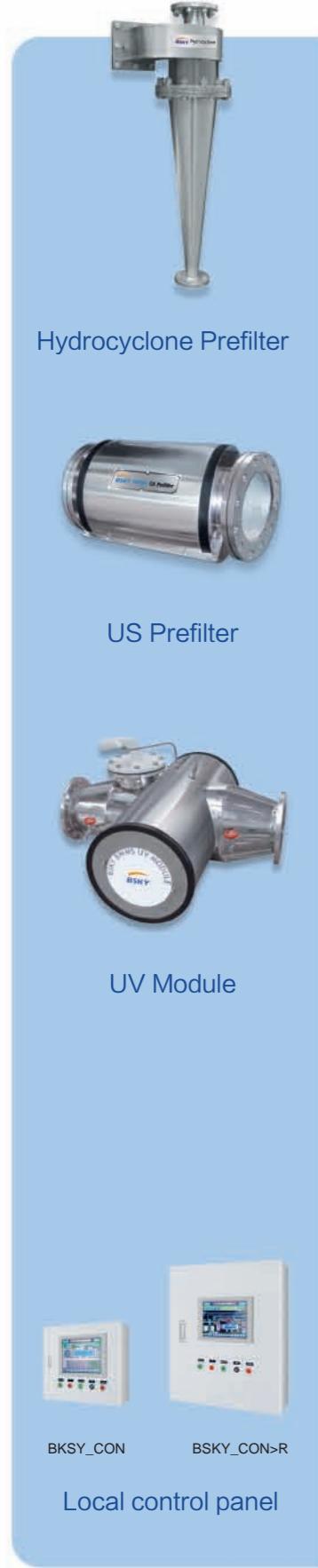
A variety of operation mode :  
To meet the complex condition of ballast and deballast operation of the ship.

BSKY™ BWMS has the exclusive EPT technology, which can provide the most economical designed ballast water management system for every ship.

EPT treatment makes all the sediments back to their earlier place when ballast and disinfect all microorganisms. After EPT treatment, the water will enter ballast tank. During a long time voyage, the microorganisms and bacteria will grow again in ballast tank by contamination, so BSKY™ BWMS treat again when discharge in the destination port to meet the requirements for PSC inspection.



# Products specification



Model	Volume ( mm )	Caliber	Treat Capacit
CY08	355×472×1,215	80A	50~80m <sup>3</sup> /h
CY10	447×585×1,533	125A	100~130m <sup>3</sup> /h
CY12	483×653×1,842	150A	150~200m <sup>3</sup> /h

Model	Line Size	Treat Capacit
US25	200A	300m <sup>3</sup> /h
US35	300A	700m <sup>3</sup> /h
US45	400A	1000m <sup>3</sup> /h
US50	450A	1500m <sup>3</sup> /h

Model	Maximum Throughput	Model	Dimension Footprint	Treat Capacit
UV406	250m <sup>3</sup> /h	CR104	845×700×905	150
UV408	300m <sup>3</sup> /h	CR106	845×700×1,060	250
UV412	450m <sup>3</sup> /h	CR108	845×700×1,115	300
UV512	900m <sup>3</sup> /h	CR112	845×700×1,525	900
UV518	1500m <sup>3</sup> /h	CR118	845×700×2,176	1500
UV402	300m <sup>3</sup> /h	CR102	845×700×978	300
UV404	450m <sup>3</sup> /h	CR104(E)	845×700×1,370	900
UV504	900m <sup>3</sup> /h	CR106(E)	845×700×1,770	1500
UV506	1500m <sup>3</sup> /h			

Model	Volume ( mm )
BSKY_CON	800×300×1,050
BSKY_CON>R	500×200×450



BSKY 150



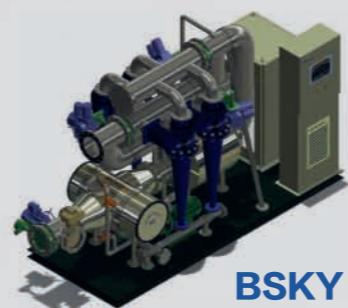
BSKY 250

Please refer to the design manual for more detail information of models.

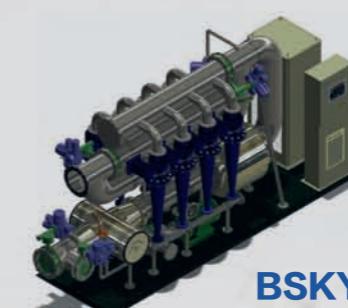
BSKY™ BWMS can treat ballast water capacity from 100m<sup>3</sup>/h ~ 6,000m<sup>3</sup>/h.

Also, it has explosion-proof model(Exd IIB T4 IP65) for installation in hazardous area.

BSKY™ BWMS can be chosen according to ship's condition and types.



BSKY 500



BSKY 1000

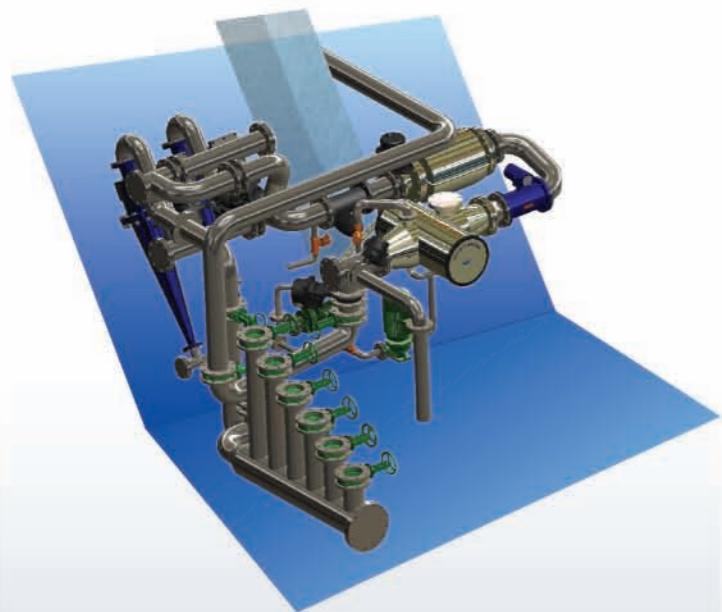
# System combination scheme

## Distributed Installation—expert your Imagination

BSKY™ BWMS adopts modular structure with four major component :

- 1) Hydrocyclone Prefilter
- 2) Ultrasonic Prefilter
- 3) UV module
- 4) Control Rack and Control Panel

The four parts can be installed in one skid, or can be distributed and installed in the pipe network of ballast water management system. It is more flexible and can save more space for engine room or pump room.



➤ Hydrocyclone filtration is installed in middle of the frame of side plate.

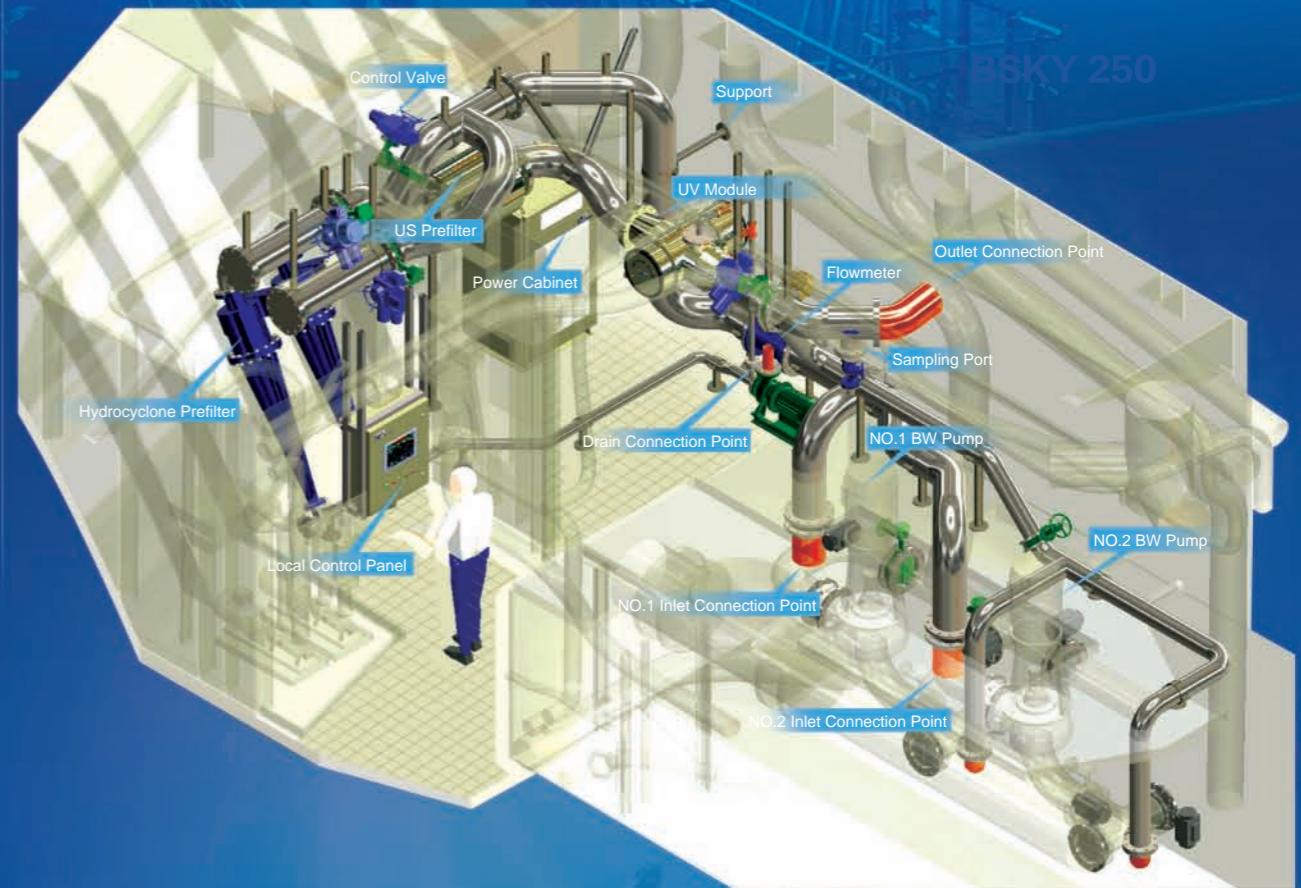


➤ Control rack including UV ballast & US generator and Local control panel are installed in engine room or E.C.R.



➤ Remote control panel(optional) can be installed in B.C.R or C.C.R.

Best Installation Case of Retrofit Vessel  
Do not take possession of bottom space



# Project Service And Solution

## 01 Communication 02 Project Analysis 03 Project Design 04 Manufacture 05 Installation 06 Training & Service



- Vessel information
- Configuration
- Installation
- Onboard Inspection
- Technical agreement

- Installation Period Analysis
- Cost Analysis

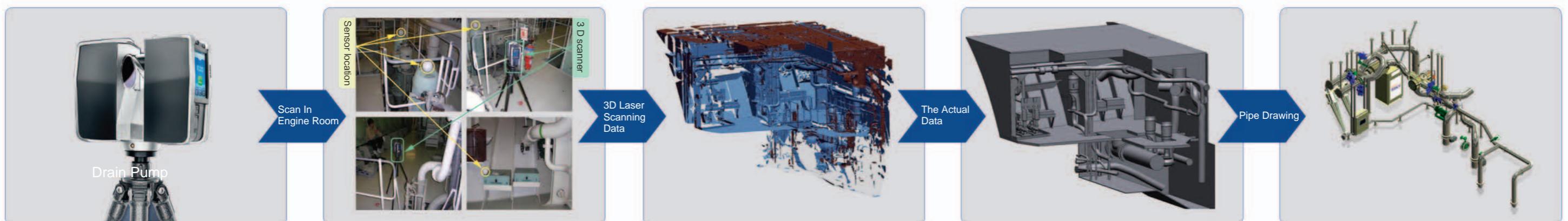
- Drawing approved by Class
- Drawing approved by Owner / shipyard
- Production Drawing
- Working Drawing

- Production Plan
- Purchasing Material
- BWMS Production
- Factory Acceptance test
- Delivery with owner / shipyard

- Dry-docking
- Modify Ballast Pipe Line
- Install BWMS
- Trial Test
- Onboard Test with Class / Owner

- Ship Crew Training
- Normal Operation
- Regular Visiting

Reverse engineering technology (3D Scanning) can improve the accuracy of locating the parts and pre-fitting of pipes during the installation of BWMS for ships in service, also it has the advantage of saving the time and the waste of the pipes.



# Installation Reference

The German company BWRNHARD SCHULTE which has 127 years of history  
FAT(Factory acceptance test) of BSKY™ BWMS



The engineer went to Huarun Dadong Shipyard



Surveyor product



Installation in engine room



Factory acceptance Test by technical manager from BERNHARD SCHULTE



Install BWMS



Installation in engine room

Shipowner from Germany  
Ship: 4100TEU Container  
Class: GL  
Model: BSKY500

Shipowner from Germany  
Ship: 3500TEU Container  
Class: GL  
Model: BSKY600

# Installation Reference



M / V HAKUSHIN MARU



Installation in engine room



Installation in engine room



STX shipyard



3D Scanning



KMTC

Shipowner from Japan

Ship: 1500DWT Naphthalene transport ship (new building)

Class: NK

Model: BSKY300

Shipowner from Korea

Ship: 1050TEU Container

Class: KR

Model: BSKY300

# Installation Reference



AMBER CHAMPION



ORKIM GLORY



Install BWMS

**Shipowner from Hongkong**

Ship: 63800DWT Bulk carrier (new building)

Class: DNV

Model: BSKY1000 x 2sets



Measure on ship

**Shipowner from Malaysia**

Ship: 7K Product Oil Tanker (new building)

Class: ABS

Model: BSKY100 / BSKY400Ex



# Global Before Service System

In traditional service mode for Marine product: If the equipment is out of order, it is just waiting next berthing or docking shipyard for maintenance work, it was called 'After Service', by equipment engineer. It is difficult for equipment provider to check the system's status because the equipment installed in vessel, cannot be monitoring during the voyage.

BSKY™ BWMS is installing a satellite communication module in the ballast water management system to check and communicate purpose for maintenance work, through satellite communications information of BSKY™ BWMS's running status send to the equipment manufacturer's database based on web site as real-time feedback. Ship owner also can check all information of the equipment's running state by access of website account. During the operation, if BSKY™ BWMS has some problem, it will be reported to headquarter of BSKY. According to this information, BSKY™ engineer can prepare maintenance service before berthing of vessel.

BSKY™ BWMS supply the high efficiency and quality 'Global Before Service System' for first-class customer service

## Advantages

- Using satellite communications, it can cover all over the world.
- Professional monitoring site: Customer can access BWMS running status by internet site.
- Communication: Sending & receiving real-time information of BWMS message between BSKY and vessel.
- One step ahead of Service: BSKY can check the problem of the BWMS without notice from vessel and prepare the solution before next port entry.
- Supply easy, full and accurate maintenance work: By real-time communication between BSKY and vessel.

## System monitoring interface

