BWTS RETROFITTING

THE CHALLENGE

- The BWTS technology that best suits the particular vessel must first be established.
- Suitable location and sufficient available space must first be determined.
- Re-programming of vessel's ballasting/de-ballasting management plan & operation philosophy.
- Existing pipe & fitting routing modification needs to be considered and carefully worked out
- Electrical & instrumentation modification works requires careful planning and implementation.
- Additional & alteration (A & A) works and other tasks that may required in order to fit the proposed ballast water treatment system onto the vessel must be address and viable solution(s) must be carefully worked out.
- Coordination & project management among vessel owners, BWTS manufacturers, shipyard & classification society bodies on technical issues.
- Submission of complete retrofitted vessel's BWMS plan for classification society review & approval must also be considered.

THE SOLUTION

With the above challenge in mind, vessel owners, shipyard operators, ship-management companies and/or anyone that requires retrofitting their vessel(s) with ballast water treatment system, will certainly be able to have peace of mind knowing that ***SINCO AUTOMATION (S) PTE LTD*** is able to address & work out viable and suitable retrofitting and installation solutions by providing:

- ✓ Various types of BWTS technologies for clients' ultimate selection for specific vessel's BWTS needs *(see following page for our collaboration & partnership with various BWMS manufacturers, but not limited to)*
- ✓ Onboard technical evaluation
- ✓ 3-D location image scanning & verification
- ✓ Full scale BWTS retrofit design, engineering and consultation.
- ✓ Advisory on suitable location and maximize limited available space.
- ✓ Advisory on pipes & fittings modification works.
- ✓ Advisory on electrical modification works.
- ✓ Advisory on additional & alteration works.
- ✓ Provide engineering services, system design detailed general arrangement drawings, piping
- ✓ & instrumentation diagrams, electrical drawings, ease of reference technical and operational manual.
- ✓ Minimizing vessel's lay-off time by providing pre-planned schedule & pre-fabrication of all necessary pipe-spool, fitting and all supplementary installation items prior to BWTS installation during dry-docking.
- ✓ Liaising with BWTS manufacturer, client's designated shipyard & classification societies on all technical issues relating to installation and implementation of retrofitted BWMS
- ✓ * Conduct Factory Acceptance Tests, installation & commissioning assistance as well as sea trial, if so required.

The above process can only take place upon request from you - Vessel Owners, Shipyard Operators, Ship Management Companies and/or anyone that requires retrofitting their vessel(s) with class society approved ***Ballast Water Management System***.

In SINCO, we stand by you. – All The Way.

BWTS RETROFITTING

In Collaboration & Partnership with the following BWTS manufacturers *(but not limited to)*:

Manufacturer / Country	Brand	Process Technology	Class Approval Status	
Headway Technology Co; Ltd - Qingdao, China	OceanGuard ™ BWMS	50µm Auto-Back Flush Filtration & In-Line Advanced Electro-catalysis Oxidation	IMO-Final Approved USCG in process	OCEAN GUARD
Hanla IMS - S. Korea	EcoGuardian ™ BWTS	50µm Auto-Back Flush Filtration & Side Stream Electro-Catalysis	IMO-Final Approved USCG AMS	EcoGuardian™ BALLAST WATER TREATMENT SYSTEM
Aqua Engineering Company, Ltd - S. Korea	AquaStar™ BWMS	Smart Pipe System & Electro-Catalysis	IMO-Final Approved USCG AMS	AquaStar
NK Co., Ltd. - S. Korea	BlueBallast BWMS	O3 Generation System	IMO-Final Approved USCG AMS	NK
Sunrui Marine Environment Engineering Co Ltd - Qingdao, China	BalClor® BWMS	50µm Auto-Back Flush Filtration & Side Stream Electro-Catalysis	IMO-Final Approved USCG in progress	BalClor®
OceanSaver AS - Norway	OceanSaver MKII BWTS	40µm Auto-Back Flush Filtration & Side Stream Electro-dialysis	IMO-Final Approved * USCG document Submission stage	OceanSaver
* Completed Test documents submitted to USCG on 23rd, September 2016 for USCG Final Type Approval				

BWTS RETROFITTING

List of BWMS New Build & Retrofit Installations 2015 to Present

Project Name / Hull No:	Vessel Type	Vessel Owner	Shipyard	Class	New Build (NB) OR Retrofit	Date of Completion
Prosafe I Safe Boreas 11-1110	Semi-Submersible Accommodation Platform	Prosafe Offshore Ltd (United Kingdom)	JSPL, Singapore	DNV.GL	N/B	2013
Prosafe II Safe Zephyrus 11-1113	Semi-Submersible Accommodation Platform	Prosafe Offshore Ltd (United Kingdom)	JSPL, Singapore	DNV.GL	N/B	2014
Helix Q7000 11-1115	Semi-Submersible Well Intervention Rig	Helix Energy Solutions Inc. (U.S.A)	JSPL, Singapore	DNV.GL	N/B	2015
Heerema Sleipner 11-1119	Semi-Submersible Crane Vessel	Heerema Marine Contractors Nederland SE (Netherlands)	JSPL, Singapore	LRS	N/B	2016
Cap Hamilton 2057	Container Ship	CMB Group (Belgium)	Singapore	DNV.GL	Retrofit	In Progress
Hermes Arrow 482	Container Ship	CMB Group (Belgium)	Singapore	DNV.GL	Retrofit	In Progress
Mineral Belgium H1014	Bulk Carrier	CMB Group (Belgium)	Singapore	ABS	Retrofit	In Progress
A La Marine	Container Ship	CMB Group (Belgium)	Singapore	DNV.GL	Retrofit	In Progress
Maersk Nijmegen	Container Ship	CMB Group (Belgium)	Singapore	DNV.GL	Retrofit	In Progress
CMB Yasmine (H 1022)	Bulk Carrier	CMB Group (Belgium)	Singapore	DNV.GL	Retrofit	In Progress
CMB Edouard	Bulk Carrier	CMB Group (Belgium)	Singapore	ABS	Retrofit	In Progress
Grouse Hunter	Container Ship	CMB Group (Belgium)	Singapore	DNV.GL	Retrofit	In Progress
Cap Harvey 2061	Container Ship	CMB Group (Belgium)	Singapore	DNV.GL	Retrofit	In Progress
C.S ASEAN Protector 402	Cable Layer	ASEAN CABLESHIP (Singapore)	Singapore	LRS	Retrofit	In Progress
C.S ASEAN Restorer	Cable Layer	ASEAN CABLESHIP (Singapore)	Singapore	LRS	Retrofit	In Progress
C.S ASEAN Explorer 11-1064	Cable Layer	ASEAN CABLESHIP (Singapore)	Singapore	LRS	N/B	In Progress