

HANYOUNG Engineering

**15PPM BILGE SEPARATOR
[IMO RES. MEPC 107(49)]**



**SEWAGE TREATMENT PLANT
[IMO RES. MEPC 227(64)]**



CONTENTS

01. Company milestones
02. Introduction
03. 15ppm Bilge Separator
04. Sewage Treatment Plant
05. Global A/S Network



COMPANY MILESTONES

2016 : Type approval Cert. of STP [IMO Res. MEPC 227(64)]

2009 : Type approval Cert. of STP [IMO Res. MEPC 159(55)]

2005 : Type approval Cert of OWS [IMO Resolution MEPC 107(49)]

2001 : Developed Foam, Dry Powder and Co2 Fire Extinguishers

2000 : Granted Maintenance-Business for life raft & storage for Explosives

2000 : Moved factory to Kimhae, Kyung Nam

1999 : Obtained ISO-9001 Cert.

1994 : Obtained Type Approval Cert. of IMO Res.MEPC60(33)

1983 : Registered the shipping Industry Related Company

1983 : Technical tie-up with Kobe Separator & Taiho Industry

1983 : Founded factory at Pajue Kyounggi-Do

1982 : Established at Incheon.

Introduction of Han Young ENG Co., Ltd

▶▶▶ N A M E : HAN YOUNG ENG CO.,LTD.

▶▶▶ C E O : YU HO GUEN

▶▶▶ ESTABLISHED : 20th JULY 1982

▶▶▶ H O M E P A G E : www.hanyoungeng.kr

▶▶▶ P R O D U C T

1. OILY WATER SEPARATOR
2. SEWAGE TREATMENT PLANT
3. BWTS NEUT. TANK



▶▶▶ A D D R E S S : 24-5, Gimhae-daero 916beon-gil, Hallim-myeon,
Gimhae-si, Gyeongsannam-do, Republic of Korea

Chapter 03

15ppm Bilge Separator

- 01. Background
- 02. IMO MEPC Res. 107(49)
- 03. 15ppm Bilge Alarm
- 04. HYN Series
 - General
 - Drawings
 - Certification
 - Specifications
 - Reference

BACKGROUND

- The international community has strengthened the structural, technical conditions and emission standards that vessels must observe to prevent the indiscriminate discharge of oil and other pollutants that cause serious damage to the marine and fisheries industries and to destroy marine ecosystems.
- The current regulations on oily sewage efflux from ships are based on Annex 1 of the 1973 International Convention for the Prevention of Pollution from Ships, amended by the 1978 Protocol (MARPOL 73/78).
- At its 33rd session of the IMO Marine Environment Protection Committee (MEPC) in 1992, it adopted resolution MEPC.60 (33), which included guidelines and specifications for pollution prevention equipment for ship's machinery space bilge.
- In recognition of the development of technology since 1992 in 2003, the Commission adopted Resolution MEPC.107 (49), which includes the guidelines and specifications adopted in 1992.

IMO Res. MEPC 107(49)

1. General

- It is required to filter and emit bilge in the state of oil emulsified by oxidizing agent, emulsifier, solvent and surfactant used in the engine room under 15ppm.
- The marine pollution prevention equipment to be installed in the ship consists of 15ppm Bilge Separator, 15ppm Bilge Alarm, and Automatic Stopping Device.
- Maintenance shall be specified by the manufacturer's instructions and a record of maintenance performed on a regular basis for repairs shall be provided.

2. Applicability

We recommend that all bilge separators installed on the ship after January 1, 2005 comply with the revised IMO resolution.

- A bilge separator installed in a newly built ship built after January 1, 2005
- Newly exchanged bilge separating apparatus for vessels built before January 1, 2005

3. Design Basis

- The 15 ppm bilge separating device has a structure that enables automatic operation but does not generate any discharge to the outside of the boat in the event of equipment failure.
- 15 ppm Even though the supply to bilge separator (from bilge water to oil, from bilge water to emulsified bilge water, from oil and water to air) fluctuates, the oil content of the drainage must meet the 15 ppm criterion is there.

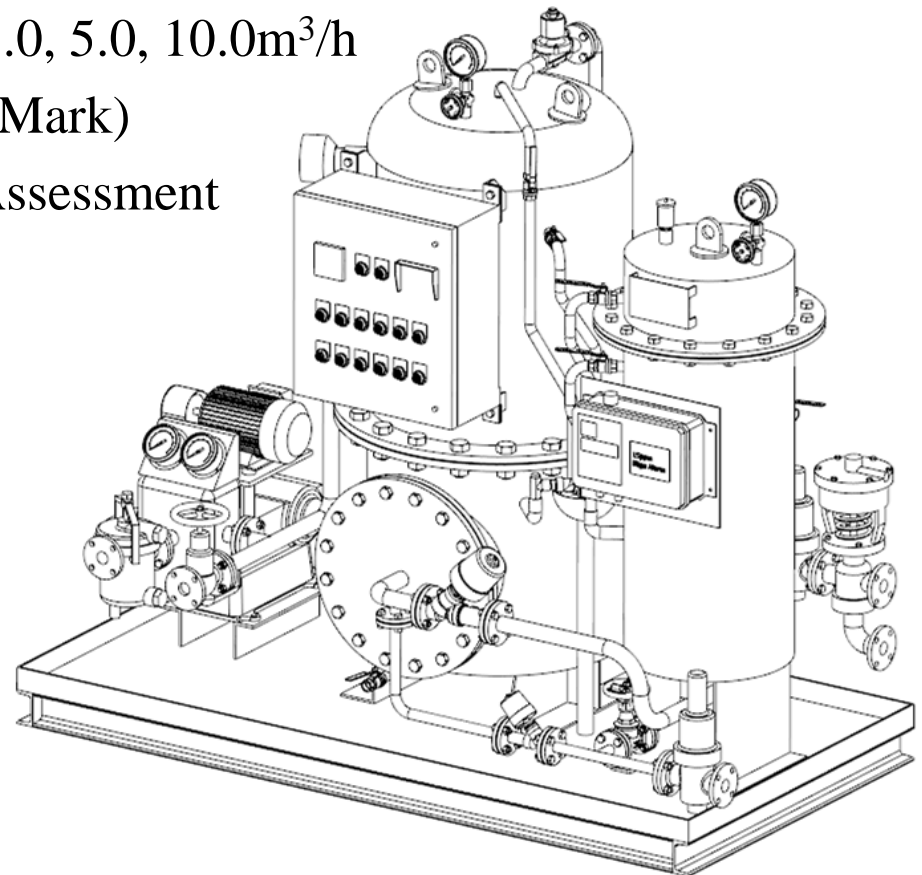
Bilge Alarm Model : BilgMon488 (Agency Agreement)

- Type approval certificate must be issued and stored on board
- Oil content analysis should take less than 5 seconds
- A minimum 3-year driving record should be preserved and printing should be possible according to the tester's requirements.
- If fresh water is used for the purposes of cleaning and calibration work, a separate line needs to be installed.



HYN Series – 15ppm Bilge Separator

- Coalesce & Membrane Type
 - ROK Type Approval 2006.04.13.
 - 8 Models : 0.2, 0.3, 0.5, 1.0, 2.0, 3.0, 5.0, 10.0m³/h
 - MED Certificate (EC Type & CE-Mark)
 - A.B.S. Type Approval – Design Assessment
 - R.S. Type Approval - Russia

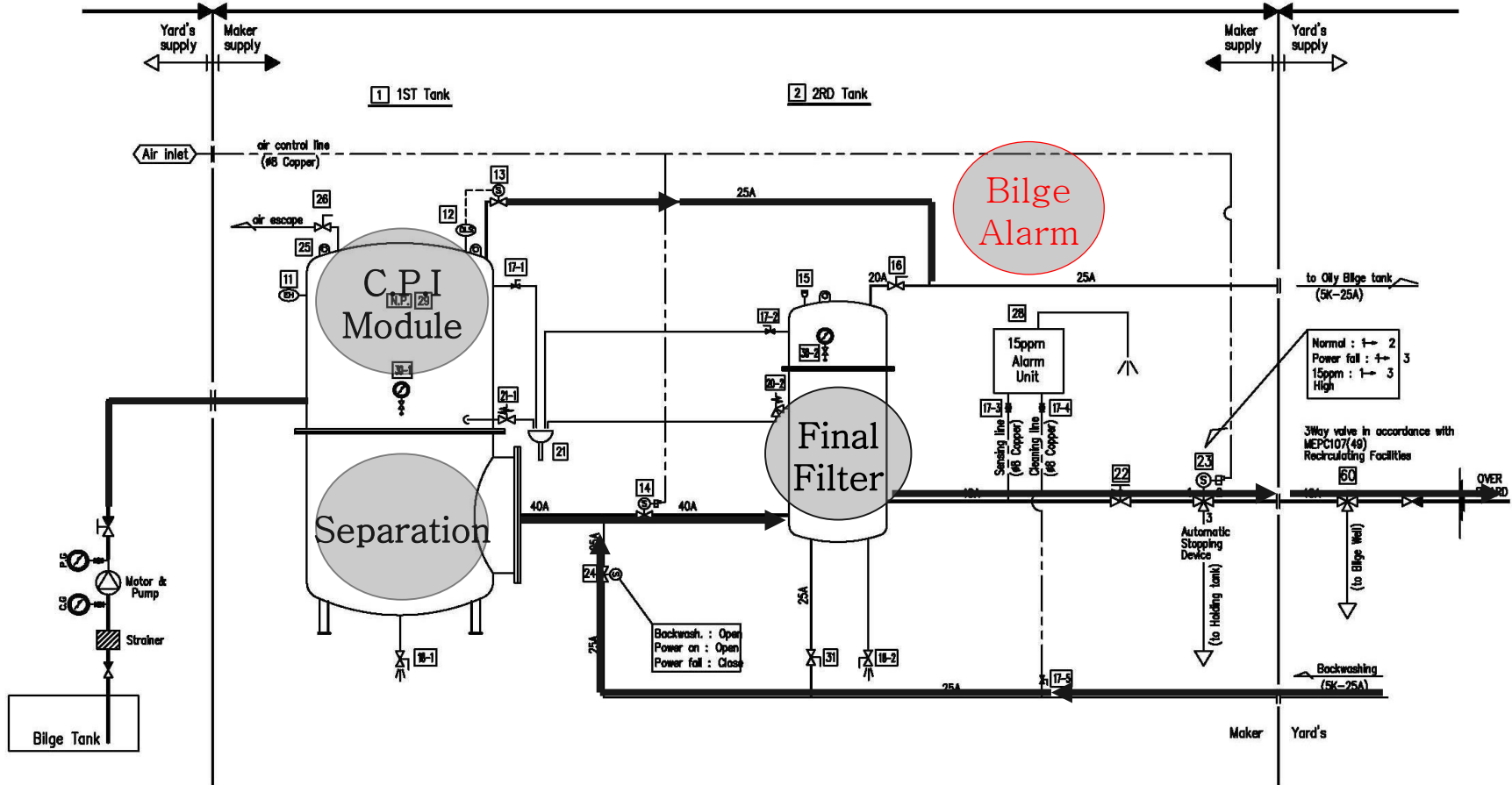


HYN Series Bilge Separator Features

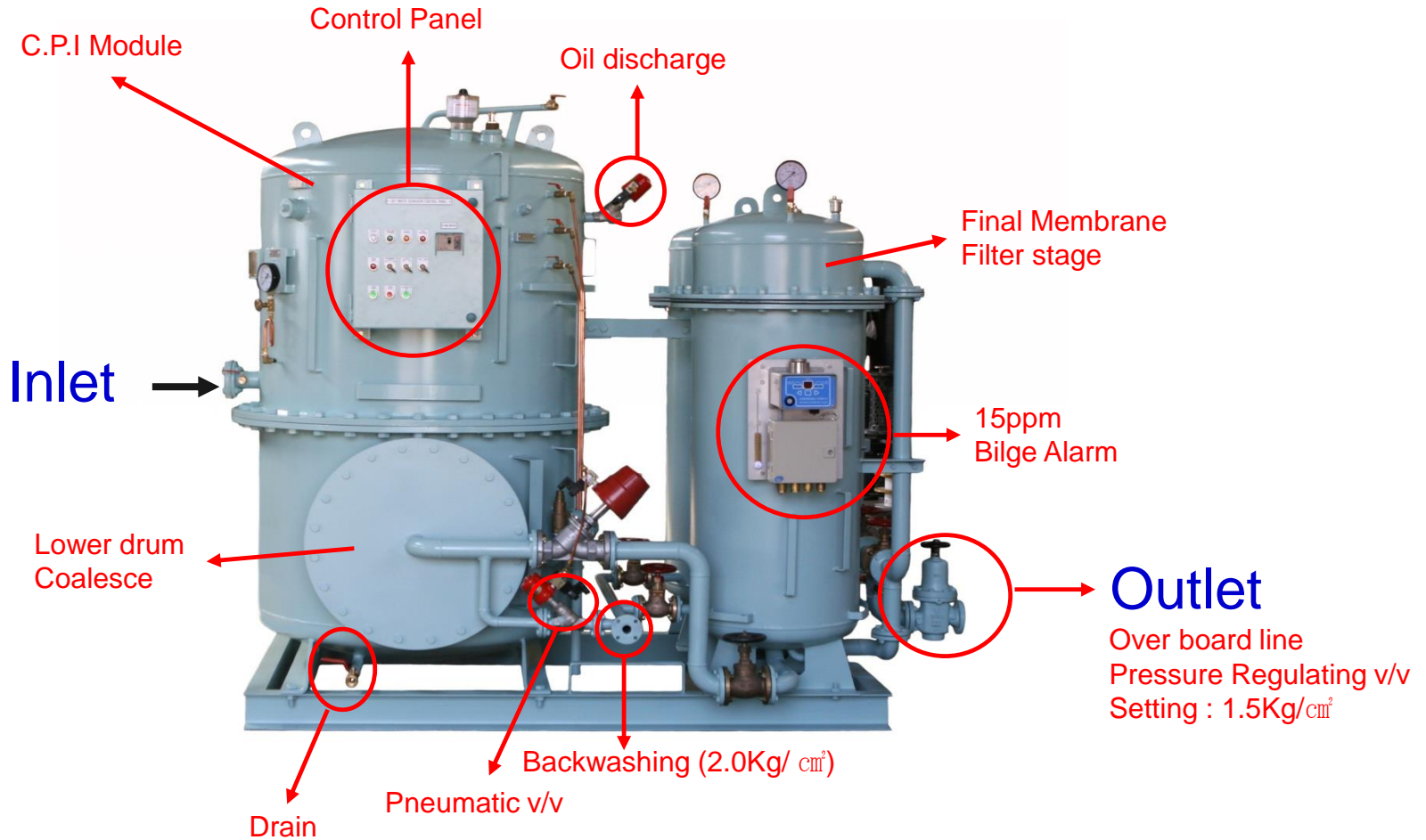
- IMO regulations and domestic marine pollution control law compliance
- It has less maintenance cost and is more economical than other devices
- Easy to operate and maintain
- Can be operated separately in Normal Mode and Emulsion mode
- Processing is possible with a general filter, and the life of the filter is lengthened as compared with other products
- Easy long-term operation with automatic reverse cleaning system
- Efficiency during treatment of emulsion-containing wastewater is high
- 3D Modeling & Retrofit Engineering

15ppm Bilge Separator

HYN Series (Coalescer & Membrane Type) Flow Diagram



HYN Series (Coalescer & Membrane Type)



15ppm Bilge Separator



HYN Series (Coalescer & Membrane Type) – Certifications

No. BS-63



Ministry of Maritime Affairs and Fisheries
Republic of Korea

CERTIFICATE OF TYPE APPROVAL FOR 15PPM BILGE SEPARATOR

This is to certify that the 15 ppm Bilge Separator listed below has been examined and tested in accordance with the requirements of the specifications contained in Part 1 of the annex to the guidelines and specifications contained in IMO resolution MEPC.107(49). This certificate is valid only for 15 ppm Bilge Separator referred to below.

15 ppm Bilge Separator supplied by Han Young Engineering Co., Ltd., R. O. Korea

Under type and model designation HYN02001 and incorporating

* 15 ppm Bilge Separator manufactured by Han Young Engineering Co., Ltd.
to specification/assembly drawing No. : HYN02001- 821408/10 Date : 2005.12.14

* Filters manufactured by Korea Filter Engineering Co., Ltd.
to specification/assembly drawing No. : HYN02001- 82140860 Date : 2005.12.14

Control equipment manufactured by Han Young Engineering Co., Ltd.
to specification/assembly drawing No. : HYN02001 - 82140857

Supply pump capacity : 2.0 m³/h 0.75 Motor kW
rating : 0.6 kW

Maximum throughput of system : 2.0 m³/h

If integral feed pump is not fitted state method proposed for ensuring maximum throughput of system is not exceeded

A copy of this Certificate should be carried aboard a vessel fitted with this Separator at all times. Limiting conditions imposed
Test data and results attached in the appendix.



Signed
Ministry of Maritime Affairs and Fisheries
Republic of Korea.
Dated this 13th day of April, 2006

EC TYPE EXAMINATION CERTIFICATE

DNV-GL

Certificate No:
MED-B-9972
Item No:
A.3/2.1
Job Id:
344.1-001344-2

Application of Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2012/32/EU, issued as "Torskrift om Skipstat" by the Norwegian Maritime Directorate. This Certificate is issued by DNV GL under the authority of the government of the Kingdom of Norway.

This is to certify:
That the Oil-filtering equipment (for an oil content of the effluent not exceeding 15 p.p.m.) with type designation(s)
Models: HYN02001, HYN02001, HYN02001, HYN02001, HYN02001, HYN02001, HYN02001 & HYN10001

Issued to
Han Young Engineering Co. Ltd
Kimhae-city, KYUNGNAM, Republic of Korea

is found to comply with the requirements in the following Regulations/Standards:
Annex A.1, Item No. A.1/2.1 and Annex B, Module B in the Directive. Marpol 73/78 as amended, Annex 1 Regulation 14, IMO Res. MEPC.107(49)

QS - CERTIFICATE OF ASSESSMENT - EC (MODULE D)

DNV-GL

Certificate No:
MED000007H

Application of Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2014/93/EU, issued as "Forskrift om Skipstat" by the Norwegian Maritime Directorate. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom of Norway.

This is to certify:
That the Quality System for the products
with type designation(s) as specified in the Appendix to this Certificate

Issued to
Han Young Engineering Co., Ltd
Gimhae-si Gyeongsangnam-do, Republic of Korea

is found to comply with the requirements applicable to it.
The quality has been assessed with respect to the procedure of conformity assessment described in Annex B, Module D in the directive.

This Certificate is valid until 2021-03-14.
Issued at Havik on 2016-03-15

DNV GL local station:
Gimhae MC & FIS

Approval Engineer:
Jens Rogge



Notified Body
No. 0575



for DNV GL AS
Signed Hereby: Vidar Dolonen
Location: DNV GL, Mark, Norway
Signed On: 2016-03-15
Vidar Dolonen
Head of Notified Body



0575 Notified body number undertaking quality surveillance
YY Last two digits of year in which the mark is affixed



The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended.
This certificate addresses the manufacturer in connection with the EC Type Examination (Module D) Certificate of the equipment listed below in the Mark of Conformity (Mandatory) in the product specified herein. Such Mark shall not be applied to and agreed with the notified body named on this certificate and/or after lapse of time, without the revision of the EC Type Examination (Module D) Certificate.
The Manufacturer has to apply for periodical audits to verify the maintenance and application to the quality system every 12 months.



CERTIFICATE NUMBER
06-8K181863-I-PDA
DATE
06 December 2011
ABS TECHNICAL OFFICE
ABS Pacific Division

CERTIFICATE OF DESIGN ASSESSMENT

This is to Certify that a representative of this Bureau did, at the request of
HANYOUNG ENGINEERING CO., LTD. - KIMHAE



РОССИЙСКИЙ МОРСКОЙ РЕГИСТР СУДОХОДСТВА
RUSSIAN MARITIME REGISTER OF SHIPPING

2.4.17.1

СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ СЕПАРАТОРА НЕФТЕСОДЕРЖАЩИХ ВОД НА 15 МЛН³

CERTIFICATE OF TYPE APPROVAL FOR 15 PPM BILGE SEPARATOR

Настоящим удостоверяется, что перечисленное ниже оборудование проверено и испытано в соответствии с требованиями части 1 Приложения к Руководству и техническим требованиям, содержащимся в резолюции ИМО MEPC.107(49). Настоящее Свидетельство действительно только для оборудования, указанного ниже.

This is to certify that the equipment listed below has been examined and tested in accordance with the requirements of the specifications contained in Part 1 of the Annex to the Guidelines and Specifications contained in IMO resolution MEPC.107(49). This Certificate is valid only for equipment referred to below.

Оборудование типа и модели
Equipment under type and model designation
HYN02001

поставляется
supplied by
HANYOUNG ENGINEERING CO., LTD.

и включает:
and incorporates
#1009-9, #YUNGDONG RE, HANJIN-MYUN, KIMHAE-CITY, KYUNGNAM, KOREA

оборудование, изготовленное
equipment manufactured by
HANYOUNG ENGINEERING CO., LTD.

по техническим условиям/Сборочному чертежу №
to specifications/assembly drawing No.
HYN02001 - 82140810

дата
date
09.10.2006

*изготовлено устройством/Сборочным чертежом №
*fabricated manufactured by
KOREA FILTER ENGINEERING CO., LTD.

по техническим условиям/Сборочному чертежу №
to specifications/assembly drawing No.
HYN02001 - 82140857

*изготовлено устройством/Сборочным чертежом №
*fabricated manufactured by
HANYOUNG ENGINEERING CO., LTD.

по техническим условиям/Сборочному чертежу №
to specifications/assembly drawing No.
HYN02001 - 82140857

пропускная способность насоса
pump capacity
0.5 m³/h

мощность двигателя
motor rating
0.4 kW

максимальная пропускная способность системы
maximum throughput of system
0.5 m³/h

* Неиспользуемые значения
* Values in parenthesis

hc
15
for
not
hc

hc
15
for
not
hc

HYN Series (Coalescer & Membrane Type) – Specifications

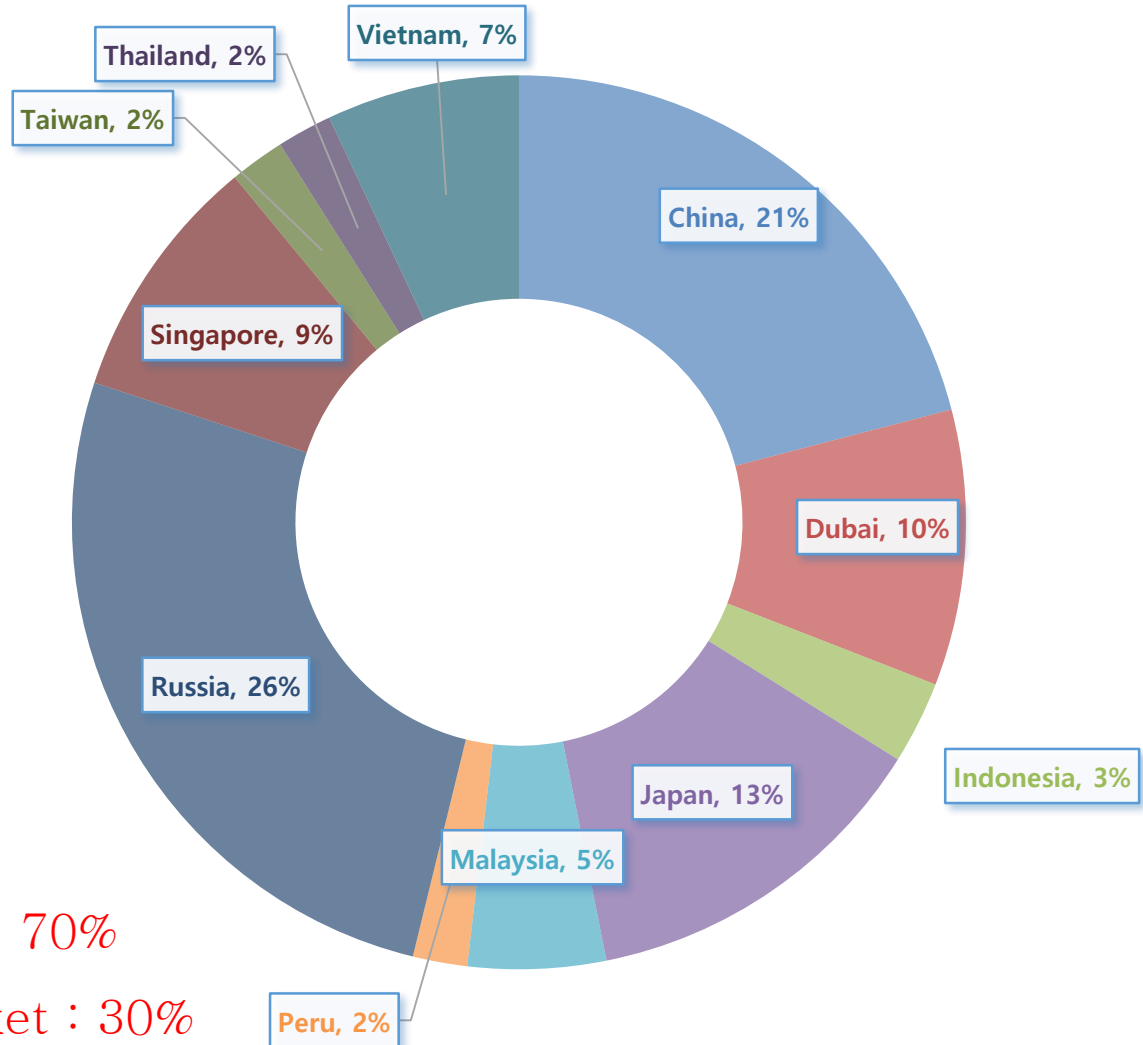
Model NO.	Capacity	Weight	Demensions (W * D * H)
HYN00201	0.2m ³ /hr	98kg	660 * 630 * 1000
HYN00301	0.3m ³ /hr	120kg	780 * 640 * 1100
HYN00501	0.5m ³ /hr	140kg	820 * 850 * 1200
HYN01001	1.0m ³ /hr	290kg	1250 * 860 * 1500
HYN02001	2.0m ³ /hr	480kg	1520 * 1050 * 2100
HYN03001	3.0m ³ /hr	580kg	1560 * 1100 * 2100
HYN05001	5.0m ³ /hr	800kg	1850 * 1350 * 2100
HYN10001	10.0m ³ /hr	1200kg	2350 * 1750 * 2200

Oily Water Separator Reference List(2010 ~ 2017)

The OWS sales business started in 1983.

Model No.	Capacity	Sales Rate
HYN00201	0.2m ³ /hr	56set
HYN00301	0.3m ³ /hr	120set
HYN00501	0.5m ³ /hr	544set
HYN01001	1.0m ³ /hr	104set
HYN02001	2.0m ³ /hr	10set
HYN03001	3.0m ³ /hr	52set
HYN05001	5.0m ³ /hr	130set
HYN10001	10.0m ³ /hr	72set
Total		1,088set

Oily Water Separator Reference List(2010 ~ 2017)



* Korea Market : 70%

* Overseas Market : 30%

Chapter 04

Sewage Treatment Plant

- 01. Background
- 02. IMO MEPC Res. 227(64)
- 03. HYSTPN Series
 - General
 - Certification
 - Drawings
 - Specifications
 - Reference

Background

- With the introduction of IMO Resolution MEPC.227 (64), a new wastewater treatment standard from 2016, it is able to satisfy the emission standards enhanced by the enforcement of biological performance and sterilizing power, and the installation of efficient equipment is required.
- A ship's Sewage treatment plant is required to have a compact apparatus which can reduce the installation area, shorten the processing time, and minimize the installation space.
- It is suitable for the load fluctuation and external physical environment change of the ship wastewater according to the various operating routes and periods of the ship, and a simple and easy maintenance structure is required.

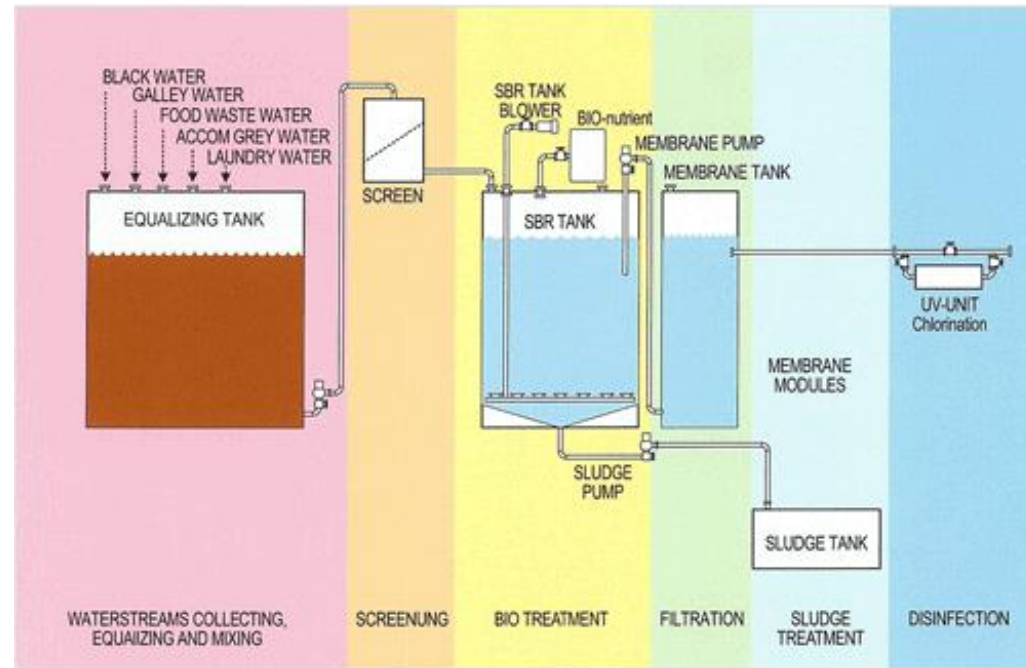
IMO Res. MEPC 227(64)

- The Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO) adopted resolution MEPC.2(VI) Recommendation on International Effluent Standards and Guidelines for Performance Tests for Sewage Treatment Plants in 1976.
- This document contains the Revised Guidelines on Implementation of Effluent Standards and Performance Tests for Sewage Treatment Plants (Guidelines).

TECHNICAL SPECIFICATION	MEPC. Res. 227(64)
Thermo-tolerant Coliform	Not exceed 100T-t C /100 ml
Total Suspended Solids(TSS)	Not exceed 35 Qi/Qe mg/l
Biochemical oxygen Demand	Not exceed 25mg/l
Chemical Oxygen Demand	Not exceed 125mg/l
pH	6 ~ 8
Residual Chlorine	Not exceed 0.5mg/l
T-N(Baltic Sea)	Not exceed 20 Qi/Qe mg/l or 70% remove
T-P(Baltic Sea)	Not exceed 1.0 Qi/Qe mg/l or 80% remove

HYSTPN Series Sewage Treatment Plant Features

- Meets regulatory requirements for new and existing installations
- Minimize size and weight
- Competitive price
- Low maintenance cost
- Small installation area
- Good operation
- Bio-solids dehydration
- Excellent in removing nutrients
- 3D Modeling & Retrofit Engineering
- Service Network



HYSTPN Series (MBR Process) - Certification

No. 2016-005

Busan Regional Office of Oceans and Fisheries
Republic of Korea

**CERTIFICATE OF TYPE APPROVAL
FOR SEWAGE TREATMENT PLANTS**

This is to certify that the Sewage treatment plant, Type **HYSTPN-016**, having a designed hydraulic loading of 1.050 cubic metres per day, (m³/day), an organic loading of 0.21 kg per day Biochemical Oxygen Demand without nitrification(BOD₅ without nitrification) and of the design shown on Drawings Nos. **STPN-007** manufactured by Han Young Engineering Co., Ltd., has been examined and satisfactorily tested in accordance with the International Maritime Organization resolution MEPC.227(64) to meet the operational requirements referred to in regulation 9.1.1 and 9.2.1 of MARPOL Annex IV of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the 1978 and 1997 Protocols (as amended by resolution MEPC.115(51) and MEPC.200(62))

The tests on the sewage treatment plant were carried out ashore at Gimhae, R.O.Korea and completed on **Mar.28, 2016**

The sewage treatment plant was tested and produced an effluent which, on analysis, produces:

1. a geometric mean of no more than 100 thermotolerant coliforms/100ml;
2. a geometric mean of total suspended solids of 35 Qi/Qe mg/l if tested ashore or the maximum total suspended solids not exceeding (35 plus x)/Qi/Qe mg/l for the ambient water used for flushing purposes if tested on board;
3. a geometric mean of 5-day Biochemical Oxygen Demand without nitrification(BOD₅ without nitrification) of no more than 25 Qi/Qe mg/l;
4. a geometric mean of Chemical Oxygen Demand(COD) of no more than 125 Qi/Qe mg/l;
5. pH between 6 and 8.5.

The Administration confirms that the sewage treatment plant can operate at angles of inclination of 22.5° in any plane from the normal operating position.

Details of the tests and the results obtained are shown on the Appendix to this Certificate.

A plate or durable label containing data of the manufacturer's name, type and serial numbers, hydraulic loading and date of manufacture should be fitted on each sewage treatment plant.

A copy of this Certificate should be carried on board any ship equipped with the above described sewage treatment plant.

Director General of Busan Regional Office of Oceans and Fisheries
Republic of Korea
Date this 12th day of April, 2016

KR HELLAS LTD.
41, Athinas Av., Vouliagmeni,
GR-16671, Athens, Greece

TEL: +30-210-428-6736
FAX: +30-210-428-6728

Certificate No:
MED-MB-1157-16
MED Item No. : **A.1/2.6**

This consists of 3 pages.
Page 1/3

EC TYPE EXAMINATION CERTIFICATE
as per Module B
of European Council Directive 96/98/EC on Marine Equipment (MED)

THIS IS TO CERTIFY that KR Hellas Ltd., designated by the Hellenic Republic of Greece as Notified Body according to Council Directive 96/98/EC on Marine Equipment as amended, did undertake the EC Type Examination procedures for the product identified below according to the following specific standards and that the product is found to meet the specific standards in compliance with the requirements of Annex A.1, Section 1, item No. A.1/2.6 and Annex B, Module B in Council Directive 96/98/EC as amended by Commission Directive 2014/93/EU:

Manufacturer Name : HAN YOUNG ENGINEERING Co., Ltd.
Address : 24-5, Gimhae-daero 916 beon-gil, Hallim-myeon, Gimhae-si, Gyeongsangnam-do, Korea

Product Name (A.1 Item designation) : Sewage systems

Product type (Model) : HYSTPN-016, HYSTPN-025, HYSTPN-040, HYSTPN-060

Specific Standards : MARPOL 73/78 as amended, Annex IV, Reg. 9, IMO Res.MEPC.227(64)

This certificate is issued at Athens on 24th June 2016, under the authority of the Hellenic Republic of Greece by KR Hellas Ltd., Notified Body No. 2198.

This certificate is valid until 23rd June 2021.

Shin Jeong-do
CEO of KR Hellas Ltd.

Any person not a party to the contract pursuant which this document is delivered may not assert a claim against KRH for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgment, fault or negligence committed by personnel of KRH in establishment or issuance of this document, and in connection with any activities for which it may provide. In this provision KRH shall mean the KR Hellas Ltd. as well as all its subsidiaries, directors, officers, employees and any other acting on behalf of KR Hellas Ltd.

제 2016-006 호
(Cert. No.2016-006)

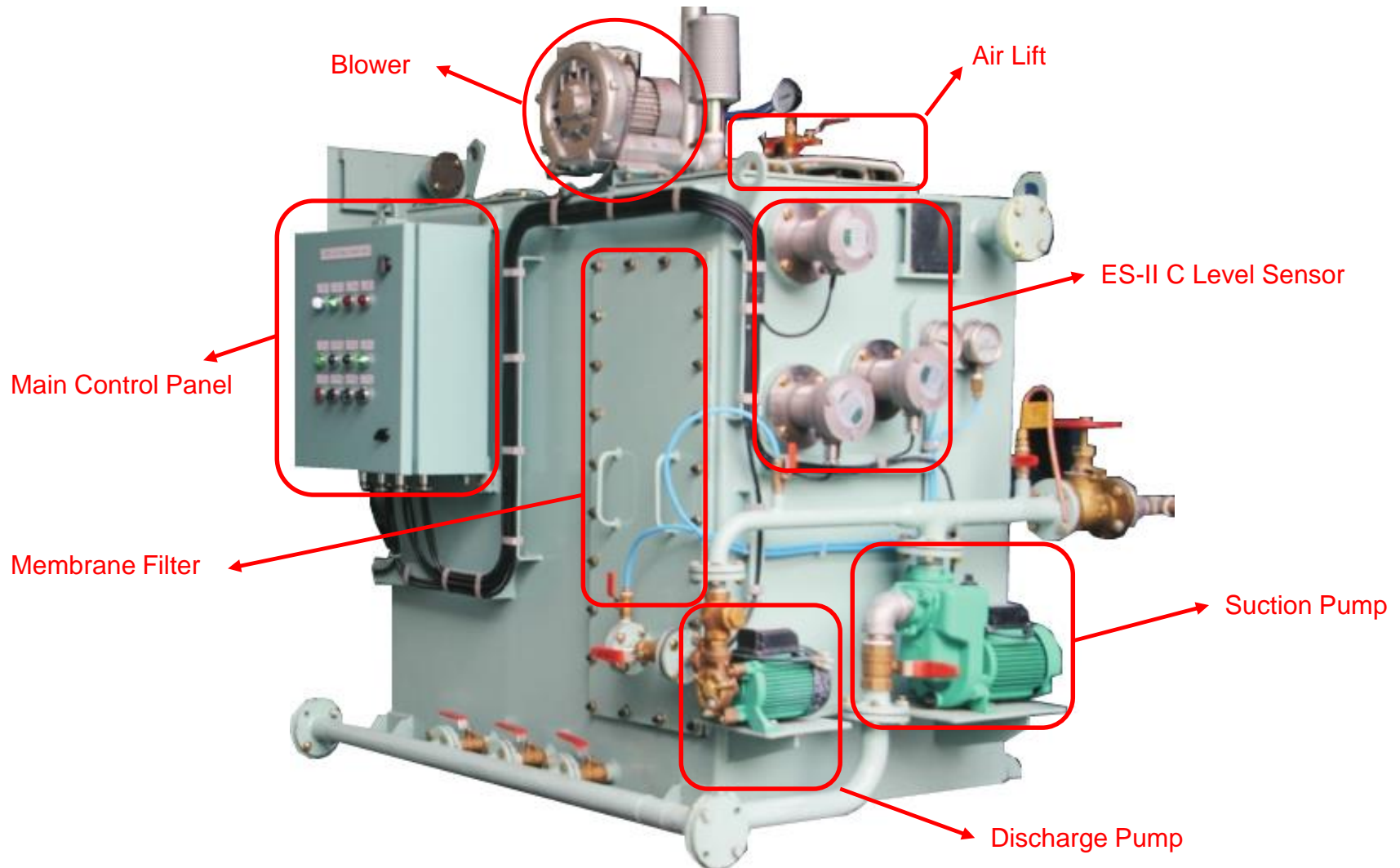
해양오염방지설비형식승인증서
(CERTIFICATE OF TYPE APPROVAL)

1. 제작자 또는 주된 영업소의 주소: 경상남도 김해시 한림면 김해대로916번길 24-5
(Address of Manufacturer) 24-5, Gimhae-daero 916beon-gil Hallim-myeon, Gimhae-si, Gyeongsangnam-do
2. 제작자(수입자)의 성명: (주)한양기연
(Name of Manufacturer of Importer) Han Young Engineering Co.,Ltd.
(법인의 경우에는 그 명칭)
3. 설비의 품명: 분뇨처리장치
(Name of Article) Sewage Treatment Plant
4. 설비의 형식 및 용량: HYSTPN-025, 1750L/DAY
(Type & Capacity of Article)
5. 설비의 성능시험합격증명서 CWNKM-0003-16
(Certificate of Performance Test)
(No. of Certificate & Test report) CWNKM-0003-16
발급원월일: 2016-03-28
(Date of Issue) 03/28/2016
6. 형식승인일: 2016-04-12
(Date of Type Approval) 12/04/2016
7. 비고(Remark): o MEPC Res.227(64)
o Not apply to passenger ships which operate in MARPOL Annex IV special areas.
[해상환경관리법] 제110조 및 「선박에서의 오염방지에 관한 규칙」 제57조 제1항에 따라 형식승인을 합니다.
(This is to certify that the above article has been examined and satisfactorily tested in accordance with the provisions of MARPOL 73/78.)

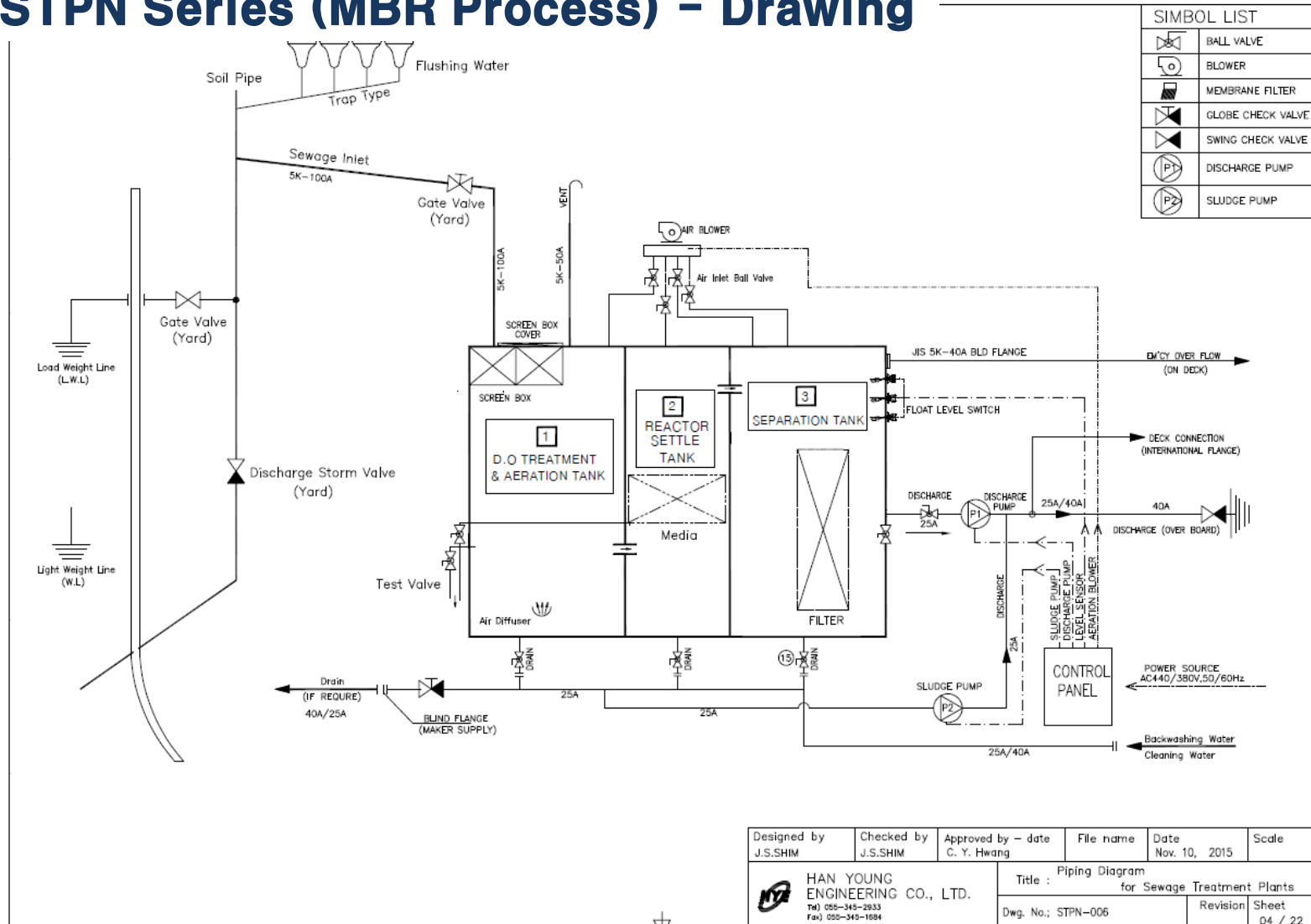
2016년 04월 12일 (2016. 04. 12)
부산지방해양수산청장

Director General of Busan Regional Office of Oceans and Fisheries

HYSTPN Series (MBR Process)



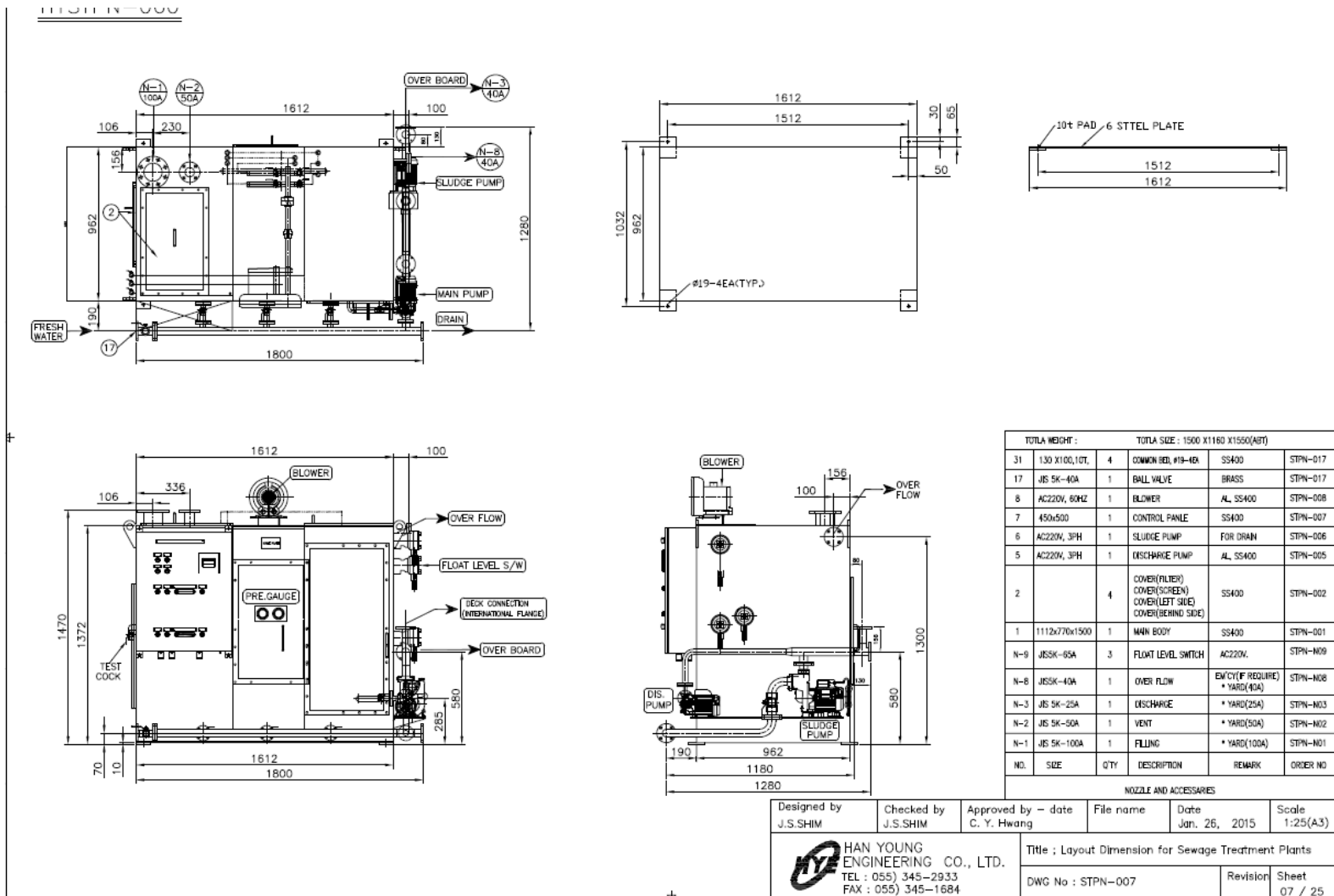
HYSTPN Series (MBR Process) - Drawing



SIMBOL LIST	
	BALL VALVE
	BLOWER
	MEMBRANE FILTER
	GLOBE CHECK VALVE
	SWING CHECK VALVE
	DISCHARGE PUMP
	SLUDGE PUMP

Designed by J.S.SHIM	Checked by J.S.SHIM	Approved by - date C. Y. Hwang	File name	Date Nov. 10, 2015	Scale
HAN YOUNG ENGINEERING CO., LTD. TEL: 055-345-2833 FAX: 055-345-1894			Title : Piping Diagram for Sewage Treatment Plants		Dwg. No.: STPN-006 Revision Sheet 04 / 22

HYSTPN Series (MBR Process) - Drawing



HYSTPN Series (MBR Process) – Specifications

Model NO.	Capacity (Liter/day)	Persons (Black)	Weight (kg)	Dimensions (W * D * H)
HYSTPN-016	1,050	16	340	1150 * 1100 * 1400
HYSTPN-025	1,750	25	450	1300 * 1200 * 1550
HYSTPN-040	2,800	40	550	1600 * 1250 * 1600
HYSTPN-060	4,200	60	650	1900 * 1350 * 1700

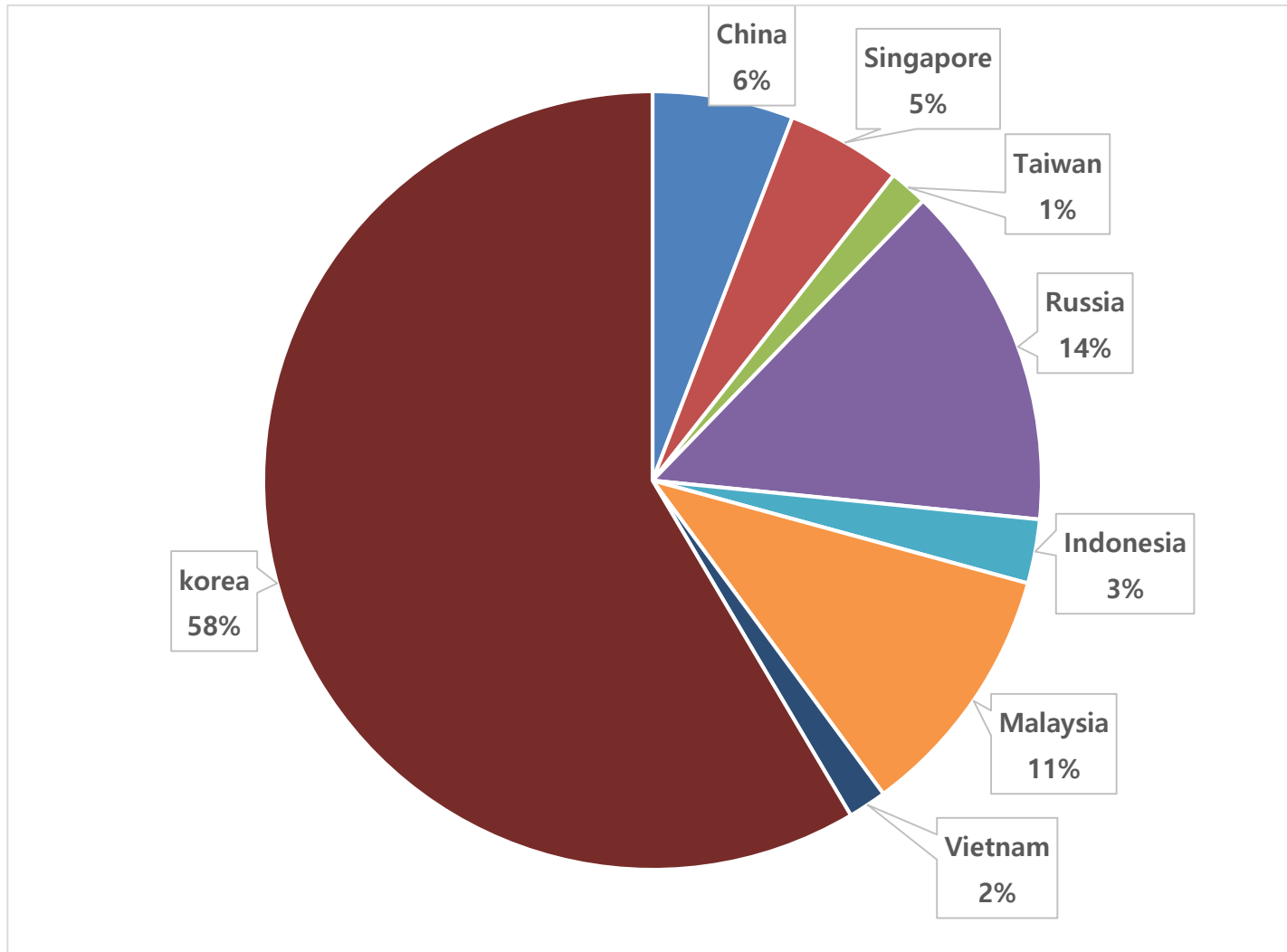
Sewage Treatment Plant Reference List(2011 ~ 2017)

※ IMO Res. MEPC 159(55) : 2011 ~ 2015

※ IMO Res. MEPC 227(64) : 2016 ~ 2017

Model No.	Persons	Sales Rate
HYSTPN-016	16	186set
HYSTPN-025	25	90set
HYSTPN-040	40	45set
HYSTPN-060	60	30set
Total		351set

Sewage Treatment Plant Reference List(2011 ~ 2017)

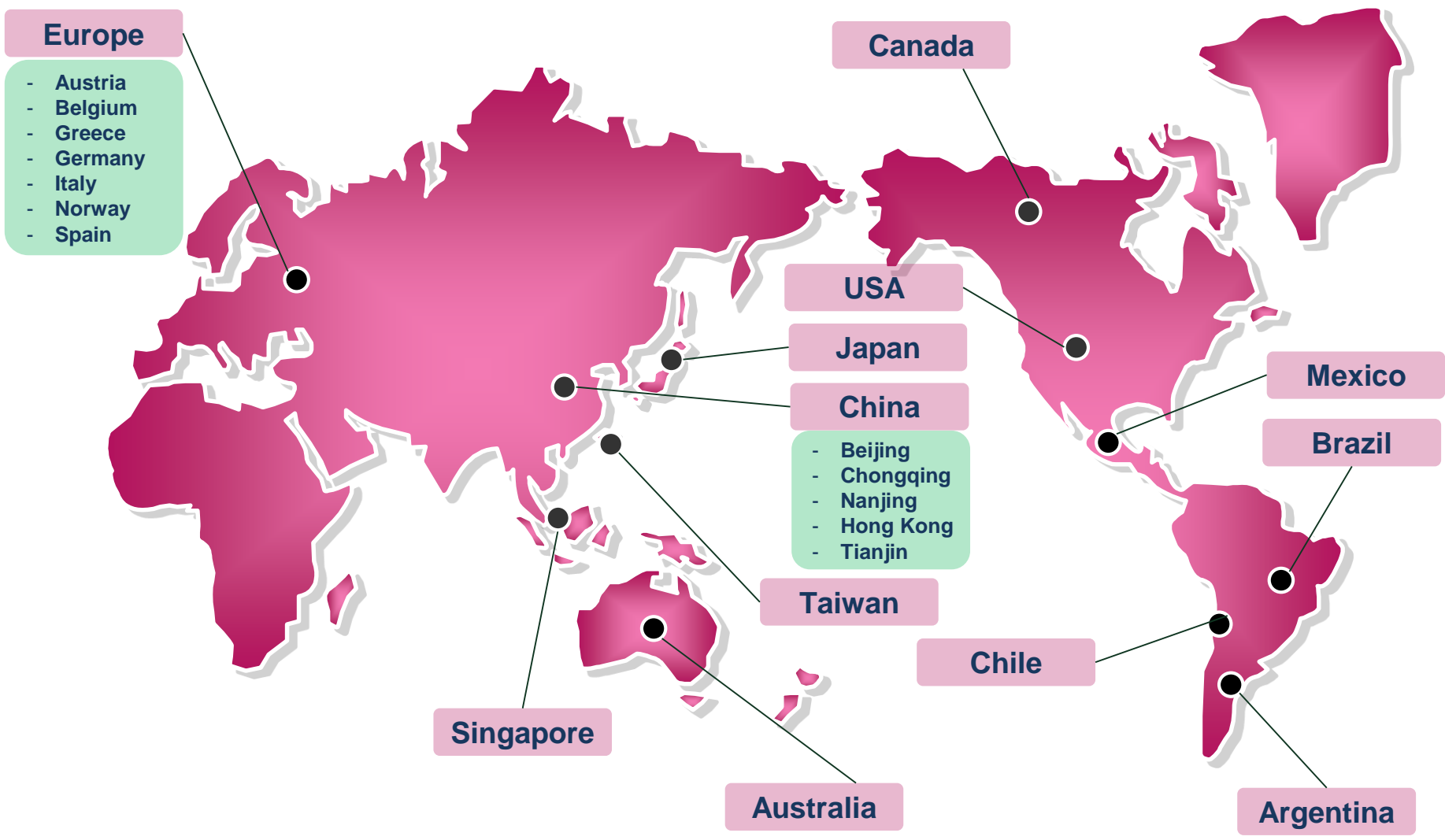




Chapter 05
Global A/S Network

Global A/S Network

Utilizing Bilge Alarm(BilgMon488) Network



Thank you!

 HAN YOUNG ENG CO.,LTD
www.hanyoungeng.kr

- Tel : + 82-55-345-2932
- Fax :+ 82-55-345-1684
- Email : hyows@hanyoungeng.kr