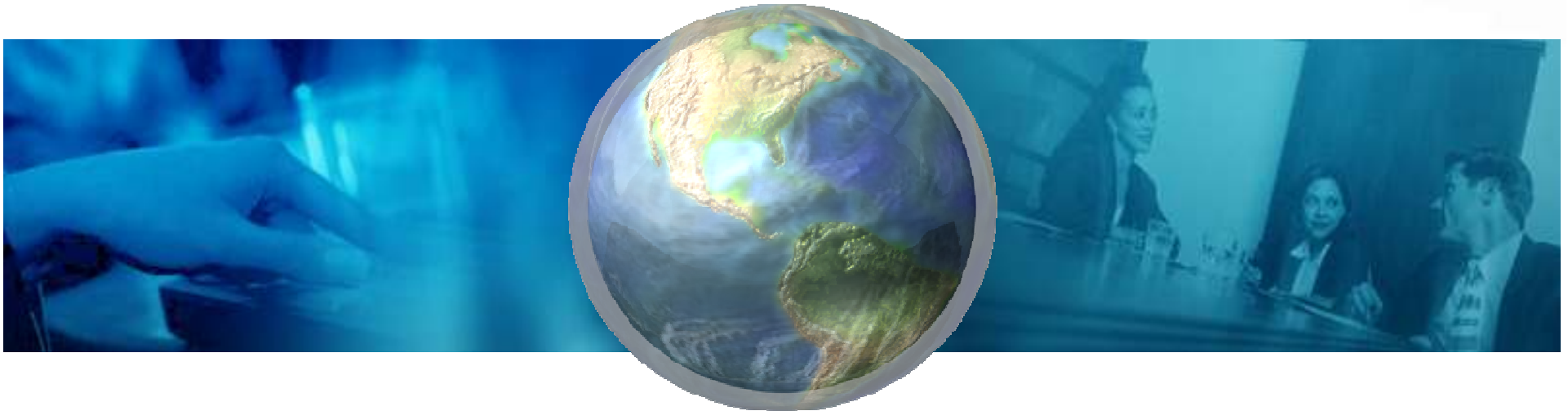


HWASEUNG EXWILL

Global Corporate



2011



□ CONTENTS

1. HWISEUNG GROUP INTRODUCTION

2. HWISEUNG EXWILL INTRODUCTION

3. PRODUCTS INTRODUCTION

□ **HWASEUNG GROUP**

1) Group Established : Aug. 07. 1953

2) Group Capital : 259 Million USD

3) Group Sales Turnover in 2011

: 3,250 Million USD

- Automotive parts Unit : 1010 Million USD

- Sports business Unit : 824 Million USD

- Logistic & Distribution Unit : 901 Million USD

- Fine Chemistry Unit : 515 Million USD

□ HWISEUNG GROUP

Business networks

Automotive Parts Unit

- *HS R&A
- *HS T&C
- *HS Material
- *HSI
- *HSR
- *HS Alabama
- *HSB
- *HSNE
- *HST

Logistic & Distribution Unit

- *HS Networks
- *HS Networks America
- *HS Shanghai
- *HS Vietnam Networks

Sports Business Unit

- *HS Corporation
- *HS Vina
- *London Design Center



K-SWISS

MERRELL

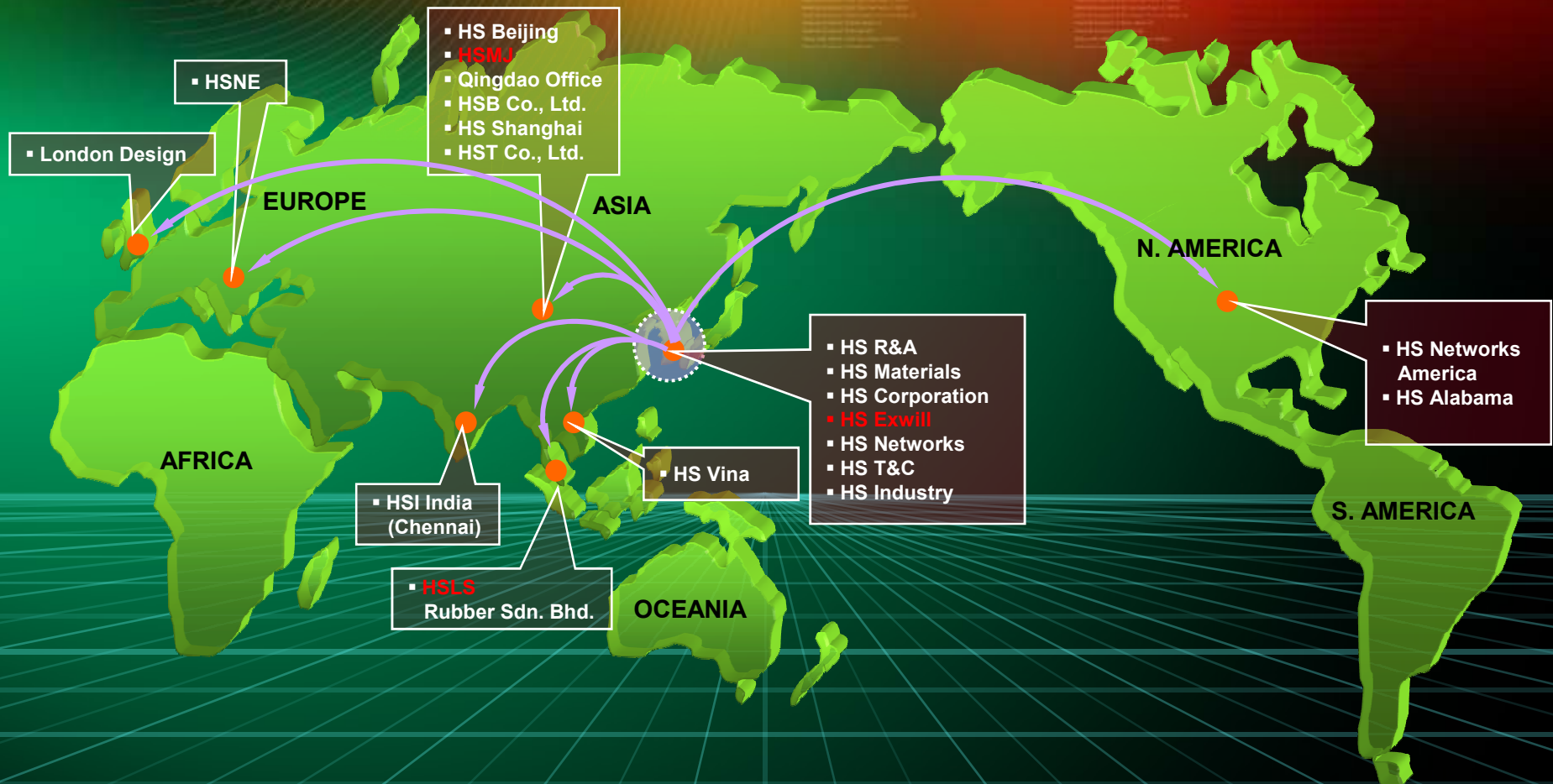


Fine Chemistry Unit

- *HS Exwill
- *HSMJ
- *HS Qingdao Office
- *HS Industry
- *HSLS

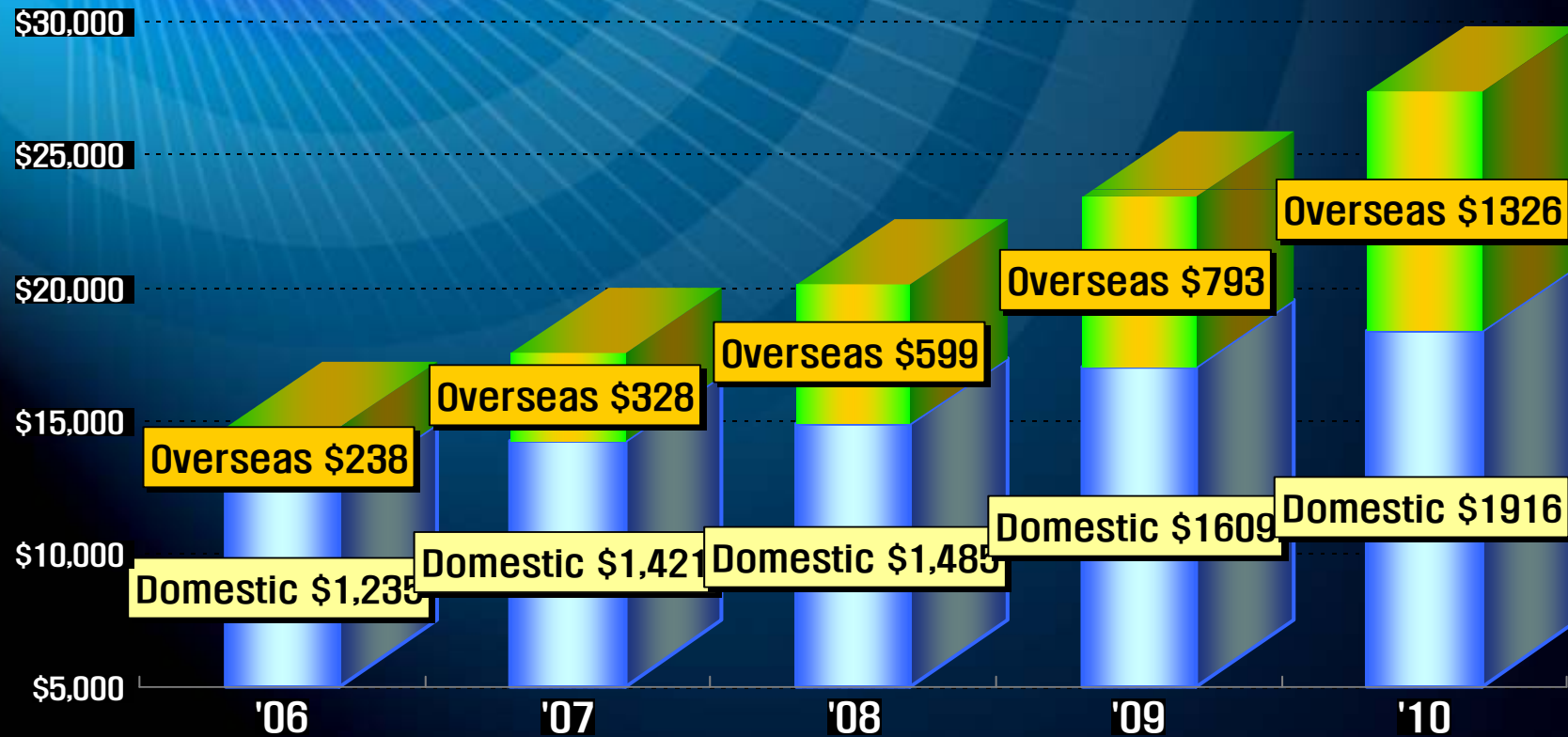
HWASEUNG GROUP

Subsidiary Companies



HWASEUNG GROUP

Unit : Million US\$



□ HWASEUNG EXWILL

1) HS EXWILL Milestones

- 1978. Sep.
: Established **Tong Yang Chemical Co., Ltd**
- 1988. Feb.
: Changing company name to **HS Chemical Co., Ltd**
- 1998. Feb.
: Changing company name to **HS R&A Co., Ltd**
- 2007. Apr.
: Segregated industrial part of HS R&A Co., Ltd.
with the name of **HS Exwill Co., Ltd.**

□ HWASEUNG EXWILL

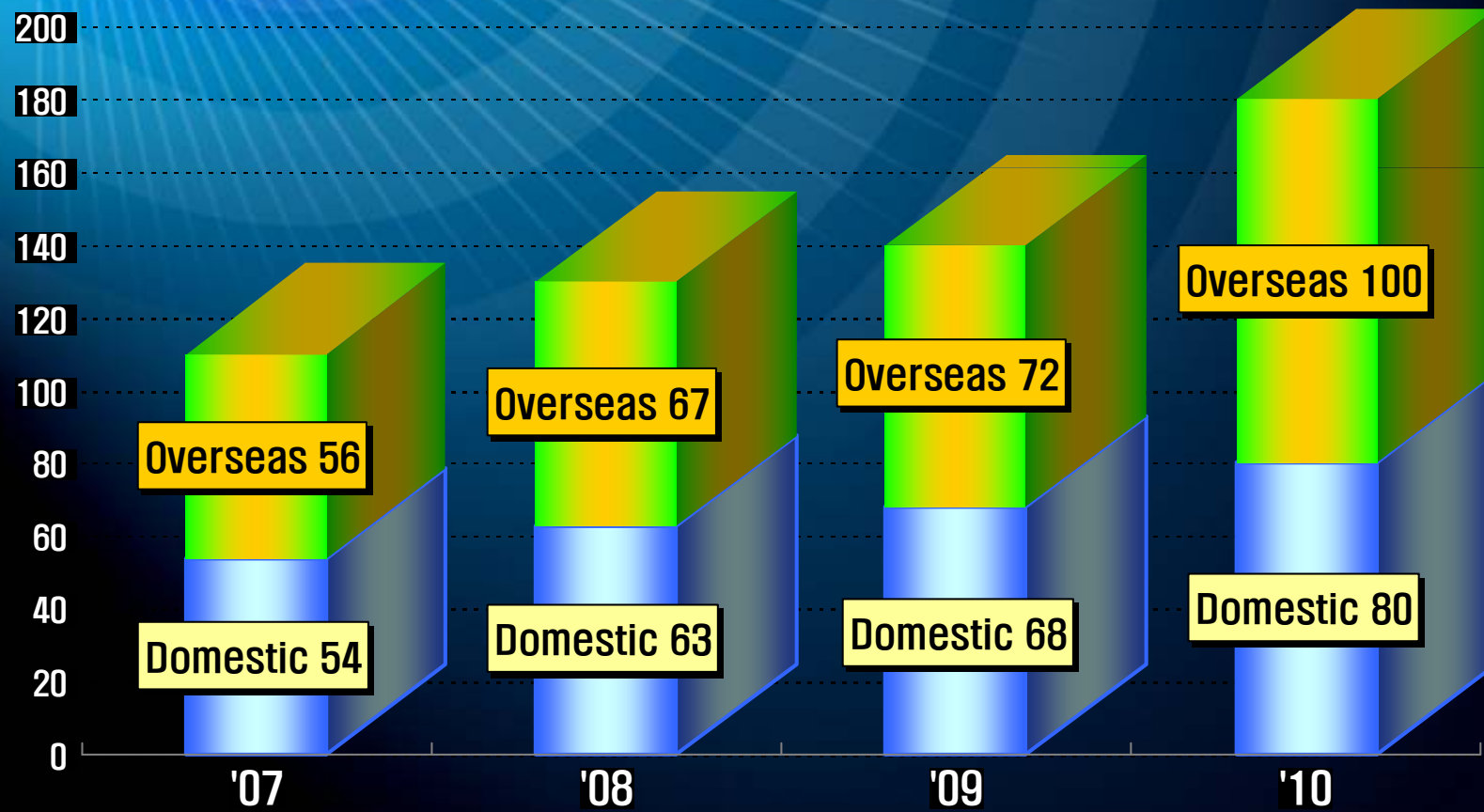
2) Head office



- Establish : 2007. Apr.
- Location : Busan, Korea
- Capital : 3 Million USD
- Employee : 83 People
- Products
: Belt, Hose, Fender and Others

HWASEUNG EXWILL

Unit : Million US\$



□ Main Products

Industrial Rubber Products

Various Kind of Industrial Hoses

Rubber Sheet & Ballast Mat

Conveyor Belt

Fender, Sleeve Hose, Packing Seal, etc.

Other Products



□ Industrial Products

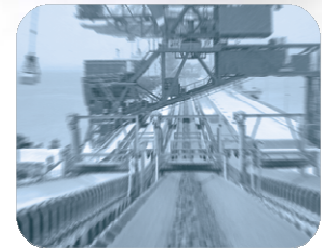
Rubber Conveyor Belt

General Conveyor Belt
Nylon-Nylon & Polyester-Nylon Conveyor Belt

Heavy Abrasion Resistant Conveyor Belt

Quarry Supreme Conveyor Belt

Single-Ply Conveyor Belt



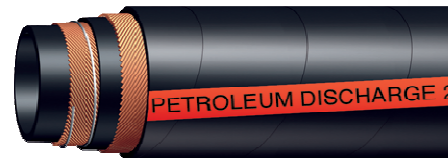
□ Industrial Products

Hoses (Mandrel Hoses)

Oil Hose-Tank Truck



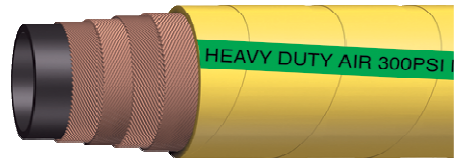
Oil Hose-Oil Discharge



Water Hose



Air Hose



Material Handling Hose



Chemical Hose-XLPE



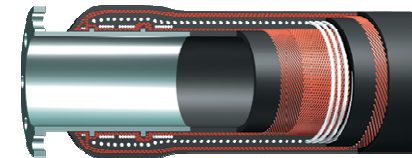
Chemical Hose-UHMW



Food Hose



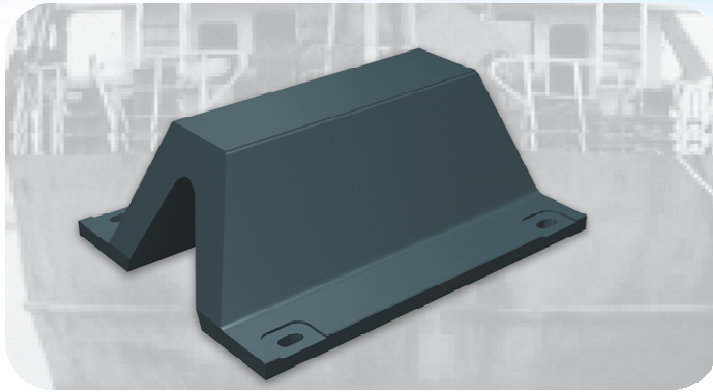
**Built-in Hose
(with Flange)**



□ Industrial Products

Rubber Fender

ARCH Type Fender



Pneumatic Fender



System Fender



□ ISO Certificate

Korean Standards Association

CERTIFICATE OF APPROVAL

HWASEUNG EXWILL Co., Ltd.

SITE : Refer to the Appendix

Korean Standards Association hereby certifies that the Quality Management System of the above organization has been assessed and found to meet the requirements of the standard and scope of certification detailed below:

CERTIFICATION NO.

QMS-0439

STANDARD

KS Q ISO 9001:2007/ISO 9001:2000

SCOPE OF CERTIFICATION

Refer to the Appendix

VALID FROM

27 May, 2009

VALID UNTIL

26 May, 2012

Original Certification Date : 27 May, 1994

Kaphone Chon
THE CHAIRMAN OF KSA

Issue Date : 9 April, 2009

KOREAN STANDARDS ASSOCIATION

701-7, Yeoksam-Dong, Gangnam-Gu, Seoul, Korea

Accredited by Member of the IAF MLA for QMS. The Accreditation Mark (SM) indicates accreditation in respect of those activities covered by the Accreditation Certificate Number KAB-QC-35.



Korean Standards Association

CERTIFICATE OF APPROVAL

HWASEUNG EXWILL Co., Ltd.

1287-21, YEONSAN 5-DONG, YEONJE-GU, BUSAN, KOREA

Korean Standards Association hereby certifies that the Environmental Management System of the above organization has been assessed and found to be in accordance with the requirements of the environmental standard and scope of certification detailed below:

CERTIFICATION NO.

EMS-0574

ENVIRONMENTAL STANDARD

KS A ISO 14001:2004/ISO 14001:2004

SCOPE OF CERTIFICATION

DESIGN, PRODUCTION AND SALES OF INDUSTRIAL RUBBER PRODUCTS

VALID FROM

23 January, 2008

VALID UNTIL

22 January, 2011

Lee Gyeongjung
PRESIDENT OF KSA

KOREAN STANDARDS ASSOCIATION

701-7, Yeoksam-Dong, Gangnam-Gu, Seoul, Korea

Accredited by Member of the IAF MLA for EMS. The Accreditation Mark (SM) indicates accreditation in respect of those activities covered by the Accreditation Certificate Number KAB-EC-11.



□ Quality Assurance(PIANC Type Approval)



TYPE APPROVAL CERTIFICATE

This is to certify that Germanischer Lloyd have witnessed and verified reported results of fenders manufactured by :

HWISEUNG EXWILL CO., LTD.
7F Changchun B/D, 1287-21,
Yeosan 5dong, Yeonje-gu, Busan, Korea

All fenders were tested in accordance with :

PIANC Guidelines for the Design of Fender Systems : 2002
Appendix "A" : Procedure to Determine & Report the Performance of Marine Fenders

This Type Approved Certificate applies to the following fender types :

Type Approved Description	Type	Material	Drawing No.
Hyper Spool Fender	HSP	RUBBER	V-01-3351-1
Super Spool Fender	SSP	RUBBER	V-01-3351-2
Super TR Fender	STR	RUBBER	V-01-3351-3
Cylindrical Fender	CYL	RUBBER	V-01-3351-4
Arch Fender	NV	RUBBER	V-01-3351-5

Approval Certificate No.: GLISK-C-08-02-14

Type Approval Date
25 February 2008



Chong Su Kim
Managing Director
Germanischer Lloyd
Industrial Services Korea Ltd., Co.



INDUSTRIAL SERVICES
20013

Managing Director: Peter Chong Su Kim
Germanischer Lloyd Industrial Services Korea Ltd., Co. - Registered Office: Seoul, Korea, 11011-074487
Place of performance and jurisdiction is Seoul, Korea. The laws and/or of the General Terms and Conditions is applicable. Korean law applies.

Business Registration NO.: 113-01-03302
Form1.29
2007-07-12



TYPE APPROVAL CERTIFICATE

This is to certify that Germanischer Lloyd have witnessed and verified reported results of fenders manufactured by :

HWISEUNG EXWILL CO., LTD.
7F Changchun B/D, 1287-21,
Yeosan 5dong, Yeonje-gu, Busan, Korea

All fenders were tested on Fatigue Test for 3,000 cycles in accordance with :

PIANC Guidelines for the Design of Fender Systems : 2002
Appendix "A" : Procedure to Determine & Report the Performance of Marine Fenders

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Super TR Fender	STR	RUBBER	V-01-3351-3
Cylindrical Fender	CYL	RUBBER	V-01-3351-4
Arch Fender	NV	RUBBER	V-01-3351-5

Approval Certificate No.: GLISK-C-08-02-15

Type Approval Date
25 February 2008



Chong Su Kim
Managing Director
Germanischer Lloyd
Industrial Services Korea Ltd., Co.



INDUSTRIAL SERVICES
20013

Managing Director: Peter Chong Su Kim
Germanischer Lloyd Industrial Services Korea Ltd., Co. - Registered Office: Seoul, Korea, 11011-074487
Place of performance and jurisdiction is Seoul, Korea. The laws and/or of the General Terms and Conditions is applicable. Korean law applies.

Business Registration NO.: 113-01-03302
Form1.29
2007-07-12

□ The List of Making Equipment 1/2

THE LIST OF MAKING EQUIPMENT		
Description	Capacity	Q'ty
Banbury Mixer	75L	3
Banbury Mixer	160L	1
Open Roll	26"	1
Open Roll	18"	5
Open Roll	14"	1
Calender	φ22" X 4Roll	1
Calender	φ18" X 4Roll	1
Crane	20Ton	2
Crane	10Ton	1
Hoist	3Ton	1
Hoist	2Ton	1
Fender Taking M/C	15HP	1
Vulcanizer	φ3500 X 4.5M	1
Vulcanizer	φ2700 X 4.5M	1
Vulcanizer	φ2000 X 4.0M	1
Vulcanizer	φ1800 X 18.0M	1

□ The List of Making Equipment 2/2

Description	Capacity	Q'ty
Shot blast M/C	2300W X 2300L X 2100H	1
Compression Press Tester	750Ton	1
Press	1000Ton	1
Press	3000Ton	1
Auto Clave	1500Ton (2100H X 1960W X 5100L)	1
Impact Wrench	1W 32	1
Compressor	7kg/cm ²	1
Boiler	10Ton	1
Planer	3Ton	1
Planer	8'	1
Shaper	2'	1
Lathe	6'	4
Lathe	14'	1
Lathe	16'	1
Lathe	18'	1
Radial Drilling M/C	φ550	1
Bench Drilling M/C	φ250	2

□ Test Facilities

DSA.



Thermal Gravimetric Analyzer



DMTA.



Physical Rhymester



FTIS.



UV-Vis Spectrometer



TGH.



SEM.



ICPS.



Ren Corporation



Tension Tester



Aging Tester



□ Raw Rubber Material

RUBBER MATERIAL IN HS-MATERIAL CO., LTD.



1. . HS-MATERIAL R & D CENTER

- Location : Yang San
- Items: CMB, PVC Compound, TPE
- Capacity: 32,000 Ton/Year (CMB)

□ HS Material

RUBBER MATERIAL IN HS-MATERIAL CO., LTD.



2 . FACTORY LAYOUT

□ Fender Factory



1. OUTSIDE OF VIEW



2. INSIDE OF VIEW

□ HS Material

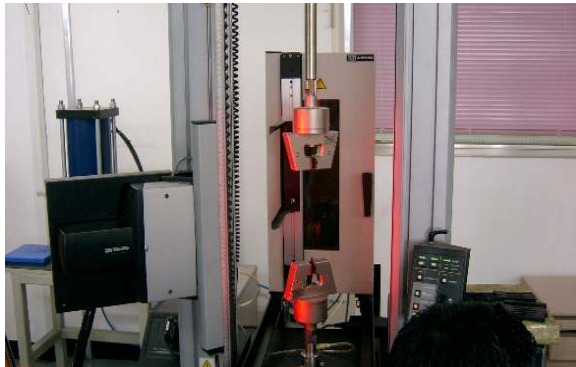
RUBBER MATERIAL IN HS-MATERIAL CO., LTD.



1. RUBBER COMPOUND AUTO-SYSTEM



2. MATERIAL TEST



3. MATERIAL TENSION TEST



4. STEEL & UHMW-PE TEST

□ Fender Processing

MANUFACTURE PROCESSING IN FENDER FACTORY



1. RUBBER MATERIAL FROM HS-MATERIAL



2. COMPOUND OF RUBBER



3. MOLDING WORK FOR ARCH FENDER



4. RUBBER VULCANIZE

□ Fender Processing

MANUFACTURE PROCESSING IN FENDER FACTORY



5. . FINISHING WORK



6. INSPECTION FOR FENDER



7. COMPRESSION TEST AT 45%



8. PACKING FOR SHIPMENT

□ Fender Pictures



CYLINDRICAL FENDER 600 X 300 X 3000L



SPOOL(CELL) FENDER



BC FENDER(TUG BOAT) 800 X 400 X 9M



**UHMW- PE FOR PANEL
300H X 4500W X 8400L**



**NV FENDER FENDER
500H X 1500L**



AOV FENDER 400H X 2000L

□ Fender Selection

1. Berthing Energy Calculations

1) Berthing Mode & Ship Data Input

Berthing Mode Selection

- Side Berthing
- Dolphin Berthing
- End Berthing
- Lock Entrance
- Ship to Ship Berthing

Ship Data Input

- Ship Type
- Ship Data

Normal Berthing Energy

☒ SIDE BERTHING ☐ DOLPHIN BERTHING ☐ LOCK ENTRANCES

☐ SHIP-TO-SHIP BERTHING ☐ END BERTHING

Ship Type

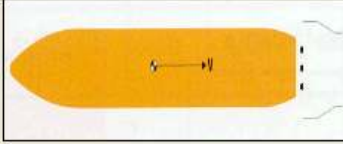
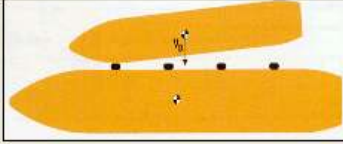
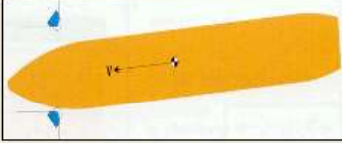
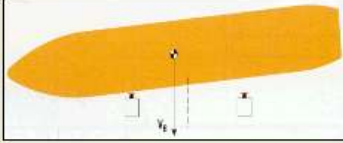
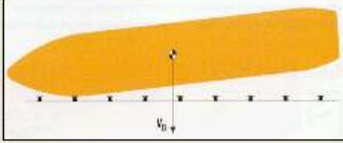
Ship Type: ULCC & VLCC TANKERS

dwt: 60000(dwt), 78000(Md)

dwt(t)	Md(t)	Loa(m)	Lbp(m)	B(m)	D(m)
60000	78000	217	206	36	13

확인

취소



□ Fender Selection

2) Berthing Energy Calculations

Approach Velocity Input

Energy Factor Calculations

- Virtual Mass Factor (Cm)
- Eccentricity Factor (Ce)
- Softness Factor (Cs)
- Berthing Configuration Factor (Cc)

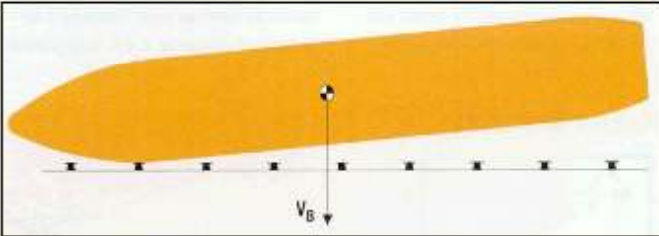
Normal Berthing Energy Calculations (En)

× Abnormal Impact Factor

Abnormal Berthing Energy Calculations (Ea)

Normal Berthing Energy

SIDE BERTHING

$$E_n = 0.5 \times M_d \times V_b^2 \times C_m \times C_e \times C_s \times C_c$$


En = 60.85700296 ton-m

※ 구성 값 변경시 En 을 새로 계산하세요.

Md = 78000 ton

Vb = 0.15 m/sec

Cm = 1.3593131147696

Ce = 0.5

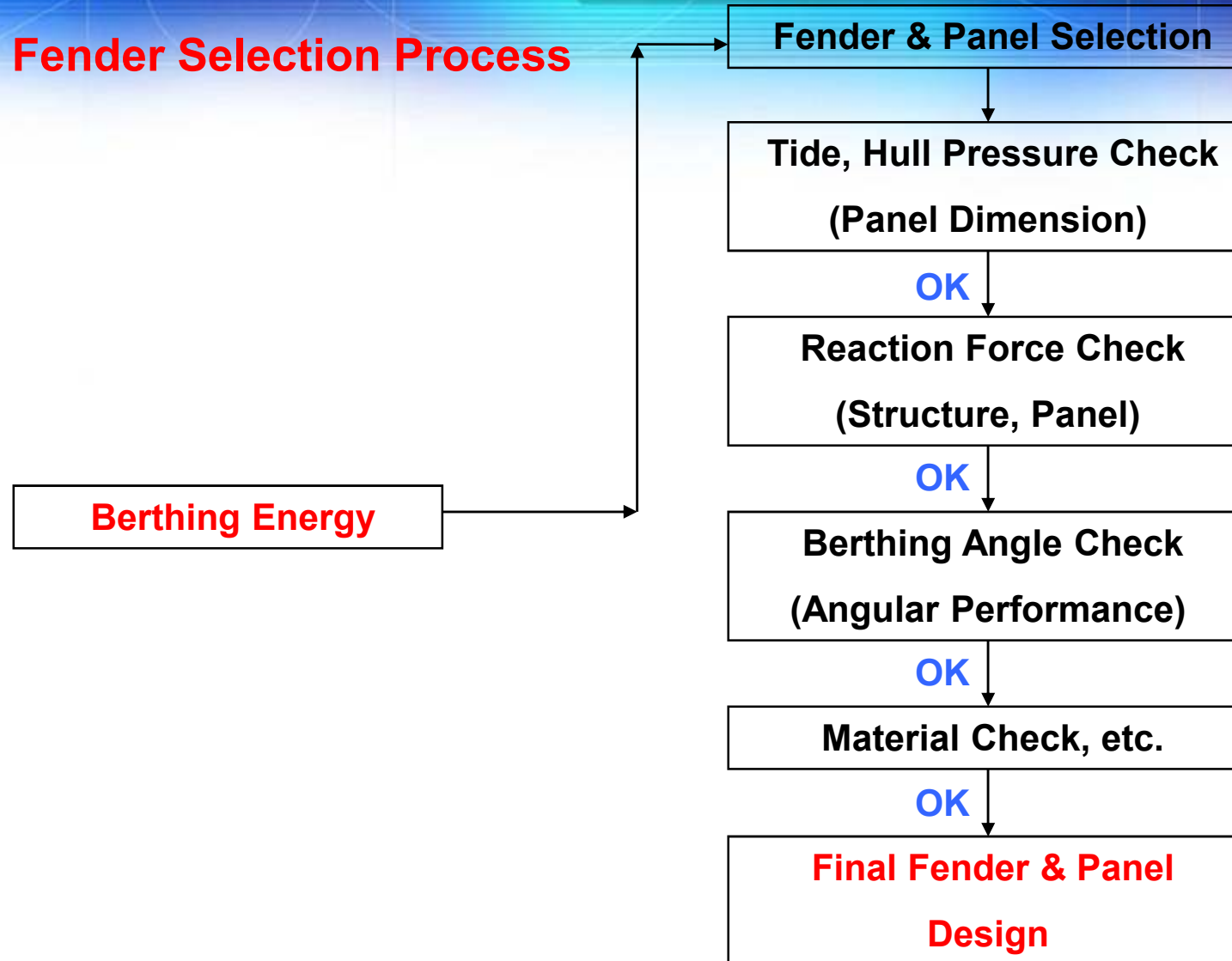
Cs = 1

Cc = 1

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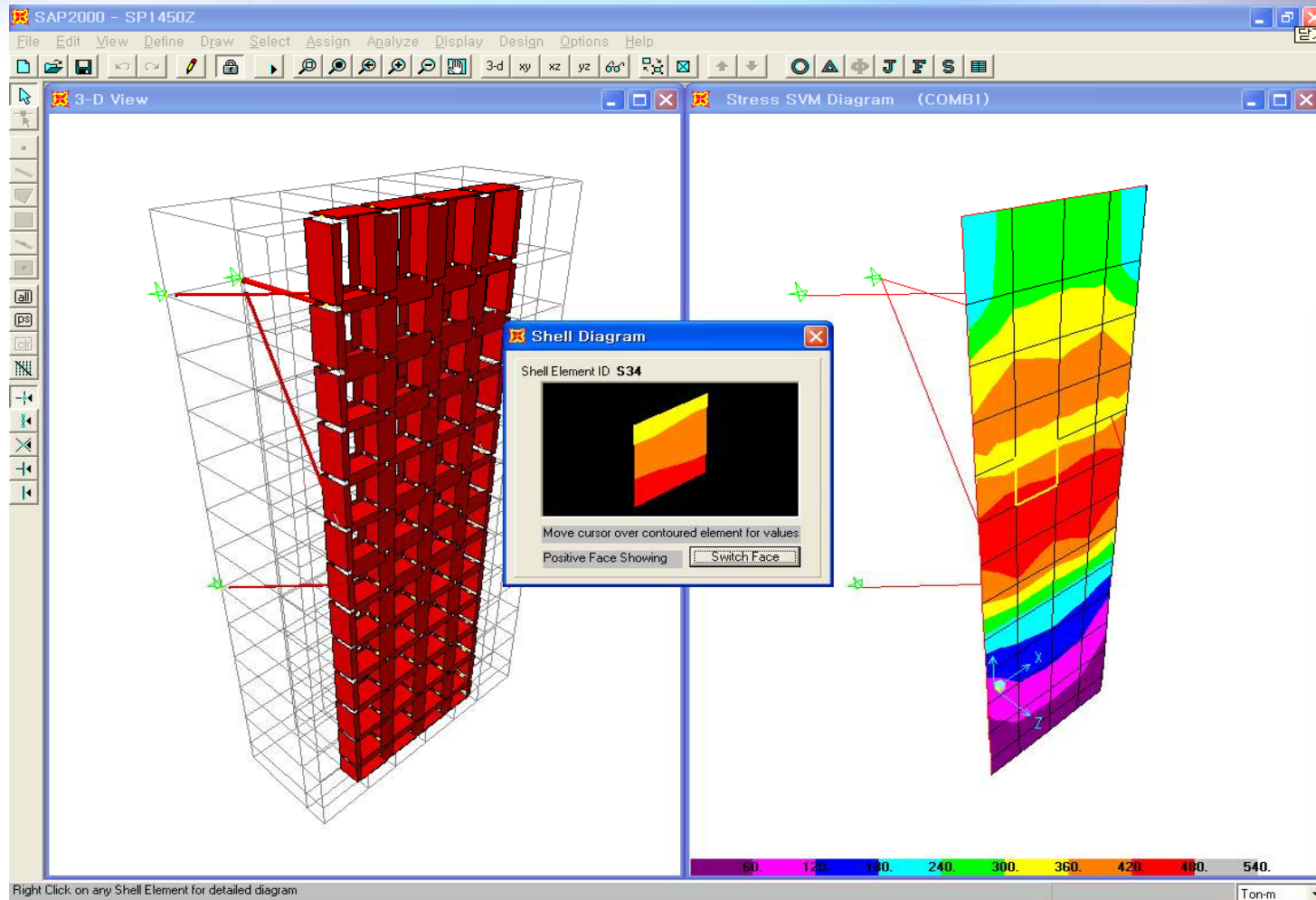
□ Fender Selection

3) Fender Selection Process



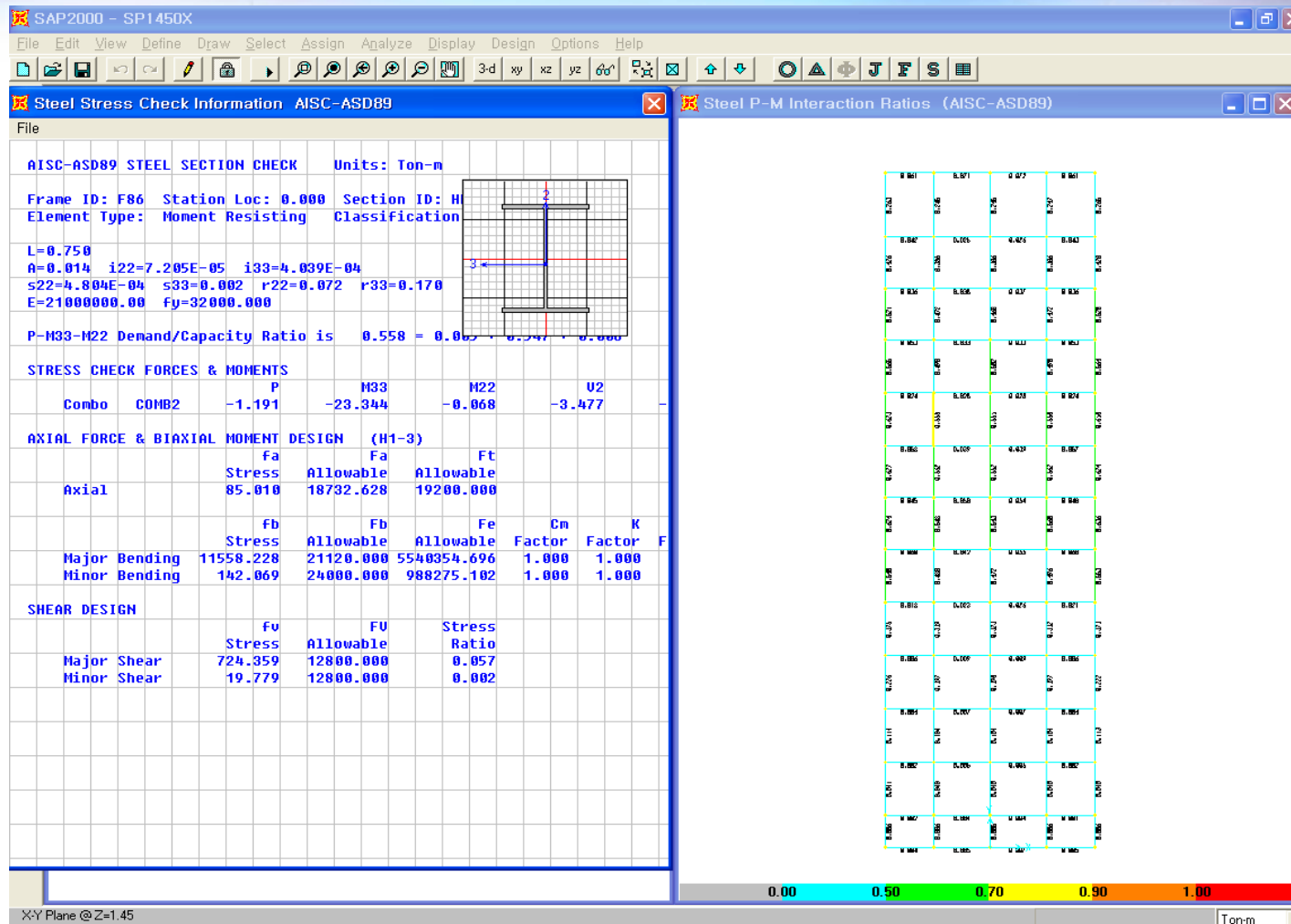
□ Fender Selection

4) Fender System Design with FEM Software



□ Fender Selection

4) Fender System Design with FEM Software



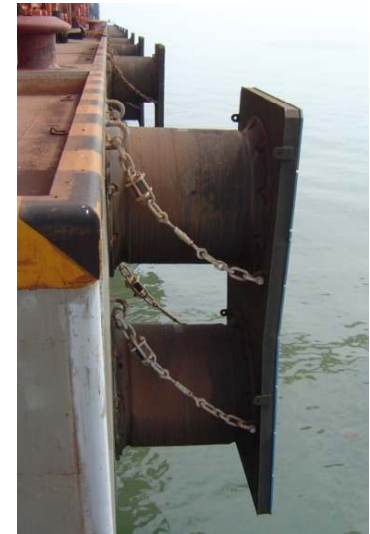
□ Fender Selection

5) Design Verification

Design with C.A.E



Poor Design



❑ POSCO PORT VIETNAM(2009)



SPOOL FENDER 1450H 32 SETS
(PANEL 2200W X 4000L X 250H)

□ KHALIFA PORT U.A.E (2009)



SPOOL FENDER 2000H 54 SETS

□ AKPO PROJECT-FRANCE(2009)



TR-B FENDER 600H X 3600L 116 SETS
(WITH UHMW-PE TOP FACING)

□ SUPPLY RECORDS IN 2007

CUSTOMER	DESCRIPTION	QUANTITY
HHI CO.,LTD	AOV FENDER 300H X 2150L	56
HMD CO., LTD.	CE FENDER 800H X 1920L	4
	CYLINDRICAL FENDER 600H X 300H X 1000L	13
BUSAN REGIONAL MARITIME AFFAIRS	BP FENDER 300H X 1000L	353
	BP FENDER 400H X 1500L	53
	CYLINDRICAL FENDER 500H X 250H X 1500L	44
BPA CO.,LTD.	ACV FENDER 600H X 1500L	94
	ACV FENDER 600H X 3000L	7
ULSAN SALVAGE CO.,LTD	BP FENDER 800H X 2000L	3
TAE-DONG DEVELOPMENT CO.,LTD.	SPOOL FENDER 1000H	3
HYUNDIA STEEL PORT(KOREA).	1450H X 4UNIT	60
BUSAN NORTH PORT(KOREA)	1450H X 2UNIT	128

□ SUPPLY RECORDS IN 2008

CUSTOMER	DESCRIPTION	Q'TY
DSME CO., LTD.	ROLLER FENDER 1400Ø X 3ROLL	6
	NV FENDER 800H X 2000L	4
	NBB FENDER(HARD-SWAY1) 400H X 1825L	33
	D-FENDER 400H X 200Ø X 1218L	22
	PACKING SEAL 75T X 185W X 2000L	265
	DC FENDER 120H X 110W X 3500L	4
HANKUK RUBBER IND. CO., LTD.	DC FENDER 120H X 110W X 3500L	5
SUNG DONG INDUSTRIAL CO., LTD	PANEL 800H X 2820L	2
	ROLLER FENDER 1500Ø X 500H X 3ROLL	26
	AOV FENDER(DARK RED) 1000H X 2000L	30
HANIL CONSTRUCTION CO., LTD.	AOV FENDER 1000H X 1000L	14
HYOSHIM IND.CO.,LTD.	AOV FENDER 400H X 1000L	1
	AOV FENDER 200H X 1000L	2
WOONGJIN DEVELOPMENT CO.,LTD.	RUBBER PLATE 3.2MM X 1000MM X 22M	27
	RUBBER LADDER 206 X 568 X 8.4M	14
ATLANTICO SUL(BRAZIL)	AOV FENDER 600H X 1500L	45
	PNEUMATIC FENDER 3300 DIA X 6500L	5

□ SUPPLY RECORDS IN 2009

CUSTOMER	DESCRIPTION	Q'TY
HYUNDAI HEAVY INDUSTRIES CO., LTD.	HYPER SPOOL FENDER ACCESSORY 700H	2
	HYPER SPOOL FENDER ACCESSORY 1000H	2
DAEWOO SHIPBUILDING & MARINE ENGINEERING CO.,LTD.	ROLLER FENDER 900MM X 3ROLL	8
	SUPER BP TYPE 300H X 1730L	16
	SUPER BP TYPE 300H X 2490L	144
SHIBATA ASIA	SPOOL FENDER 2000H	54
	PNEUMATIC 2500φ X 4000L	5
	PNEUMATIC 2500φ X 5000L	4
	PNEUMATIC 3300φ X 6500L	1
ISRAEL NAVY	HYDRO PNEU. 2000φ X 6000L	2
GERMANY NAVY	HYDRO PNEU. 1700φ X 7200L	8
STX OFFSHORE & SHIPBUILDING CO.,LTD.	PNEUMATIC 1000φ X 1500L	4
	PNEUMATIC 2000φ X 3500L	2
	PNEUMATIC 3300φ X 4500L	3
	PNEUMATIC 1000φ X 1500L	4
	PNEUMATIC 2000φ X 3500L	2
	PNEUMATIC 3300φ X 4500L	3

□ SUPPLY RECORDS IN 2009

CUSTOMER	DESCRIPTION	Q'TY
POSCO E&C (VIETNAM PORT)	SPOOL FENDER 1450H X 1 UNIT	32
HYUNDAI(KALIFA PORT, U.A.E)	SPOOL FENDER 2000H X 1 UNIT	189
HYUNDAI(AKPO PROJECT, FRANCE)	TR B FENDER 600H X 3600L	116
DONGKOOL STEEL PORT(KOREA)	SPOOL FENDER 1250H X 3 UNIT	42
BBC CHARTERING (Germany)	PNEUMATIC FENDER 2000 DIA X 3500L	8
U.K (SHIP REPAIR PROJECT)	PNEUMATIC FENDER 1500 DIA X 3000L	5
	PNEUMATIC FENDER 1200 DIA X 2000L	4
RIGA PORT (LATVIA)	PNEUMATIC FENDER 2000 DIA X 3500L	8
NETHERLANDS (SHIP REPAIR PROJECT)	PNEUMATIC FENDER 2000 DIA X 3500L	6
	PNEUMATIC FENDER 1500 DIA X 3000L	8

□ SUPPLY RECORDS IN 2010

CUSTOMER	DESCRIPTION	Q'TY
GERMANY NAVY PROJECT	PNEUMATIC FENDER 4500 DIA X 9000L	2
	PNEUMATIC FENDER 3300 DIA X 10.600L	4
Norfolk Southrn Pier P Repair (U.S.A)	STR FENDER 1250H X 1UNIT	124
Straumsivk Quay (Iceland)	HSP FENDER 1000H	24
TCC Quay (Morocco)	HSP FENDER 1150H	32
Turkey Navy Project	HYDRO PNEUMATIC FENDER 2500 DIA X 5500L	4
LAGOS PORT	PNEUMATIC FENDER 2000 DIA X 6000L	6
C.U.S.A PORT (PANAMA)	NV FENDER 300H X 2000L	98
NETHERLANDS (SHIP REPAIR PROJECT)	PNEUMATIC FENDER 2500 DIA X 5500L	8
	PNEUMATIC FENDER 1500 DIA X 3000L	15
OMAN DRY DOCK	PNEUMATIC FENDER 3300 DIA X 6500L	6
	PNEUMATIC FENDER 2500 DIA X 4000L	4

□ SUPPLY RECORDS IN 2010

CUSTOMER	DESCRIPTION	Q'TY
ITALY (SHIP REPAIR PROJECT)	PNEUMATIC FENDER 2500DIA X 5500L	5
	PNEUMATIC FENDER 2000 DIA X 3500L	8
U.K (SHIP REPAIR PROJECT)	PNEUMATIC FENDER 2000 DIA X 3500L	12
	PNEUMATIC FENDER 1200 DIA X 2000L	6
FRANCE(SHIP REPAIR PROJECT)	PNEUMATIC FENDER 2500DIA X 5500L	1
RUSSIA (Petersburg Port)	PNEUMATIC FENDER 3300DIA X 6500L	5
MALTA(SHIP REPAIR PROJECT)	PNEUMATIC FENDER 2000 DIA X 3500L	5
RUSSIA (Novorossiysk Port)	SPOOL FENDER 2000H	5

□ HWASEUNG EXWILL

**We are proud of offering
Our customers Value and Quality by providing
Quality Products and Service.**

Thank You.

We're Selling Trust !!