Leak - Proof
Flow & Control
Solution Partner

COMPANY PROFILE
GENERAL INFORMATION

▶ CHAIRMAN & CEO – Mr. LEE, JyeHoon

▶ FACTORY SIZE : 5,609 m² (abt 1,700py)

▶ ESTABLISHED DATE - 1993. 3. 15

▶ EMPLOYEES – 60 persons

▶ WORK SCOPE – Tube Fitting, Pipe Fitting, Instrument Valves (Ball, Check, Needle, Manifolds)

▶ CAPITAL - USD 3 Million $

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar. 1993</td>
<td>Established in Busan Korea as a manufacturer for Assembly Cramp, Fittings.</td>
</tr>
<tr>
<td>Mar. 2005</td>
<td>Obtained Certificate of registration ISO 9001 from HSB-RS. (revision)</td>
</tr>
<tr>
<td>Feb. 2006</td>
<td>Obtained Certificate of DNV &amp; LRS.</td>
</tr>
<tr>
<td>Jul. 2006</td>
<td>Certificate of Qualified Supplier for Shin-kori Nuclear Plant unit 1,2.</td>
</tr>
<tr>
<td>Aug. 2006</td>
<td>Supplied forged and tube fittings and valves to Hanaro Nuclear Project.</td>
</tr>
<tr>
<td>Dec. 2006</td>
<td>Designated as INNO-BIZ Enterprise.</td>
</tr>
<tr>
<td>Jan. 2007</td>
<td>Obtained Certificate of Qualified Supplier for ASME SEC. III</td>
</tr>
<tr>
<td>Mar. 2007</td>
<td>Certificate of Qualified Supplier for Shin-wolsung Nuclear Plant unit 1,2.</td>
</tr>
<tr>
<td>Dec. 2009</td>
<td>Obtained Certificate of ASME and Renewed ISO 9001</td>
</tr>
<tr>
<td>Feb. 2010</td>
<td>Obtained Certificate of API</td>
</tr>
<tr>
<td>Jan. 2013</td>
<td>Obtained Certificate of ISO9001/ISO14001/OHSAS18001 from DNV</td>
</tr>
</tbody>
</table>
ORGANIZATION

CEO

Vice President

Quality Management

Management Planning Div.
- management Planning Team

Sales Div.
- Sales #1
- Sales #2

Technology Div.
- R & D
- Design Team

Production Div.
- Production Management Team
  - Production Team
  - Assembly, Tools Management Team
LOCATION & NETWORKS

FOR THE BEST QUALITY FITTING & VALVES MANUFACTURING IN THE WORLD

Global Availability / Local Services

Australia, Chile, China, Denmark, Egypt, Germany, Hungary, India, Indonesia, Iran, Japan, Korea, Malaysia, Singapore, Taiwan, United States, Vietnam...

Head Office / Factory - Korea
BUSINESS AREA

- Petrochemical
- Shipbuilding
- Offshore: Oil & Gas
- Semiconductor
- Power Plant
- Pulp & Paper
## QUALITY SYSTEM CERTIFICATIONS

<table>
<thead>
<tr>
<th>No.</th>
<th>Certificate</th>
<th>Title</th>
<th>Organization</th>
<th>Item</th>
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<tbody>
<tr>
<td>4</td>
<td>DNV</td>
<td>Det Norske Veritas</td>
<td>DNV</td>
<td>S-LOK, BITE, DIN, Valve</td>
<td>2010.11.09</td>
<td>2014.06.30</td>
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<tr>
<td>5</td>
<td>ABS</td>
<td>American Bureau of Shipping</td>
<td>ABS</td>
<td>S-LOK, BITE, DIN, Valve</td>
<td>2008.09.09</td>
<td>2013.09.08</td>
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<table>
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<tr>
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<tr>
<td>1 API</td>
</tr>
<tr>
<td>2 LLOYD</td>
</tr>
<tr>
<td>4 NK</td>
</tr>
</tbody>
</table>
PRODUCTS

Main feature of S-Lok

◆ Gaugeability
  * Strict supervision of 1/1000" tolerance of Nut, Ferrule, Body
    - Datum Gauge

◆ Interchangeability
  * Standardized internationally
  * Interchangeable with most of products all over the world

◆ Corrosion Resistance
  * Special heat treatment process for Back Ferrule
  * Repetitive experiment
  * Certified excellence of oxidation prevention in worldwide

◆ Consistency
  * Standardized process from raw material to final processing
  * Produce consistent goods maintaining the best quality

CLEANLINESS

S- Lok Tube Fittings
- Two Ferrule System
- Perfect Leak Prevention

Bite type Tube Fittings
- JIS B2351
- DIN2353

Precision Thread / Welded Fittings
- ASME B31.3, ASME B1.20.1
- Maximize users’ advantage

Instrument Valves
- Needle Valves
- Ball Valves
- Check Valves
- Manifold & Gauge Valves
- Others: Plug, Filters
- Bleed Valves

Tubings

PRODUCTS - FITTINGS

S-LOK® Tube Fittings
- Available in Size: 1/16 - 2 in. and 2mm - 50mm
- Compression type double ferrule fittings
- Roll threaded construction
- Available variety of configurations
- Excellent vibration resistance
- Excellent leak-proof sealing
- Gaugeability and retighten
- Stainless steel, Brass, Carbon steel, Alloy 400

Hydraulic Pipe Fittings
- Socket welding & Screwed type
- Pressure class 2000, 3000, 6000, 9000 fittings to ANSI and JIS standards
- Materials
  - Carbon steel: A105, A234, JIS G4061 S20C - S45C
  - Stainless steel: ASTM A182 F304, F316, JIS G4303 S304, S316

Bite Type Tube Fittings (DIN2353)
- According to DIN2353 standard
- Two cutting edge single ring design
- Stainless steel and Carbon steel
- Metric tube 0.D
- Type approved: Lloyds / DNV / ABS

Bite Type Tube Fittings (JIS B2351)
- According to JIS B2351 standard
- Single cutting ring design
- Stainless steel and Carbon steel
- Metric tube 0.D and pipe 0.D

Instrument Thread Fittings
- Size range from 1/8 to 2 inch piping.
- Stainless steel and Carbon steel
- NPT, ISO/BSP, and SAE threads
- According to ASME B31.1 & B31.3
- Rolled male threads
- Male threads are protected with cap
- Excellent threads constructed to ensure leak-proof & reliable systems
PRODUCTS – NEEDLE VALVES

SNV50
Integral Bonnet Needle Valves
- Pressure rating up to 5000 psi (34 bar) @ 100°F (38°C)
- Temperature rating: -65°F (-54°C) to 450°F (232°C)
- Stainless steel, Brass, and Alloy
- In-Line or Angle pattern
- Vee stem, Regulating stem, Soft seat
- Sizes: S-LOK 1/8 to 3/4 in., Pipe Thread 1/8 to 1/2 in.

SNV60
Integral Bonnet Bar Stock Needle Valves
- Pressure rating up to 6000 psi (413 bar) @ 100°F (38°C)
- Temperature rating: -65°F (-54°C) to 450°F (232°C)
- Stainless steel, Alloy
- Vee stem, Regulating stem, Soft seat
- Sizes: S-LOK 1/4 to 1/2 in., Pipe Thread 1/4 to 3/4 in.

SUNV60
Union Bonnet Needle Valves
- Pressure rating up to 6000 psi (413 bar) @ 100°F (38°C)
- Temperature rating: up to 592°F (360°C) with PTFE packing up to 120°F (69°C) with Graphol packing
- Stainless steel, optional Alloy 20, and Alloy C276
- Non-rotating globe type stem tip
- Size: S-LOK 1/8 to 1 in., Pipe Thread 1/8 to 1 in., SW: 1/4 to 1/2 in.

SNV100
High Pressure Needle Valves
- Pressure rating up to 10000 psi (689 bar) @ 100°F (38°C)
- Temperature rating: -65°F (-54°C) to 450°F (233°C)
- Stainless steel
- PTFE packing on stem for leak tight seal and long life cycle
- Sizes: S-LOK 1/8 to 1 in., Pipe Thread 1/4 to 3/4 in.
PRODUCTS – BALL VALVES

**SBV10**
*Bar Stock Ball Valves*
- Pressure rating up to 1000 psi (68 bar) @ 100°F (38°C)
- Temperature rating: -4°F (-20°C) to 302°F (150°C)
- Stainless steel, Brass
- Butterfly handle optional
- Sizes: S-LOK 1/4 to 1 in.
  Pipe Thread 1/4 to 1 in.

**SBV30**
*One-Piece Instrumentation Ball Valves*
- Pressure rating up to 3000 psi (206 bar) @ 100°F (38°C)
- Temperature rating: -4°F (-20°C) to 302°F (150°C)
- Stainless steel, Brass
- Sealing without system pressure
- Sizes: S-LOK 1/8 to 3/4 in.
  Pipe Thread 1/8 to 1/2 in.

**SBV60**
*High Pressure Ball Valves*
- Pressure rating up to 10,000 psi (689 bar)
  @ 100°F (38°C)
- Temperature rating:
  -22°F (-30°C) to 200°F (93°C) with PTFE Seat
  -85°F (-60°C) to 200°F (93°C) with PEEK Seat
- Stainless steel
- 2-way, 3-way
- Sizes: S-LOK 1/4 to 1 in.
  Pipe Thread 1/4 to 1 in.

**SFBV60**
*Forged High Pressure Ball Valves*
- Pressure rating up to 6000 psi (413 bar)
  @ 100°F (38°C)
- Temperature rating:
  -4°F (-20°C) to 440°F (220°C)
- Stainless steel
- Easy replacement ball seats
  2-WAY, 3-WAY
- Sizes: S-LOK 1/8 to 3/4 in.
  Pipe Thread 1/4 to 1/2 in.

**SDBV**
*Hydraulic Ball Valves for DIN Standard*
- Pressure rating up to 7200 psi (500 bar)
  @ 100°F (38°C)
- Temperature rating:
  -4°F (-20°C) to 210°F (100°C)
- Stainless steel
- Sizes: Pipe Thread 1/4 to 2 in.
Products – Check Valves

**Hansun - CHECK VALVES**

**SCV30**
*Poppet Check Valves*
- Pressure rating up to 3000psi (206bar) @ 100°F (38°C)
- Temperature rating: -10°F (-23°C) to 375°F (191°C)
- Stainless steel, Brass
- Cracking pressure: 1/2psi (0.02 barg) to 100psi (6.89 barg)
- Sizes: S-LOK 1/8 to 1 in.
  - Pipe Thread 1/8 to 1 in.

**SCP30**
*One piece Check Valves*
- Pressure rating up to 3000psi (206bar) @ 100°F (38°C)
- Temperature rating: -10°F (-23°C) to 375°F (191°C)
- Stainless steel, Brass
- Cracking pressure: 1/2psi (0.02 barg) to 50psi (3.45 barg)
- Sizes: Pipe Thread 1/4 to 1/2 in.

**SCA30**
*Adjustable Check Valves*
- Pressure rating up to 3000psi (206bar) @ 100°F (38°C)
- Temperature rating: -10°F (-23°C) to 375°F (191°C)
- Stainless steel, Brass
- Cracking pressure: 3psi (0.2 barg) to 60psi (41.3 barg)
- Sizes: Pipe Thread 1/4 to 1/2 in.

**SCH60**
*High pressure Check Valves*
- Pressure rating up to 6000psi (413bar) @ 100°F (38°C)
- Temperature rating: -10°F (-23°C) to 375°F (191°C)
- Stainless steel
- Cracking pressure: 1/2psi (0.02 barg) to 25psi (1.7 barg)
- Sizes: S-LOK 1/8 to 1 in.
  - Pipe Thread 1/4 to 1 in.
PRODUCTS – PLUG, RELIEVE VALVES & FILTERS

HanSun - PLUG, RELIEVE VALVES AND FILTERS

**SPV20**
Plug Valves
- Pressure rating up to 3000psi (206bar) @ 100°F (38°C)
- Temperature rating: -10°F (-23°C) to 400°F (204°C)
- Stainless steel, Brass
- Flow throttling
- Easy replacement plug and o-ring
- Sizes: S-LOK 1/8 to 1/2 in.
  Pipe Thread 1/8 to 1/2 in.

**SRPV20**
Rising Plug Valves
- Pressure rating up to 6000psi (413bar) @ 100°F (38°C)
- Temperature rating: -20°F (-29°C) to 250°F (121°C)
- Stainless steel
- Replaceable soft seat
- DIn, PEEK or PTFE seats
- Non-rotating globe type stem tip
- Sizes: Pipe Thread 1/4 to 2/4 in.

**SRV30, SRO60**
Relief Valves
- Pressure rating up to 6000psi (413bar)
  @ 180°F (82°C)
- Temperature rating:
  -10°F (-23°C) to 400°F (204°C)
- Stainless steel
- Cracking pressure:
  - SRV30: 10psi (0.69 barg) to 250psi (17.25 barg)
  - SRV60: 250psi (17.25 barg) to 6000psi (413 barg)
- Sizes: S-LOK 1/4 to 1/2 in.
  Pipe Thread 1/4 to 1/2 in.

**SFV30, SFV99**
Filters
- Pressure rating up to 3000psi (206bar), 6000psi (413bar)
- Gas and liquid filtration
- Micron filtering ranges:
  - 0.5, 2, 7, 15, 60 and 90 microns
- Replaceable sintered elements
- Stainless steel, Brass
- Sizes: S-LOK 1/8 to 1/2 in.
  Pipe Thread 1/8 to 1/2 in.

**SBLV**
Bleed Valves
- Pressure rating up to 10000psi (689bar)
  @ 180°F (82°C)
- Temperature rating:
  - 45°F (-7°C) to 850°F (454°C)
- Stainless steel
- Male pipe thread: 1/8 - 1/2 in.
PRODUCTS – MANIFOLDS/GAUGE ROOT/DBB VALVES

Hansun - MANIFOLDS AND GAUGE ROOT VALVES

SGRV60
Gauge Root Valves
Pressure rating up to 6000psi (41.3 bar) @ 100°F (38°C)
Temperature rating: -65°F (-5°C) to +400°F (204°C)
Stainless steel
Non-rotating globe stem tip
Gland packing for high temperature available
Standard gauge valve, longer body gauge root valve and extended 4” long body
Multi-port design and Block and Bleed style
Sizes: Pipe Thread 1/2 to 3/4 in.

Hansun - DOUBLE BLOCK & BLEED VALVES, MONOFLANGES

SDBV
Double Block & Bleed Valves
- Class 150 to Class 2500 to ASME B16.5
- Temperature rating:
  PEEK seat: -65°F (-5°C) to 400°F (204°C)
  PTFE seat: -50°F (-5°C) to 300°F (150°C)
- Stainless steel, Duplex, A182
- Saving on space and weight
- Easy installation and maintenance
- Fire safety designed to API 607/6 FA
- Flange Sizes: 1/2 to 2 in. (DN15 to DN50)

SMNF
Monoflanges
- Class 150 to Class 2500 to ASME B16.5
- Temperature rating:
  PTFE packing: -65°F (-5°C) to 400°F (204°C)
- Graphite packing: -65°F (-5°C) to 800°F (430°C)
- Stainless steel
- Flange Sizes: 1/2 - 2 in. (DN15 to DN50)

SMY
Manifolds Valves
- Pressure rating up to 6000psi (41.3 bar) @ 100°F (38°C)
- Temperature rating: -65°F (-5°C) to 125°F (52°C) with Gland packing
- Stainless steel
- 2V, 3V and 5V as standard
- Remote or direct mounting
- Non-rotating globe stem tip

Tubing
- Standard for ASTM A339 or A213 or equivalent
- Recommended hardness: RHR 0 or less
- Full annealed stainless steel high quality seamless steel tubing
- Working Pressure is based on allowable value of 15000 psi according to ASME 521
- Safety Factor 3.76: considering ultimate tensile Strength 25,000 psi
- To determine working Pressure of ASME-1
  multiply the ASME 1 rating by 0.94
  Size: 1/16 - 2 m, 3mm - 30mm
<table>
<thead>
<tr>
<th>NAME</th>
<th>SIZE</th>
<th>Q'TY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Equipment</td>
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<td></td>
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<tr>
<td>CNC LATHE</td>
<td>6&quot;, 8&quot; &amp; 10&quot;</td>
<td>21</td>
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<tr>
<td>Auto CNC LATHE</td>
<td>6&quot;</td>
<td>10</td>
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<tr>
<td>MCT</td>
<td>800 kgf</td>
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<tr>
<td>Thread Rolling Machine</td>
<td>7 ton &amp; 10 ton</td>
<td>4</td>
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<tr>
<td>Auto Bend Saw</td>
<td>300 ~450</td>
<td>5</td>
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<tr>
<td>Laser Marking Machine</td>
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<td>Roll Marking</td>
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<td>Press Marking</td>
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<td>Auto Press Marking</td>
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<td>Test &amp; Inspection</td>
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<tr>
<td>Spectrometer</td>
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<td>Universal Test Machine</td>
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<td>Charpy Impact Tester</td>
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<td>Brinell / Rockwel / Vickers Hardness Tester</td>
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<tr>
<td>Contour Measureing Instrument</td>
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<tr>
<td>Surface Roughness Measure Tester</td>
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<tr>
<td>High &amp; Low Pressure Bursting Tester</td>
<td>4,000 bar &amp; 1,500 bar</td>
<td>2</td>
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<tr>
<td>High &amp; Low Vibration with Impulse Tester</td>
<td>1,500 bar &amp; 700 bar</td>
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<td>Profile Projector</td>
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<tr>
<td>Electron Microscope</td>
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<tr>
<td>Air Driven Pump (Hydraulic Tester) &amp; Vacuum Pump</td>
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<td>2</td>
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<tr>
<td>Polishing Machine</td>
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<tr>
<td>Mounting Press</td>
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<td>1</td>
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<tr>
<td>Granite Surface Plate</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
PRODUCTION FLOW

RAW MATERIAL
- ASTM A182 F316
- ASTM A479 F316
- Recording HCN

INCOMING INSPECTION
- CHEMICAL COMPOSITION
- MECHANICAL PROPERTIES
- VISUAL & DIMENSION

CUTTING
- ASTM A182 F316
- ASTM A479 F316

FORGING
- ASTM A182 F316
- ASTM A479 F316

MARKING
- LASER MARKING
- ROLLING
- RAW MATERIAL HCN

DEBURING

MACHINNING
- WORKER SELF CHECK
- INSPECTION: VISUAL & DIMENSION, GUAGE

ELECTRO POLISHING

CLEANING & PASSIVATION

INSPECTION
- VISUAL

ASSEMBLY

MOVEMENT CHECK
- LEAKAGE TEST
- PRESSURE TEST

SHIPPING

FINAL INSPECTION

PACKING

INSPECTION
- INSPECTION CERTIFICATE
TRACKING FLOW FOR RAW MATERIALS

- **P/O Issuance**
  - Check P/O

- **QA Inspection**
  - Mill Sheet
  - Inspection
    - Hardness test
    - Dimension
    - External
    - Inspection

- **Recording HCN**

- **Storage by HCN**
  - Check Output voucher
  - Traveler attached

- **Submit Output voucher**

- **Output**

- **Production**
  - HCN Marking on Product

**System to fully trace raw materials**
PRODUCT INSPECTION

- **Raw Material Management**
  - Chemical Composition
  - Hardness check when Incoming inspection
  - Hardness Check: Rockwell Hardness Tester
  - Brinell Hardness Tester

- **Process Inspection**
  - Total inspection by worker-inspector
  - Inspection on tour by QA-Inspector
  - Final Inspection by final-Inspector
  - Dimension, Thread
  - Datum Point
  - Inside hole

- **Measurement**
  - Check Thread Size by the projector
  - Check Intensity of Illumination of surface
  - Projector
  - Illuminometer

- **Final Inspection & Assembly**
  - Assembling Inspection by worker-Inspector
  - Final Inspection by QA-Inspector
  - External Inspection while packing
<table>
<thead>
<tr>
<th>PRODUCTION TEST</th>
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<tbody>
<tr>
<td><strong>VIBRATION &amp; IMPULSE TEST</strong></td>
</tr>
<tr>
<td>High</td>
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<tr>
<td><strong>REPEATED ASSEMBLY TEST</strong></td>
</tr>
<tr>
<td>Check leakage by practicing 10 times repetitive assembling test and giving 1.5 times of Allowable Pressure</td>
</tr>
<tr>
<td><strong>BURST PRESSURE TEST</strong></td>
</tr>
<tr>
<td>Check any transformation or any tube dropping case by giving quadruple of maximum allowable pressure</td>
</tr>
<tr>
<td>Test Type</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td><strong>TENSILE STRENGTH TEST</strong></td>
</tr>
<tr>
<td><strong>CONTOUR MEASURING</strong></td>
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<tr>
<td><strong>IMPACT TEST</strong></td>
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<tr>
<td><strong>VACUUM TEST</strong></td>
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## MAIN CLIENTS – DOMESTIC & OVERSEAS

<table>
<thead>
<tr>
<th>Domestic</th>
<th>Overseas</th>
<th>Country</th>
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<tbody>
<tr>
<td>HYUNDAI Engineering &amp; Construction</td>
<td>Hydraulink Fluid Connector</td>
<td>New Zealand</td>
</tr>
<tr>
<td>SAMSUNG C&amp;T and SAMSUNG E&amp;C</td>
<td>Shell Petroleum DVLT</td>
<td>USA</td>
</tr>
<tr>
<td>DAEWOO E&amp;C</td>
<td>Petromex</td>
<td>Mexico</td>
</tr>
<tr>
<td>GS E&amp;C</td>
<td>Yanbu Refinery</td>
<td>Saudi Arabia</td>
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<tr>
<td>SK E&amp;C</td>
<td>National Iranian Oil Co</td>
<td>Iran</td>
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<tr>
<td>Doosan Heavy Industries</td>
<td>STX Dalian</td>
<td>China</td>
</tr>
<tr>
<td>Daelim E&amp;C</td>
<td>Gates E&amp;S</td>
<td>Singapore</td>
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<tr>
<td>Korea Hydro &amp; Nuclear Power Co.</td>
<td>Hoking Fittings &amp; Valves</td>
<td>Taiwan</td>
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<tr>
<td>POSCO E&amp;C</td>
<td>Source Hose &amp; Industrial</td>
<td>Canada</td>
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<tr>
<td>SUNG IL Co. LTD</td>
<td>Kor-Fitting</td>
<td>Hungary</td>
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</table>


## SUPPLY REFERENCE LIST

<table>
<thead>
<tr>
<th>Market</th>
<th>Customer/PJT</th>
<th>Country</th>
<th>Product</th>
<th>Delivery</th>
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</thead>
<tbody>
<tr>
<td>Nuclear Plant</td>
<td>Doosan Heavy Ind. Co</td>
<td>KOREA</td>
<td>Tube Fittings</td>
<td>2006/Mar</td>
</tr>
<tr>
<td>Nuclear Power / Hanaro</td>
<td></td>
<td>KOREA</td>
<td>Forged &amp; Instrument Valve, Tube &amp; Forged Fittings</td>
<td>2006/Aug</td>
</tr>
<tr>
<td>Hyundai Construction / Shingori #1,2,3,4</td>
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<td>KOREA</td>
<td>Pipe, Fittings, Valves</td>
<td>2009</td>
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<tr>
<td>Hyundai Construction / Shinwolsung #1,2</td>
<td></td>
<td>KOREA</td>
<td>Pipe, Fittings, Valves</td>
<td>2009</td>
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<tr>
<td>Hyundai Construction / Yungkwang</td>
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# SUPPLY REFERENCE LIST

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