Hyundai Platform Screen Door

March. 2014
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Part 1

Introduction
1. Company Profile

General
- Location: Ichon-Si, Republic of Korea
- Establishment: 1984. 5. 23.
- Number of Employee: 1,200 Persons
- International Sales & Services Networks
  - 3 Joint Venture Company (China, India, Indonesia)
  - 3 Overseas Branch OFC. (China, UAE, India, Hungary)
  - 35 Overseas Sales & Services Agents

Platform Screen Doors (PSD)
- Full-Closed Type PSD
- Semi-Closed Type PSD
- Half Height PSD (APG)
- Aluminum & STS Type
- Post & Top Support Type
- ATO & ATS Control

Major Products
- Elevators
- Escalators & Moving Walks
- Platform Screen Doors
- Material Handling Systems
- Auto Parking Systems
Part 2

Hyundai’s Strength
Total solution Provider

Hyundai’s Strength

Accumulated Experience
Abundant Capability
Apparent Reliability
4. Experience (Performance)

Performance Records

Total: 200 Stations
Market share: 50%

Completion: 175 stations
Under construction: 25 stations
4. Experience (History)

History of PSD installation

Thirteen (13) years
Since 1997
4. Experience (Interfaces)

Interface works

Experiences with Various Companies
(Signaling, Train, Construction, Civil, etc.)
4. Experience (Know-How)

**Design Know-How**
- Elevator Design: 26 years
- PSD Design: 13 years

**Installation Know-How**
- Installation at *live* stations
  (The world’s first)
- **New** Installation method
  (International patent for modular type installation method)
4. Experience (Global Business)

International Sales, Installation and Maintenance Networks

Total: 38 countries

- 3 Joint Venture Company (China, India, Indonesia)
- 3 Overseas Branch OFC. (China, UAE, India, Hungary)
- 35 Overseas Sales & Services Agents
5. Capability (Strategy of Manufacturing & Quality control)

The manufacture of all parts
(Even small parts production is being handled by Hyundai.)

Direct quality control by parts
(Every product shall be tested before shipment)
5. Capability (Number of people in PSD business)

<table>
<thead>
<tr>
<th>Fields</th>
<th>PSD Business</th>
<th>Whole Business</th>
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<tbody>
<tr>
<td>Design, R&amp;D</td>
<td>22</td>
<td>152</td>
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<tr>
<td>Manufacturing</td>
<td>106</td>
<td>320</td>
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<tr>
<td>Installation</td>
<td>46</td>
<td>280</td>
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<tr>
<td>Maintenance</td>
<td>8</td>
<td>56</td>
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</table>

Total: **182** persons
5. Capability (Production Facilities)

Major Production Facilities

1) LASER CUTTING M/C (TRUMPF)
   - 2.7 KW, 3000*1520, MAX 16T
2) P4 BENDING M/C #2
   - 3200L*165H, SUS 2T
3) S4 PUNCH & SHEARING M/C #2
   - 26TON*3048L*1524W
4) FMS (ACE100)
   - X2000*Y1120*Z1000
5) TURN MILL (VT1100M)
   - Ø1100
6) POWDER COATING LINE
   - 182M*2M/min (250W*2500H)
7) POWDER BOOTH
   - 2100W*43,00H*5,000 (500W*2500H)

Area of Plants:
1st Factory: 10,965 m²
2nd Factory: 8,506 m²
3rd Factory: 4,106 m²
5. Capability (Annual output)

Elevators: 12,000 Units/Year
Escalators & Moving Walks: 1,000 Units/Year
Auto Parking Systems: 150 Projects/Year
Material Handling Systems: 100 Projects/Year

PSD Products

3800 set / Year
60 Stations / Year
6. Reliability (Financial Status)

Sales (Revenue)
- 2010: U$ 830 million
- 2009: U$ 626 million
- 2008: U$ 611 million
- 2007: U$ 564 million

2011 Plan: U$ 970 million
6. Reliability (Credit Evaluation)

**D&B Rating**

Received the highest rank in 2010

**Estimated Financial Strength : 5A**

**Composite Appraisal : 1**

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6. Reliability (Certificates)

Certificate of ISO 9001
Certificate of ISO 14001
Certificate of Excellent Service Quality
6. Reliability (Certificates)

Certified various tests

Duration test (3 million times)
EMC, EMI test
Coating test
Insulation test
Strength test
Impact test
Wind pressure test
Temperature test
Vibration test
Water proof test
Part 3
Platform Screen Door
PSD (Platform Screen Doors) is the safety system to cut off subway’s platform from the rail way. Sliding doors of PSD system open and close as ATO (Automatic Train Operation) system make a signal when an electric train stops at the designated position.
1. Summary of PSD

**Full-Close Type**
- Upper part of PSD structure reach the platform ceiling.
- Prevent passenger from falling down or committing suicide
- Make a comfortable air condition
- Maximizing energy efficiency
- Fully blocking train wind, fine particulates, noise cancellation

**Semi-Close Type**
- Natural ventilation
- Prevent passenger from falling down or committing suicide
- Partially blocking train wind, fine particulates, noise cancellation
- Decrease of interface factors with the platform ceiling than Full-Closed Type

**Half Height Type (APG)**
- Incomplete blocking train wind, fine particulates, noise cancellation
- Prevent passenger from falling down or committing suicide
- No interface factors with the platform ceiling
- Easy construction
- Reduction of construction period through the installation of semi-assembling conditions.
2. System over view

Main Parts

- Structure
- Tramsom
- Header Box
- Fixed Door
- Guide Rail
- Sliding Door
- EED
2. System overview

Structure Parts

- Ceiling
- Base Plate Upper
- Column Bracket
- Vertical Beam
- Horizontal Beam
- Fixation (Upper)
- Anchor
- Base Plate
- Vertical Beam
- Bolt
- Fixation (Middle)
- Vertical Beam
- Horizontal Beam
- Fixation (Bottom)
- Vertical Beam
- Anchor

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2. System overview

Driving Parts

- Idler Pulley
- Belt Clamp
- Timing Belt
- Driving Motor
- Door Control Module (DCM)
- Door Hanger
- Electric Locking Device
- Door Stopper
- Hanger Rail
2. System overview - APG

The Name of Main Parts

- Top Checking Zone (Top Cover)
- Door Open Lamp
- Tempered Glass
- Sliding Door
- Bottom Checking Zone (Driving Part)
- Door Control Device
- Drive Belt
- Drive Motor
- Local Control Panel
2. System overview - APG

Structure (Frame)

- Steel Column
- Base Plate
2. System overview - APG

Name of Detail Parts

- Manual Control Panel
- Door Control Module (DCM)
- Interface Module (IFM)
- Sensor for Door
- Belt Clamp
- Electric Locking Device
- Timing Belt
- Power Supply
- Idler Pulley
- Driving Motor
2. System overview

Safety Devices (Overview)

- Electric locking device
- Sensing obstacle between doors
- Edge rubber
  - Protection of passenger from crash with door edge
- Obstacle sensor
  - Sensing obstacle between PSD and train
- Manual door open device
- EED Panic Bar
  - It can be opened manually from track side at the emergency
- Panel for prevention of getting jammed
  - Prevention of getting jammed between train and PSD
3. System configuration of PSD - ATO system

The case of ATO signal system to be able to interface with PSD

We have been experienced to interface with various ATO systems:
- Alstom: Dea-gu, Inchon international airport, Seoul line9
- Siemens: Dea-jeon subway
- Thales (Alcatel): Seoul Sinbundang Line,
- Kyosan: Gwang-ju subway
3. System configuration of PSD - RF system

In case that the signal couldn't interface between PSD And Train directly, it could interface through RF equipments installed on the train and track. (It could be possible in the same sort of train service only)
3. System configuration of PSD – Door Sensor system

In case that the signal couldn't interface between PSD and Train directly and the sorts of trains were different, it could interface through Sensor equipments installed on the track.
4. Procedure of Installation

1. Site survey, Measurements, Marking
2. Drilling, Anchoring
3. Steel structure (Beams)
4. Headerbox, Guiderail
5. Doors, Control panels
6. Inspection, Adjustment
7. Site test (Individual, Interlocking, Overall)
Part 4

Site View
Site View

Full Closed Type
7. Site View
Semi Closed Type
Half Height Type (APG)
Thank you