SK E&C Plant Division
Build the Great

“A Perspective of the World E&C Stage as a TSP”
Contents

1. SK Group Overview

2. SKEC Overview

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1. SK Group Overview
SK Group Overview

**Group Annual Revenue**

- **U$ 98.4 Billion**

**Operational Income by sector**

- Energy & Chemicals: 51.4%
- Trading & Services: 17.7%
- Telecommunications: 30.8%

**No. 1 in Oil & Gas Sector**

**No. 1 Telecommunication Sector**

**Leading EPC Company**

**90 Affiliates**

**Greatly contributes to Korea’s GDP (9%) & Export (8%)**

**SK is the first energy-oriented company in Korea with refining capacity of 1.15 Mil. BPSD**

**Ranked 82th by sales among the Top 500 Global Companies** (Fortune Magazine, 2011)
<table>
<thead>
<tr>
<th>SK Group Total Solution Provider</th>
</tr>
</thead>
</table>

### Concession Investment
- Oil
- Gas
- Coal
- Others

### E & P
- Exploration
- Drilling
- Production

### Development / Planning
- E & S
- Financing Arrangement

### Plant Construction
- Engineering
- Procurement
- Construction

### O & M / Training
- Startup
- Technology Transfer
- Off-Take

### Marketing & Trading
- Feed Supply
## Major Affiliated Companies

### Energy & Chemicals (35 Companies)
- E&P, Refinery, LPG & GAS Supply, Power, Chemical & Petrochemical

- **SK Energy**
  - E&P / Refining / Chemicals (MS 40%/ No.1 in Korea)

- **SK Chemicals**
  - Fine Chemical

- **SKC**
  - Film / Display

- **SK E&S**
  - Gas Supply / Power (MS 25%/ No.1 in Korea)

- **SK Gas**
  - LPG Gas

### Telecommunications (30 Companies)
- Mobile Network Operator, U-City, Satellite, Communication, Internet TV

- **SK Telecom**
  - Mobile Comm. Service (MS 51%/ No.1 in Korea)

- **SK C&C**
  - IT / System Integration

- **SK Telink**
  - Int'l Long Distance Call

- **SK Communications**
  - Portal/Social Networking

- **SK Broadband**
  - VoIP, IPTV

### Trading & Services (25 Companies)
- Trading, Logistics, Hotel, Engineering & Construction, Securities

- **SK E&C**
  - Engineering & Construction

- **SK Networks**
  - Trading / Logistics
  - Coal E&P

- **SK Shipping**
  - Transportation

- **Walkerhill**
  - Hotel

- **SK Securities**
  - Securities & Futures
2. SKEC Overview
**SKEC Business Portfolio**

<table>
<thead>
<tr>
<th>Plant</th>
<th>Housing &amp; Building</th>
<th>Civil &amp; Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Refineries</td>
<td>• Offices / Multiple Complexes</td>
<td>• Roads / Tunnels / Bridges</td>
</tr>
<tr>
<td>• Industrial Plants</td>
<td>• SK Brand Residential Buildings</td>
<td>• Underground Storage</td>
</tr>
<tr>
<td>• Petrochemical Plants</td>
<td>• Hotels &amp; Resorts</td>
<td>• Harbors</td>
</tr>
<tr>
<td>• IT Infrastructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Gas Processing Plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Power Plants</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Established**: 1977
- **Resources**: Over 7,000 people
- **Revenue**: U$ 4.1 billion (2010)
- **Backlog**: U$ 18.5 billion (2010)
SKEC Business Portfolio

New Order & Backlog
Unit: Bill USD

- Backlog
- New Order

2007: 9.3
2008: 7.68
2009: 8.56
2010: 7.1

18.5
17.0
13.7
9.3
SKEC USA Organization

Planning & Mgmt Support

- Roy Yoon
  - Admin/Account
  - HR
  - Planning
  - Project
    - Mike Lee
    - RDP BEP
  - ERP Phase I
  - ERP Phase II
  - I&C
  - Electrical
  - CSA

Manager of Operations

- Keith Claus

EPC Function

- Charles Jeong

Engineering

- Chuck Lively
  - Process
  - PEM
  - Mech.
  - Piping

Biz. MGT

- PJT Planning & Control
  - Estimating

PJT Support

- Procurement
  - GPO
  - Construction
  - QA
  - HSE
  - Contract

MKT Branch

- Calgary
- Quito
- Bogota
- Mexico City

Proposal / PJT Manager

IM&T

SKEC USA

- Technical Advisor
  - Daniel Ju

Plant CIO

- Jorge Ungo

Marketing

- James Kwon
  - Jason Rhie
## SKEC FEED Experience

<table>
<thead>
<tr>
<th>Project</th>
<th>Product Category</th>
<th>Client</th>
<th>Duration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JURONG AROMATICS COMPLEX PROJECT</strong></td>
<td>Petro-chemical</td>
<td>Jurong Aromatics Corp. PTE, Ltd (SINGAPORE)</td>
<td>May 2011 ~ May 2014 (36 mo.)</td>
<td>Paraxylene (800,000 MTPD) Orthoxyene (200,000 MTPD) Benzene (438,000 MTPD) Zet Fuel (900,000 MTPD) Diesel (580,000 MTPD)</td>
</tr>
<tr>
<td><strong>MANABI REFINERY FEED</strong></td>
<td>Refinery</td>
<td>RDP(Refineria del Pacifico) : PDVSA (49%) + Petroequador (51%) (ECUADOR)</td>
<td>Mar 2010 ~ Sep 2011 (18 mo.)</td>
<td>GRASSROOTS REFINERY (300,000 BPSD)</td>
</tr>
<tr>
<td><strong>LPG4</strong></td>
<td>Gas</td>
<td>Kuwait National Petroleum Company (KNPC) (KUWAIT)</td>
<td>Dec 2007 ~ Feb 2011 (38 mo.)</td>
<td>Gas Compression, Dehydration, Stripping, NGL Recovery, Fractionation</td>
</tr>
<tr>
<td><strong>GLADSTONE LNG PROJECT</strong></td>
<td>LNG</td>
<td>Gladstone LNG PTY., Ltd (AUSTRALIA)</td>
<td>Jul 2008 ~ Jan 2009 (6 mo.)</td>
<td>Liquefaction (1.5 MMTPY)</td>
</tr>
<tr>
<td><strong>RRC UPGRADING PROJECT</strong></td>
<td>Refinery</td>
<td>Rayong Refinery Public Co., Ltd (THAILAND)</td>
<td>Sep 2007 ~ Dec 2008 (16 mo.)</td>
<td>Fractionation (57,700 BPSD) Sweetening (30,000 BPSD)</td>
</tr>
<tr>
<td><strong>LBO NO.3 PLANT PROJECT</strong></td>
<td>Refinery</td>
<td>SK-PATRA (INDONESIA)</td>
<td>Apr 2006 ~ May 2008 (26 mo.)</td>
<td>Vacuum Distillation (25,000 BPSD) Catalytic Dewaxing (9,000 BPSD)</td>
</tr>
</tbody>
</table>
SKEC operates three Engineering offices globally at Seoul Office (SKEC), SKEC USA and SKEC India. Each office closely operates based on Peak & Valley workload and specially Houston office is focused on Front End Engineering Design (FEED) work with global talent engineers.

- SKEC HQ: 6,000 People
- SKEC India: 500 People
- SKEC USA: 200 People

Total: Over 6,700 People
SKEC operates seven global procurement offices (GPO) in order to purchase materials through world-wide networks.
3. Capability Highlights
SK delivers Total Solution…

1. One Stop Total Solution
2. Differentiated Values
   - Technical Collaboration w/SKI
   - Project Development/ Financing
   - O&M Services
   - Marketing & Trading
   - Training Services
SKEC Engineering Service

**Quality / Safety**
- Design Quality Audit by an Independent Quality Assurance TF
- Involvement of Expert
- Safety Study: HAZOP, SIL, QRA, etc
- FEED Verification

**Speed**
- Early Verification for FEED
- Early commitment of Long Lead Equipment
- Design Priority in line with Delivery of Equipment & Materials and Path of Construction
- Improvement of Approval Cycle Through Joint Review Meeting with COMPANY

**Effectiveness**
- Effective Interface Management
- Construction Oriented Design
- Use of Global Engineering Office

Flawless Eng’g leading On-time Completion & On-specification
SKEC Key Delivery Values

- Speed
- Size & Complexity
- Safety
- Quality
SKEC Key Delivery Values

Speed
Size & Complexity
Safety
Quality

RFCC / SK Energy in Korea

Unit Description
RHDS, HP, RFCC, SRU, Alkylation & Utility Facilities

Project Schedule
02.06 ~ 07.08 (29 M)

Actual Project Duration
02.06 ~ 04.08 (26 M)

Early Completion by 3 months
SKEC Key Delivery Values

<table>
<thead>
<tr>
<th>Speed</th>
<th>Size &amp; Complexity</th>
<th>Safety</th>
<th>Quality</th>
</tr>
</thead>
</table>

GC 24 in Kuwait

Unit Description
165,000 BOPD Oil & 240MMSCFD LP gas

Project Schedule
03.07 ~ 09.10 (42 M)

Actual Project Duration
03.07 ~ 03.10 (36 M)

Early Completion by 6 months
SKEC Key Delivery Values

Mega Size Refinery Complexes Construction

- Cadereyta Project: US$ 2.4 Bil ('97)
  - Today's value US$ 7.2 Bil
  - Grassroot & Revamps (24 Units)

- Madero Project: US$ 1.6 Bil ('99)
  - Today's value US$ 4.8 Bil
  - Grassroot & Revamps (28 Units)
SKEC Key Delivery Values

Speed

Size & Complexity

Safety

Quality

KOC FMP / Kuwait
40,150,550 hours / Jun.05 ~ May.08

Aromatics / Thailand
21,000,000 hours / Feb.95 ~ Jul.96

3rd LBO / Indonesia
9,000,000 hours / Dec.06 ~ Apr.08

RPMAA / Kuwait
6,000,000 hours / Aug.01 ~ Dec.02

RFCC / Ghana
3,850,000 hours / May.00 ~ Apr.02

ISP-4 / Indonesia
2,521,270 hours / Jan.95 ~ Oct.96

FCC / Korea
2,300,000 hours / Nov.95 ~ Feb.96

B2P3 / Ghana
2,025,126 hours / May.04 ~ Jul.05

CCR / Mexico
2,022,270 hours / Feb.94 ~ Sep.95

KOCR / Kuwait
2,000,000 hours / Jun.03 ~ Jul.04
### SK Energy Ulsan Complex

#### 40 years Operation
- One of the largest and complex plants in the world with the refining and petrochemicals production units of more than 30 licensors installed

#### Refinery (50 Units)

<table>
<thead>
<tr>
<th>Process</th>
<th>Units</th>
<th>Capacity (MBPD)</th>
<th>Process</th>
<th>Units</th>
<th>Capacity (MBPD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDU</td>
<td>5</td>
<td>840</td>
<td>UC</td>
<td>1</td>
<td>45</td>
</tr>
<tr>
<td>MDU</td>
<td>6</td>
<td>257</td>
<td>LBO</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>BRU</td>
<td>1</td>
<td>30</td>
<td>RHDS</td>
<td>3</td>
<td>192</td>
</tr>
<tr>
<td>VDU</td>
<td>2</td>
<td>94</td>
<td>RFCC</td>
<td>2</td>
<td>117</td>
</tr>
<tr>
<td>Reformer</td>
<td>1</td>
<td>42</td>
<td>HP</td>
<td>3</td>
<td>273 (KNM3/Hr)</td>
</tr>
</tbody>
</table>

#### Petrochemicals (50 Units)

<table>
<thead>
<tr>
<th>Process</th>
<th>Units</th>
<th>Capacity (KMT/Yr)</th>
<th>Process</th>
<th>Units</th>
<th>Capacity (KMT/Yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>2</td>
<td>860 (C2=)</td>
<td>CHx</td>
<td>1</td>
<td>180 (CHx)</td>
</tr>
<tr>
<td>BEU</td>
<td>2</td>
<td>115 (BD)</td>
<td>PE</td>
<td>2</td>
<td>396 (PE)</td>
</tr>
<tr>
<td>B-1</td>
<td>1</td>
<td>41 (B1)</td>
<td>PP</td>
<td>2</td>
<td>366 (PP)</td>
</tr>
<tr>
<td>Reformer</td>
<td>3</td>
<td>79</td>
<td>Solvent</td>
<td>3</td>
<td>119 (Sol.)</td>
</tr>
<tr>
<td>SUL/AEU</td>
<td>2</td>
<td>3,020 (BTX)</td>
<td>1.4 BDO</td>
<td>1</td>
<td>40 (1.4 BDO)</td>
</tr>
<tr>
<td>PX</td>
<td>2</td>
<td>958 (PX/OX)</td>
<td>EPDM</td>
<td>1</td>
<td>30 (EPDM)</td>
</tr>
<tr>
<td>MTBE</td>
<td>2</td>
<td>250 (MTBE)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Over 70% the above facilities has been designed/ procured/ constructed by SKE&C in close cooperation with SK Energy
### Korean ECA (Export Credit Agents) are providing various support programs to promote export and investment of Korean Companies

<table>
<thead>
<tr>
<th>Program</th>
<th>KEXIM</th>
<th>K SURE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Export Credit</strong></td>
<td><strong>Overseas Business Credit</strong></td>
<td><strong>Export Credit</strong></td>
</tr>
<tr>
<td><strong>Condition</strong></td>
<td>Korean content is more than 25% of Off shore</td>
<td>Korean investor holds at least 10% of equity through the loan life</td>
</tr>
<tr>
<td><strong>Credit Amount</strong></td>
<td>Maximum 200% of Korean content (Ceiling as 85% of Off shore)</td>
<td>Up to 50% of Loan</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>55%: Direct Loan, 45%: Guarantee to Lenders</td>
<td>Comprehensive Political Insurance to Lenders</td>
</tr>
<tr>
<td><strong>Interest</strong></td>
<td>Libor + Applicable Margin (for Direct Loan)</td>
<td>Commercial Lenders Interest separately applied</td>
</tr>
<tr>
<td><strong>Cover Fee</strong></td>
<td>TBD (for Guarantee to Lenders) based on risk profile</td>
<td>Minimum Premium rate + exposure fee</td>
</tr>
<tr>
<td><strong>Tenor</strong></td>
<td>Up to 14 years based on cash flow, sector, country</td>
<td>Flexible Does not regulated by OECD guideline</td>
</tr>
<tr>
<td><strong>Fee</strong></td>
<td>Upfront/Commitment</td>
<td>Upfront/Commitment</td>
</tr>
</tbody>
</table>

### Key Components of TSP

- **Value Partner**
  - Financing: K-Exim, KSURE, etc.
  - Operation: KOSEP, etc.
  - Tech/Licensor: Shaw, etc.
  - Consulting: KBC, etc

- **Critical Enabler**
  - • Equity Participation
  - • Creative Financing

- **SK Group**
  - • EPC, Technology, Off-take, O&M, Equity Financing

- **TS Contents Development through a variety of partnership**

- **Secure Project through the Equity Participation**
SKEC Project Financing Experience

1994
ATC
- Project Amount: USD 679M
- EPC Contractor
- ECA Loan Arrangement

1997
Cadereyta
- Project Amount: USD 2,424M
- Main Sponsor
- EPC Contractor

2003
SK Eurochem
- Project Amount: USD 77M
- Equity Investor

2010 3Q
Jurong Aromatics
- Project Amount: USD 2,100M
- Main Sponsor
- EPC Contractor
- ECA Loan Arrangement

2010 4Q
Eurasia Tunnel
- Project Amount: USD 1,100M
- Sponsor
- EPC Contractor
SKEC-TSP Major Experiences Jurong Aromatics Complex

**Equity**
- **SK Group (30%)***
- Founding Shareholder 20%
- Sangfangxiang (SFX) 25%
- Others*** 25%
- Others (70%)

**Debt**
- KEXIM (Direct, Coverage)
- K-SURE (Coverage)
- Commercial Loan
- Working Capital
- Subordinated Loan

**Project Feeds & Offtakce**
- Feedstock Supply
- FEED & EPC Contract
- O&M Contract
- Offtake

**Commodities & Raw Material**
- Glencore, EDBI etc.
- Global Oil & Gas Company

**Founding Shareholder**
- 20%

**Sangfangxiang (SFX)**
- 25%

**Others***
- 25%

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**Debt Sources**
- Commercial Loan
- Working Capital
- Subordinated Loan

**Equity Shareholders**
- SK Group (30%)
- Others (70%)
- Founding Shareholder (20%)
- Sangfangxiang (SFX) (25%)
- Others*** (25%)
- **Glencore, EDBI etc.** (25%)
- **Sangfangxiang (SFX)** (20%)

**Product**
- PX, BZ, OX, Petrochemical Product

**SK Energy**, **SK Gas**, **SK E&C**, **BP**, **Glencore**, and **ESSAR** logos are present in the diagram.
3. SK Capability as a Total Solution Provider (Example 2)

**RDP**

*Refineria Del Pacifico (SPC)*

**Equity** (30%)

**Debt** (70%)

**Feed Supply**
- Petroecuador
- PDVSA

**Off Take**
- Petroecuador
- PDVSA
- Int’l Trader

**Ecuadorian Venezuelan Crude**

**LPG Gasoline Diesel Kerosene**

**Potential Financing Arrangement**
- **KEXIM** (Direct Loan + Coverage)
- **KEIC** (Coverage)
- DB, BNP Paribas, etc. (Commercial Bank)
- Multi ECAs (China-EXIM, JBIC, EDC, ECGD etc.) and MLA

**Completed**
- F/S
- CEP, SEA
- FEED
- EPC
- O & M

**On going**
- SK E&C
- Other EPC Contractors

**Petroecuador** 51%
- **PDVSA** 49%

Shareholder’s Structure shall be change if 3rd party is invited.
SKEC intend to be IPP developer in Power block separately

**RDP (SPC)**
SKEC-TSP Business Model
Typical Gasification Project in the USA

SKEC is ready to collaborate with the companies who need SK.
Thank You