Upon establishing the Offshore Plant Technology Roadmap in 2014, the Korean government has since aggressively pursued the gradual development of 100 core technologies in four segments identified by the roadmap.

The government also focuses on promoting offshore R&D centers, and foreign technicians are entitled to a 50% cut in income tax for the first two years (until 2018).

Government-Driven Development of Core Offshore Plant Technologies

100 Core Technologies

- Drilling (28)
- FPSO (21)
- FLNG (26)
- Subsea/OSV (25)

Technology Development Projects

**Driller**

Development of environment-friendly offshore plant technology for deepwater resources (Jul. 2012 – 2017, KRW 65.7 billion)

**Equipment**

- Drilling and subsea system for FPSOs, and high-pressure mud pumps for deepwater drilling (2012–2020, KRW 26.3 billion)

**Processing Technology**

- Opportunity crude production & processing technologies, and organic acid and calcium removing technology (Jun. 2013 – May 2018, KRW 3.8 billion)

**IT conversion**

Development of predictive maintenance systems to deliver integrated offshore plant operation, maintenance and repair services (May 2013 – Apr. 2017, KRW 13.9 billion)

Success Case

Siemens’ Investment in Korean Power Engineering

In 2013, Siemens established its energy solutions Asia headquarters (in charge of power generation solution markets in the Asia-Pacific, the Middle East, and North Africa) in Seoul, along with its Asia headquarters for power and gas businesses.

Siemens’ Asia headquarters is expected to act as an energy solution hub, connecting Korea, Japan, Taiwan, Australia, Singapore, and other countries in the Asia-Pacific and the Middle East.
Korea’s Offshore Plant Industry

Leading in No. of Backlogged Orders

Korean shipbuilding and marine engineering companies focus on building platforms for the exploration, drilling, and production of oil and gas, subsea production and processing systems, and URF (umbilical, riser and flowline) equipment.

As of 2015, MDUs (mobile-drilling units) account for about 51% of all backlogged orders in the offshore plant industry, followed by MOPUs (mobile-offshore production units) at 18%. By country, Brazil leads the world in order backlog with 9 orders each.

Backlogged Orders for FPSO Vessels by Country

By standardizing offshore equipment and procedures, Korea’s three major shipbuilders have been lowering the break-even point of oil prices and increasing orders.

Hyundai Heavy Industries Order Backlog

<table>
<thead>
<tr>
<th>Year</th>
<th>Semi-submersible Drillsips</th>
<th>Fixed offshore plants</th>
<th>Floating offshore plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>629 (USD million)</td>
<td>720 (USD million)</td>
<td>660 (USD million)</td>
</tr>
<tr>
<td>2016</td>
<td>250 (USD million)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Samsung Heavy Industries Order Backlog

<table>
<thead>
<tr>
<th>Year</th>
<th>Offshore plants</th>
<th>Production facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>19.18 (USD billion)</td>
<td>13.25 (USD billion)</td>
</tr>
</tbody>
</table>

Korean Offshore Plant Industry by Segment

All three domestic majors have abundant experience in production.

Samsung Heavy Industries has the greatest track record in number of orders and production abilities.

All three majors have abundant experience in building medium to large and ultra large plants.

LNG-FPSOs are currently being built for Shell (By Samsung) and Petronas (By Daewoo).

Most orders go to Hyundai, Samsung, Daewoo, and STX.

Competitiveness

Korean shipbuilders boast a competitive edge in offshore plant construction and fabrication technology, and have an extensive track record in production design.

Their knowhow and technologies developed through various projects have resulted in Korea’s current competitiveness in making semi-submersibles, drillsips, FPSOs, LNG-FPSOs and LNG-FSRUs.

Korea’s Offshore Plant Industry Locations and Infrastructure

Korea’s offshore plant clusters are concentrated in Gyeongangnam-do, where major shipbuilders make large offshore plants for global customers.

The ocean engineering basin in Busan, the world’s largest of its kind, can simulate actual environmental conditions such as waves, winds and tides, enabling related companies and research institutes to develop various deepwater facility technologies and test performances.

Ocean Engineering Basin in Busan

- Wave Generation System
- Wind Generation System