FSRWP® = Floating Storage, Regasification, Water, and Power

### Key Features
- Long-Term and Cost Effective Solution
- ECA Supported Financing
- High Efficiency; low operating cost
- Time to First Power: ≤ 24 months
- Available on EPCI, Lease, BOT or BOOT basis
- Fuel Flexibility: LNG, LPG, or domestic Natural Gas
- Integrated Power Management System to help balance power supply from renewables
- Multiple Mooring Options: Jetty, Turret or Tower Yoke

### Applications
- Power/Water/Gas supply to Utilities, Industrial Parks or large Industry (i.e. Mines, Steel Mills, Smelters)
- Power & Water Hub for off-shore Oil & Gas Fields
- Integration with Renewable Power (Solar, Wind, & Hydro)
- Base Load and/or Peak Shaving Power Plant
- Power & Water Hub for off-shore Oil & Gas Fields
- Power/Water/Gas supply to Utilities, Industrial Parks or large Industry (i.e. Mines, Steel Mills, Smelters)

### Capacities
- **Power Generation:** 80 to 1,000 MW
- **Water Treatment:** 10,000 - 600,000 m³/day
- **LNG Storage:** ≤ 133,000 m³
- **Fuel Autonomy:** 20 to > 150 days

### Temporary Power Systems Available
- **Time to First Power:** 3 months
- **Powered by Liquid Fuels or Natural Gas**
- **Flexible Contract Periods (months to years)**
- **Powered by Liquid Fuels or Natural Gas**
- **Time to First Power:** ≤ 24 months
- **High Efficiency; low operating cost**
- **ECA Supported Financing**
- **Long-Term and Cost Effective Solution**

### Pre-Engineered FSRWP® Solutions
MODEC offers a range of Pre-Engineered FSRWP® Solutions (“SMALL”, “MEDIUM” and “LARGE”) based on MODEC’s proven and extensive experience with Floating Offshore Production Systems.

### Comparison: Engine versus GT Efficiency & CO² Emission

<table>
<thead>
<tr>
<th>Description</th>
<th>Efficiency (%)</th>
<th>CO² (kg/hr/kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil &amp; Coal</td>
<td>33.9%</td>
<td>0.940</td>
</tr>
<tr>
<td>Conventional Engine</td>
<td>33.6%</td>
<td>0.743</td>
</tr>
<tr>
<td>* Turbo-Charged Engine</td>
<td>48.7%</td>
<td>0.448</td>
</tr>
<tr>
<td>Gas Turbine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple Cycle</td>
<td>54-57%</td>
<td>0.551</td>
</tr>
<tr>
<td>Combined Cycle</td>
<td>49-51%</td>
<td>0.413</td>
</tr>
<tr>
<td>* MODEC Combined Cycle</td>
<td>52-54%</td>
<td>0.393</td>
</tr>
</tbody>
</table>

* = MODEC preferred options

### Floating Water & Power Sizes

<table>
<thead>
<tr>
<th>System</th>
<th>&quot;SMALL&quot;</th>
<th>&quot;MEDIUM&quot;</th>
<th>&quot;LARGE&quot;</th>
<th>&quot;ALL SIZES&quot;</th>
<th>&quot;ALL SIZES&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel Type</td>
<td>FSR-POWER®</td>
<td>FSR-POWER®</td>
<td>FSR-POWER®</td>
<td>FSR-WATER®</td>
<td>FSR-POWER®</td>
</tr>
<tr>
<td>Power Generation Range (for export)</td>
<td>80-166 MW</td>
<td>80-480 MW</td>
<td>240-1,000 MW</td>
<td>NA</td>
<td>160-1,000 MW</td>
</tr>
<tr>
<td>Operation &amp; Maintenance</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>On-board Accommodation</td>
<td>Option</td>
<td>Option</td>
<td>Option</td>
<td>Option</td>
<td>Option</td>
</tr>
<tr>
<td>LNG Storage Volume</td>
<td>20 - 23k m³</td>
<td>75 - 133k m³</td>
<td>30 - 200k m³</td>
<td>25 - 100k m³</td>
<td>50 - 200k m³</td>
</tr>
<tr>
<td>Fuel Autonomy (LNG) at max power</td>
<td>15 - &gt; 30 days</td>
<td>12 - &gt; 120 days</td>
<td>9 - 45 days</td>
<td>15 - &gt; 45 days</td>
<td>30 - &gt; 105 days</td>
</tr>
<tr>
<td>Length (Overall) in meters</td>
<td>110-130</td>
<td>275</td>
<td>330</td>
<td>240-330</td>
<td>330</td>
</tr>
<tr>
<td>Beam in meters</td>
<td>30 - 39</td>
<td>44</td>
<td>58 - 60</td>
<td>42 - 60</td>
<td>58 - 60</td>
</tr>
<tr>
<td>Draught (Max)</td>
<td>5 to 8</td>
<td>10 to 12</td>
<td>15 to 20</td>
<td>15 to 20</td>
<td>15 to 20</td>
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<tr>
<td>Lift</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Voltage (HV) Substation</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Front Cover: FSRWP® - 160 MW & 60k m³ water/day
MODEC Introduction

MODEC began in 1968 as Mitsui Ocean Development & Engineering Company. During the first two decades MODEC pioneered the development and construction of new solutions (at the time) for the off-shore construction and drilling industry such as Crane-Barges, Jack-Ups and Heavy-Lift Semi-Submersibles.

Starting in the mid-1980s MODEC developed the Floating Offshore Production Business and engineered, built and sold Floating Storage and Offloading (FSO) systems and Floating Production Storage and Offloading (FPSO) systems and then in the late 90s started to lease and operate these systems as well.

- FPSOs, FSOs, TLPs delivered to date: ............ 46
- Current Owned/Operated Fleet: ..................... 16
- Current Operated (owned by Others): ............. 3
- Installed Power Generation Capacity: .......... >1,500 MW
- Installed Sea Water Treatment Capacity: ...... >328,000 m³/day

FSRWP® - MODEC’s new Product Line

Looking to our future in late 2015 MODEC realized that:

- Over a billion people do not have access to clean water;
- One-third of the world populace does not have access to electricity and;
- Around 50% of the global population lives near an ocean;
- The global production capacity of Liquefied Natural Gas (LNG) will increase by around 50% in the next five (5) years and;
- Of the current fuels, Natural Gas is the cleanest source of Power.

As a result MODEC decided to develop the following Floating Water & Power family of products:

- **FSRWP®** (Floating Storage, Regasification, Water and Power)
- **FSR-POWER®** (Floating Storage, Regasification and Power)
- **FSR-WATER®** (Floating Storage, Regasification and Water)

MODEC Track Record

<table>
<thead>
<tr>
<th>West Africa</th>
<th>Southeast Asia</th>
<th>Oceania</th>
<th>Brazil</th>
<th>GOM</th>
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FPSO “Prof. John Evans Atta Mills” Ghana

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