HABSHAN 5 Project Execution Case Study
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Habshan 5 Block Diagram

- **Existing Habshan complex**
- **Offshore Gas**
  - 180 MMSCFD
  - 960 MMSCFD
- **Feed Gas Compressor**
  - 160 MMSCFD
- **Stabilization Unit**
- **Acid Gas Removal**
  - 2x650MMscfd
- **NGL Recovery**
  - 2x650MMscfd
- **Sulphur Recovery Units**
  - 4x1300TPD
- **Dehydration & Recompression**
- **Sales Gas**
  - 900 MMSCFD
- **NGL to Ruwais**
  - 12,000 TPD
    - 3600TPD C2
- **Sulphur to Ruwais**
  - 5200 TPD
- **Habshan 2**
  - 770 MMSCFD

**ADCO CDS**

**Th. C/D/6/7**

850 MMSCFD

553 MMSCFD

**Acid Gas Remova**

2x425MMscfd

160 MMSCFD

960 MMSCFD

770 MMSCFD

**NGL Recovery**

2x650MMscfd

**Sales Gas**

900 MMSCFD

**Habshan 2**

770 MMSCFD
Habshan 5 Project Execution – Case Study
ABU DHABI GAS INDUSTRIES (GASCO)
## H5 EPC Contractors

<table>
<thead>
<tr>
<th>Section</th>
<th>Contractor</th>
<th>Amount US$</th>
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<tbody>
<tr>
<td>Process Plant</td>
<td>JGC</td>
<td>JV Contract</td>
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<tr>
<td>- NGL Trains</td>
<td></td>
<td></td>
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<tr>
<td>- MP &amp; HP Compression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Stabilization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Flare</td>
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</tr>
<tr>
<td>Process Plant</td>
<td>Tecnimont</td>
<td>4.7 Billion</td>
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<tr>
<td>- AGRU’s</td>
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<td></td>
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<tr>
<td>- SRU’s</td>
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</tr>
<tr>
<td>Utilities &amp; Offsite</td>
<td>Hyundai Engineering &amp;</td>
<td>1.7 Billion</td>
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<tr>
<td></td>
<td>Construction</td>
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<tr>
<td>Non Process Building</td>
<td>Al Faraa</td>
<td>0.1 Billion</td>
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<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td><strong>6.5 Billion</strong></td>
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Habshan 5 Project Execution – Case Study
ABU DHABI GAS INDUSTRIES (GASCO)
### Schedule

<table>
<thead>
<tr>
<th>Package</th>
<th>Award Date</th>
<th>Duration</th>
<th>Due Date</th>
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<tr>
<td>Process Package</td>
<td>29/7/2009</td>
<td>PAC</td>
<td>28/5/2013</td>
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<tr>
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<td>Phase 1</td>
<td>46 Months</td>
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<tr>
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<td>Phase 2</td>
<td>50 Months</td>
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<tr>
<td>U&amp;O Package</td>
<td>29/7/2009</td>
<td>PAC</td>
<td>28/5/2013</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>46 Months</td>
</tr>
</tbody>
</table>
H5 Achievements Highlights

- 143 Million Manhours without LTI
- 10 weeks from Gas In to Phase 1 Commissioned
- On Schedule
- Cost (Process Package + U&O)
  - Positive variations ≈ US $ 12 Millions
  - Negative variations ≈ US$ 77 Millions
  - Final amount is US$ ≈ 65 Million less than awarded value
Owner’s Team Role

**Logistics**
- Location of EPC Contractors accommodation
- EPC Contractors Temporary Facilities
- Traffic Control
- Ring Road

**Security**
- CICPA Check Point
- Gates Access Control
Owner’s Team Role

Interface Management

**One Team:** Owner, PMC, TPI, EPC Contractors & Sub Contractors

**End User:** Involvement during Project Phase

FEED Quality

Heavy Equipment Transportation

Early “No Objection Certificate” - NOC

Visible Leadership in all Project Aspects

Senior Management Role
EPC Phase - Engineering

- Underground work to be treated as “Early Works” including design, procurement, 3D Modelling and construction
- Early design of structural steel
- Develop as early as possible the necessary data to support procurement
EPC Phase - Construction

- Arrange equipment & material logistics
- Complete underground work before starting above ground work (at least reduce overlap)
- Complete Sub stations and IES’s (Instrument Equipment Shelters) before planned arrival of switchgears and Control panels
- Assign “Champions” for each specific areas
- Produce “Constructability Booklets” based on (a) availability of resources: personnel and machinery, (b) material and © access.
- Complete Non Process Buildings in time to support End User Team during pre commissioning and commissioning
- Establish Quality and Preservation / Cleanliness team
EPC Phase - HSE

- Adequate procedures in place
- Extensive training
- Firm implementation
- Visible Management involvement and support
- Life Saving Rules
- Road safety: regulations, training and implementation
- Site Construction Supervisors to be HSE qualified
EPC Phase – Workforce Welfare

- Establish “Welfare committee’s”
- Ensure that Contractors / Subcontractors have the minimum required facilities
- Conduct social & sport activities to enhance the one family spirit
- Plan traffic movement
- Ensure adequate security and control is implemented
Thank you