EPC plants for the Oil&Gas industry
Overview and references
ABB a leader in power and automation technologies
Leading market positions in main businesses

~140,000 employees

$40 billion in revenue (2014)

Present in +100 countries

Formed in 1988

Merger of Swiss (BBC, 1891) and Swedish (ASEA, 1883) engineering companies
Power and productivity for a better world

ABB’s vision

As one of the world’s leading engineering companies, we help our customers to use electrical power efficiently, to increase industrial productivity and to lower environmental impact in a sustainable way.
How ABB is organized
Five global divisions

ABB’s portfolio covers:

- Electricals, automation, controls and instrumentation for power generation and industrial processes
- Power transmission
- Distribution solutions
- Low-voltage products
- Motors and drives
- Intelligent building systems
- Robots and robot systems
- Services to improve customers productivity and reliability
ABB in Italy
Key facts

Headquarters
• Based in Milan, Italy
• Permanent Employees: 6,308 in 2014
• Orders 2014: $3 Billion
• Revenues 2014: $2.9 Billion

SOX
Internal Control Process in compliance with
Sarbanes-Oxley Act – SOX

Certifications
• Quality: ISO 9001
• Safety: OHSAS 18001
• EMS: ISO 14001
ABB HSE Commitment

Provide a safe and healthy working environment on sites and take adequate steps to prevent accidents and injuries to health arising from work by minimizing, so far as reasonably practicable, the causes of hazards inherent in the working environment.

HSE performances

<table>
<thead>
<tr>
<th></th>
<th>LTIF (Lost time Injury Frequency per million man-hours)</th>
<th>TRIR (Total Recordable Incidence Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABB LBU IS EPC</td>
<td>0,15</td>
<td>0,27</td>
</tr>
<tr>
<td>OGP International Association of O&amp;G</td>
<td>n.a.</td>
<td>0,45</td>
</tr>
</tbody>
</table>
# The way we work

## EPC Safety Awards

<table>
<thead>
<tr>
<th>Hours without LTI</th>
<th>Project</th>
<th>Location</th>
<th>Client</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.000.000</td>
<td>TL4 - New Crude Transit Line</td>
<td>Kuwait</td>
<td>Kuwait Oil Company</td>
</tr>
<tr>
<td>4.000.000</td>
<td>SNCP- Condensate Stabilization Plant</td>
<td>Oman</td>
<td>PDO</td>
</tr>
<tr>
<td>3.000.000</td>
<td>El Merk – Lot 3&amp;4 – Off site fac.</td>
<td>Algeria</td>
<td>Anadarko/Sonatrach</td>
</tr>
<tr>
<td>2.000.000</td>
<td>Sayok Gas Compressor Station</td>
<td>Thailand</td>
<td>PTT</td>
</tr>
<tr>
<td>2.000.000</td>
<td>Sawan Gas Compressor Station</td>
<td>Pakistan</td>
<td>OMV</td>
</tr>
<tr>
<td>2.000.000</td>
<td>Menzel Ledjmet East</td>
<td>Algeria</td>
<td>Saipem for FCP</td>
</tr>
<tr>
<td>500.000</td>
<td>Power Generation Barge No.8</td>
<td>Kazakhstan</td>
<td>Agip KCO</td>
</tr>
</tbody>
</table>
The way we work
EPC Safety Awards

SNCP- Condensate Stabilization Plant – 3,000,000 safe man-hours

TL4 Project – 6,000,000 safe man-hours

El Merk Project - 3,000,000 safe man-hours

Sawan Project – 2,000,000 safe man-hours

Power Generation Barge no. 8 - 500,000 safe man-hours
LBU OGC EPC
Our organization

- Controlling
- HSE
- Process & QA
- Human Resources
- Information Systems
- Marketing Communications
- Contract Administration
- Project Directors
- Sales & Proposal
- Project Control
- Operations

* Company participated by ABB SpA
LBU OGC EPC Engineering

- Process
- 3D Model
- Piping
- Instrumentation & Control
- Material Classes & Stress Analysis
- Commissioning & Start Up

- Mechanical Equip. & Package
- Concrete & Steel Structure
- Electrical
- HSE Design
- Static Equipment

Project Engineers
LBU OGC EPC
Sales & Proposal

- Sales & Proposal
  - Strategic Marketing
  - Sales Assistant
    - Sales & Business Development
    - Bid & Proposal
EPC Unit
Locations and projects

Companies:
- Italy
- Algeria
- Nigeria

Engineering:
- Italy
- Algeria (civil eng)

Branches:
- Abu Dhabi UAE
- Algeria
- Brazil
- Congo
- Chile
- Iraq
- Kuwait
- Libya
- Malta
- Mexico
- Oman
- Pakistan
- Tunisia

Projects executed in:
- Algeria
- Chile
- Congo
- Ecuador
- Iraq
- Italy
- Kazakhstan
- Kuwait
- Mexico
- Nigeria
- Oman
- Pakistan
- Thailand
- Tunisia
The EPC Unit builds Medium size EPC Projects in the Oil and Gas Industry, with core competence for the Mid-stream plants, coupled with high specialization for the up-stream and power generation facilities. The reliability of a major international group, combined with the flexibility of a lean organization: a perfect match for adequately serving medium size projects across the world.
EPC Unit
Activities performed and skills

- A multi-disciplinary engineering team
- Basic and detailed plant design including Heat and Material Balances, Equipment and Lines sizing, Process Flow Diagrams, Electrical Loads Calculation, Distributed Control Specification, etc.
- Project Management and Project Control
- Procurement and Subcontracting activities
- Modular approach
- Strong experience in construction and construction supervision
- Commissioning & start-up
- Full Service & Maintenance Services
- Advanced IT systems and interconnections
EPC Unit
Turn-key Plants

- **UPSTREAM**: Gas, Oil Separation Plants (onshore/offshore), Gas treatment plants, Gas/Water injection plants
- **OFFSHORE**: production and service platform and FPSO
- **MIDSTREAM**: Compressor & Pumping Stations, Terminals & Storage, Flowstations
- **DOWNSTREAM**: Refinery Process Units, Plant utilities including power distribution & oily water treatment
- **POWER PLANTS**: all types as complete EPC or BOP, Modular and Standard Power Plants
EPC Unit
Core activities: Midstream

- Compressor & Pumping Stations
- Terminals & Storage
- Flowstations
EPC Plants
Major recent references: Midstream

**FEED Satellite Units – Hassi Messaoud**
*Client/Country: Sonatrach / Algeria*

FEED (Front End Engineering Design) related to the revamping and upgrading of the existing gathering system and related facilities to increase field production, relevant to Satellite Units South at Hassi Messaoud.

Duration: 6 months
Scope of Work: Front End Engineering Design

**ELR1 – PUMPING STATION Phase II/12**
*Client/Country: Sonatrach / Algeria*

Realization of Pumping Station SP1 including Tie-In/ interface with pipelines LR1, ELR1 and injections coming from ZCINA and CINA Fuel gas flowline (4”, 13 km) from GR1 to SP1; Overhead lines 30 kV, 30 MVA from PDE n.04 to SP1 ELR1; Electrical sub-station; Paved road connecting SP1 to RN3

Duration: 2013 ÷ 2015
Scope of Work: Engineering, Procurement, Construction & Commissioning
EPC Plants
Major recent references: Midstream

**New Crude Transit Line (TL-4)**
Client/Country: Kuwait Oil Company (KSC) / Kuwait

EPC for new pipeline 30” – 123 km for a capacity of 315 mbopd with intermediate valve / gathering stations and relevant utilities.

Duration: 2010 ÷ 2014
Scope of Work: Engineering, Procurement, Construction, Transport, Installation and Commissioning

**Tempa Rossa offshore – Taranto**
Client/Country: ENI SpA / Italy (Taranto)

Extension of the existing jetty in the Taranto refinery from Platform P2 to a new Platform P3 for a length of 500 m. Installation of all facilities for the reception and the transfer of the oil from the Tempa Rossa Oil Center. The new P3 Platform will be fitted on the East Direction in order to guarantee the mooring of the ships with a minimum capacity of 30,000 DWT to a maximum capacity of 80,000 DWT.

Duration: 2012 ÷ 2015
Scope of Work: Engineering, Procurement, Construction
## EPC Plants

### Major recent references: Midstream

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Client/Country</th>
<th>Description</th>
<th>Duration</th>
<th>Scope of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haoud Berkaoui – Gas Flaring Elimination</td>
<td>Sonatrach /Algeria</td>
<td>Gas compression trains and re-instrumentation at Haoud Berkaoui, Guellala and Benkhala including no. 2 centrifugal compressors 4.5 MW, no. 2 centrifugal compressors 2.5 MW and no.2 reciprocating compressors 2.0 MW. Electrical and I&amp;C upgrading.</td>
<td>2009 ÷ 2014</td>
<td>Engineering, Procurement, Construction and Commissioning</td>
</tr>
<tr>
<td>Sawan Gas Compressor Station</td>
<td>OMV (Pakistan) Exploration GmbH/Pakistan</td>
<td>New compressor station installed upstream of an existing Central Processing Plant to prevent reduced reservoir pressure. The plant includes no. 4 x 7.5 MW/each gas turbine compressors and auxiliaries</td>
<td>2007 ÷ 2010</td>
<td>Engineering, Procurement, Construction and Commissioning</td>
</tr>
</tbody>
</table>
**EPC Plants**

**Major recent references: Midstream**

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**Hassi R’Mel Boosting Station Phase II**

**Client/Country:** Sonatrach Div. ENC/Algeria

Upgrading of No. 3 Gas Compressor stations, including No. 6 x 25 MW ISO/each Gas Turbine Compressors, station DCS upgrading, electrical distribution, infrastructures, tie-ins to the existing plant systems + No. 11 compressors rebundles.

Duration: 2006 ÷ 2009

Scope of Work: Engineering, Procurement, Construction and Commissioning

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**NK-1 Pumping Stations (SP1/SP3)**

**Client/Country:** Sonatrach TRC / Algeria

2 new pumping stations along the NK1-30” oil pipeline to increase transport capacity up to 18 M t/y. Including: No. 3 x 3 MW/each turbine driven pumps, No. 2 x 2.5 MW/each turbo generators, No. 3 x 800 kW/each Centrifugal Booster pumps, No. 3 x 2,250 kW/each electrical driven centrifugal pumps.

Duration: 2006 ÷ 2008

Scope of Work: Engineering, Procurement, Construction and Commissioning
## EPC Plants

### Major recent references: Midstream

<table>
<thead>
<tr>
<th>Project Description</th>
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<tr>
<td><strong>TFT – GR1 GR2 Project</strong></td>
<td><strong>Sonatrach / Algeria</strong></td>
</tr>
<tr>
<td>New Tin Fouye Tabankort compressor station along the existing GR1/GR2 gas pipeline to increase the gas flowrate up to 2.9 MMNm³/h. Upgrading of four existing compressor stations at Rhourde Nouss, Zina, Ouargla and Hassi R'Mel. Total No. 7 x 25 MW turbo compressors</td>
<td></td>
</tr>
<tr>
<td>Duration: 2004 ÷ 2007</td>
<td></td>
</tr>
<tr>
<td>Scope of Work: Engineering, Procurement, Construction, Commissioning &amp; Start-up</td>
<td></td>
</tr>
<tr>
<td><strong>Poggio Renatico Compressor Station</strong></td>
<td><strong>ENI / Italy</strong></td>
</tr>
<tr>
<td>New Compressor Station plus upgrading of the existing block valve and metering station. No. 2 x 11 MW Gas Turbine Compressors plus No. 1 x 25 MW Gas Turbine Compressor, auxiliaries systems, station DCS and SCADA upgrading, electrical distribution, infrastructures, tie-ins.</td>
<td></td>
</tr>
<tr>
<td>Duration: 2005 ÷ 2008</td>
<td></td>
</tr>
<tr>
<td>Scope of Work: Engineering, Procurement, Construction, Commissioning &amp; Start-up</td>
<td></td>
</tr>
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</table>
EPC Plants
Major recent references: Midstream

Saiyok Gas Compressor Station
Client / Country: PTT, Thailand
No. 3 x 23 MW turbo compressors, utilities, hot-tap tie-in at the existing block valve BVW#7 of the Yadana gas pipeline system
Duration: 2003 ÷ 2006
Scope of Work: Engineering, Procurement, Construction, Commissioning & Start-up

OK1 Pumping Station
Client / Country: Sonatrach, Algeria
Revamping of the four existing crude oil and condensate pumping stations along the OK1 34” oil pipeline connecting Haoud El Hamra to Skikda in order to increase the delivered oil flow rate up to 4,750 m³/h.
Duration: 2002 ÷ 2004
Scope of Work: Engineering, Procurement, Construction, Commissioning & Start-up
EPC Plants
Major recent references: Midstream

**GPDF Gas Compressor Station**
**Client / Country: Sonatrach, Algeria**

New gas compressor station along the existing GPDF 48" gas pipeline (Maghreb-Europe) to increase delivered gas flow rate up to 1,420,000 Nm³/h. No. 2 x 25 MW turbo compressors

Duration: 2001 ÷ 2003

Scope of Work: Engineering, Procurement, Construction,Commissioning & Start-up

**OH3 Pumping Station**
**Client/ Country: Sonatrach, Algeria**

No. 2 pumping stations Hassi Berkine (HBN) and Nezla (NZL) along the existing OH3 30" oil pipeline, in order to increase the delivered oil flow rate up to 3,200 m³/h.

Duration: 2001 ÷ 2003

Scope of Work: Engineering, Procurement, Construction, Commissioning & Start-up
EPC Plants
Major recent references: Midstream

**ODIDI Gas Gathering Project**
**Client/ Country: Shell West, Nigeria**
No. 2 Compression Modules (650 t/each): No. 2 Turbo Compressors (2x11 MW) with 3 Stages Compressors; and No. 1 Power Generation Module (1,200 t): No. 1 Gas Turbine (1x11 MW)
Duration: 1998 ÷ 2001
Scope of Work: Engineering, Procurement, Construction, Transportation & Hook-up
EPC Plants
Strong competence: Upstream

- Gas, Oil Separation Plants (onshore / offshore)
- Gas Treatment Plants
- Gas/ Water Injection Plants
- Offshore production and service platforms and FPSO
### EPC Plants

**Major recent references: Upstream**

<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Client/Country</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Nawara Gas Treatment Plant**                               | **Client/Country: OMV (Tunesien) Production GmbH /Tunisia**  | EPC for a new gas treatment plant to fractionate the raw gas coming from the Nawara gas field into methane, propane, butane and LPG, for final sale  
Duration: 2014 ÷ 2016  
Scope of Work: Engineering, procurement, construction, installation, pre-commissioning and commissioning activities including gas separation and LPG extraction units. |
| **Saih Nihayda Condensate Stabilization Plant (SNCP)**       | **Client/Country: Petroleum Development Oman / Oman**        | EPC for a Condensate stabilization plant 4,500 m3/d to secure availability of gas in case the existing Saih Rawl Condensate Process Plant is out of operation including gas compression  
Duration: 2012 ÷ 2014  
Scope of Work: Engineering, Procurement, Construction, Installation, Commissioning and Start-up plus 6 months assistance to Operation and Maintenance |
### PW10 Second Water Injection Train

**Client/Country:** ENI Congo SA / Congo (Brazzaville)

Installation and electrical connection of the second water injection train including booster and main injection pumps, sand filters, to enhance oil recovery of the M'Boundi field.

**Duration:** 2012 ÷ 2014

**Scope of Work:** Engineering, Procurement, Construction, Installation, Commissioning and Start-up

### PW1 Gas Compression and Treatment Plant

**Client/Country:** ENI Congo SA / Congo (Brazzaville)

Gas Treatment plant including dehydration to reach the required water dew point. Gas injection in wells and gas compression station to increase pressure of gas separated in the existing oil plant and deliver it to the CEC and CED power plants in Djeno.

**Duration:** 2011 ÷ 2014

**Scope of Work:** Engineering, Procurement, Construction, Transport, Installation and Commissioning
EPC Plants
Major recent references: Upstream

**Menzel Ledjmet East – MLE**
**Client/ Country:** Saipem for FCP/Sonatrach / Algeria
Utilities, storage and export facilities for the MLE Central Processing facilities. Including no. 4 LPG spheres, no. 10 tanks, hot oil system, electrical and instrumentation systems
Duration: 2009 ÷ 2012
Scope of Work: Engineering, Procurement, Construction, Commissioning & Start-up

**El Merk – Lot 3&4 – Off site facilities**
**Client/ Country:** Groupement Berkine (Anadarko/Sonatrach) / Algeria
Field Gathering stations, Gas Distribution Manifolds, well sites, 900 km flow lines and trunk lines. Utilities
Duration: 2009 ÷ 2014
Scope of Work: Engineering, Procurement, Construction, Commissioning & Start-up
EPC Plants
Major recent references: Upstream

**PB-KU-H Platform**

*Client /Country: Pemex E&P/ Mexico*

Realization of the PB-KU-H Production Platform - 100,000 BBLD oil and 90 MMscfd gas

Duration: 2005 ÷ 2009

Scope of Work: Engineering, Procurement and Supply, and Commissioning of process packages

**BBK/BBKN OIL FIELD**

*Client /Country: Sonatrach/ Algeria*

Block 404 Bir Berkine/ Bir Berkine Nord Oil Fields development. Including: crude oil and gas processing facilities, oil (25,000 BOPD), gas (2,4 MMNm³/d), infrastructure requirements

Duration: 2003 ÷ 2007

Scope of Work: Engineering, Procurement, Construction, Commissioning & Start-up
# EPC Plants

## Major recent references: Upstream

<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Client / Country</th>
<th>Description</th>
<th>Duration</th>
<th>Scope of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Villano CPF Oil Treatment Plant</td>
<td>Agip Ecuador B.V., Ecuador</td>
<td>Expansion of existing Central Processing Facilities to achieve higher oil treatment and delivery rate from 30,000 BOPD to 45,000 BOPD, and addition of water separation and injection facilities</td>
<td>2001 ÷ 2003</td>
<td>Engineering, Procurement and Support Services</td>
</tr>
<tr>
<td>Hassi R’Mel Oily Water Plant</td>
<td>Sonatrach, Algeria</td>
<td>Realisation of no. 2 Oily Water treatment Plants at Hassi R’Mel, with a capacity of 14,286 BWPD including Filtering, De-oiling, Desalting and Water Conditioning Units and gathering lines</td>
<td>2003 ÷ 2005</td>
<td>Engineering, Procurement, Fabrication and Construction, Commissioning &amp; Start-up</td>
</tr>
</tbody>
</table>
EPC Plants
Major recent references: Upstream

MPF Santa Barbara
Client / Country: SPDC, Nigeria
Santa Barbara Mobile Production Facilities 30,000 bpd capacity and concrete floating barge
Duration: 1998 ÷ 2001
Scope of Work: Engineering, Procurement, Construction, Transport, Installation, Commissioning and Start-up
EPC Plants
Proven expertise: Power Plants

- Simple cycle power plants
- Combined cycle power plants
- Cogeneration
- Modular plants
- Balance of Plant
- Modular and Standard Power Plants
EPC Plants
Major recent references: Power

**Khor Al Zubair (KAZ) Power Plant**  
**Client / Country: Shell Gas Iraq BV, Iraq**  
New power plant 2 x 26 MW, with the potential to be upgraded to 4 x 26 MW in the future. Purpose of the new power plant is to increase the reliability of electrical feeder of existing KAZ NGL/LPG plant.  
Duration: 2012 ÷ 2014  
Scope of Work: Engineering, Procurement, Construction, Commissioning and Start-up services

**Zirku Cogeneration Plant**  
**Client / Country: Zadco, UAE**  
Power Generation Plant with 2 Gas turbine 50 MW driven generators, step up transformers and new 22 kV HV switchgear and associated facilities. Waste heat recovery results in savings in gas usage and reduction in CO2 load on environment.  
Duration: 2014 ÷ 2016  
Scope of Work: Engineering, Procurement, Construction, Installation, Pre-commissioning & Commissioning
EPC Plants
Major recent references: Power

**Integrated Power Plant**

**Client / Country:** ENI Congo S.A., Congo

Realization of a new power generation plant open cycle aimed at providing 320 MW electrical power to the ENI Oil & Gas plants. The plant includes 2 gas turbine generators 166 MW each

Duration: 2008 ÷ 2010

Scope of Work: Engineering, Procurement, Construction, Commissioning and Start-up services

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**Power Generation Plant – Kashagan**

**Client / Country:** Agip KCO, Kazakhstan

Power generation barge complete of a steel hull (95 m L x 16 m W x 5 m H) equipped with a total 4 X 30 MWe jet derivative turbo generators, no. 3 diesel generators 2 MW, dedicated auxiliaries and topsides facilities

Duration: 2004 ÷ 2007

Scope of Work: Engineering, Procurement, Fabrication, Commissioning and Start-up services
EPC Plants Downstream

- Refinery Process Units
- Plant utilities including power distribution & oily water treatment
- Special Applications: bio-ethanol
EPC Plants
Major recent references: Downstream

**KNO3 Crystallization Plant.**
Client/ Country: SQM (Sociedad Química y Minera de Chile S.A.) / Chile

New Potassium Nitrate Plant suitable for a production capacity of 48,000 kg/hr. The plant includes the following units:
- Dissolution of raw nitrate salts
- Conversion of the raw KCl
- Crystallization of the potassium Nitrate with all relevant Utilities

Duration: 2007 ÷ 2009
Scope of Work: Engineering & Procurement and Construction

**CDU 3 Revamp Project 2006**
Client/ Country: Thai Oil Ltd, Thailand

Sriracha Refinery Revamping, including refurbishment of CDU3 Unit to increase capacity from 16,000 to 24,000 t/d.
- Revamping of some connected units/facilities and installation of new KMT (UOP) and SCOT (Shell) Units

Duration: 2005 ÷ 2006
Scope of Work: Engineering & Procurement
# EPC Plants

## Reference list

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
<th>Project</th>
<th>Technical features</th>
<th>Client</th>
<th>Description of ABB scope of work</th>
<th>Scope of work</th>
<th>Start</th>
<th>Compl.</th>
<th>Execution Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>Hassi Messaoud</td>
<td>FEED Satellite Units</td>
<td>FEED (Front End Engineering Design) related to the revamping and upgrading of the existing gathering system and related facilities to increase field production, relevant to Satellite Units South at Hassi Messaoud.</td>
<td>Sonatrach</td>
<td>Front End Engineering Design</td>
<td>X</td>
<td>2015</td>
<td>2015</td>
<td>FEED</td>
</tr>
<tr>
<td>Tunisia</td>
<td>Gabels City</td>
<td>Nawara Gas Treatment Plant</td>
<td>EPC for a new gas treatment plant to fractionate the raw gas coming from the Nawara gas field (in the southern Tunisian desert) into methane, propane, butane and LPG, for final sale.</td>
<td>OMV (Tunesien) Production GmbH</td>
<td>Engineering, Procurement, Construction, Installation &amp; Commissioning</td>
<td>X X X</td>
<td>2014</td>
<td>2016</td>
<td>LSTK</td>
</tr>
<tr>
<td>UAE</td>
<td>Abu Dhabi - Zirku Island</td>
<td>Zirku Cogeneration Plant</td>
<td>Power Generation Plant with 50 MW Two Gas turbine driven generators, step up transformers and new 22 kV HV switchgear and associated facilities. SOW foresees also the supply and installation of no.2 WHRU (hot oil). Waste heat is recovered from the exhaust of the new gas turbines for heat input to the existing hot oil system. Waste heat recovery results in savings in gas usage and reduction in CO2 load on environment.</td>
<td>Zakum Development Company (ZADCO)</td>
<td>Engineering, Procurement, Construction, Installation, Pre-commissioning &amp; Commissioning</td>
<td>X X X</td>
<td>2014</td>
<td>2016</td>
<td>LSTK</td>
</tr>
<tr>
<td>Algeria</td>
<td>Haoud El Hamra</td>
<td>ELR1 – PUMPING STATION Phase II/12</td>
<td>Realization of Pumping Station SP1 including Tie-In/Interface with pipelines LR1, ELR1 and injections coming from Z.C.I.N.A. and C.I.N.A.. Fuel gas flowline (4&quot;, 13 km) from GR1 to SP1; Overhead lines 30 kV, 30 MVA from PDE n.04 to SP1 ELR1; Electrical sub-station; Paved road connecting SP1 to RN3; SCADA including FOC procurement and installation</td>
<td>Sonatrach TRC</td>
<td>Engineering, Procurement, Construction &amp; Commissioning</td>
<td>X X X</td>
<td>2013</td>
<td>2015</td>
<td>LSTK</td>
</tr>
<tr>
<td>Italy</td>
<td>Taranto</td>
<td>Tempa Rossa Offshore - Taranto</td>
<td>Extension of the refinery existing pier in order to guarantee the reception and the transfer of the crude oil, extracted from the Tempa Rossa Oil Center. The new pier shall be extended from Platform P2 to a new Platform P3 for a length of 500 m in South-East direction.</td>
<td>ENI SpA</td>
<td>Engineering, Procurement, Construction</td>
<td>X X X</td>
<td>2012</td>
<td>2015</td>
<td>LSTK</td>
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<tr>
<td>Oman</td>
<td>Saith Nihayda Site</td>
<td>Saith Nihayda Condensate Stabilization Plant (SNCP)</td>
<td>EPC for a Condensate stabilization plant 4,500 m3/d to secure availability of gas in case the existing Saith Rawl Condensate Process Plant is out of operation including gas compression</td>
<td>Petroleum Development Oman</td>
<td>Engineering, Procurement, Construction, Installation, Commissioning and Start-up plus 6 months assistance to Operation and Maintenance</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2012</td>
</tr>
<tr>
<td>Congo</td>
<td>M'Boundi</td>
<td>EPIC for the second water injection train at M'Boundi</td>
<td>Installation and electrical connection of a new water injection train (booster and main injection pumps, sand filters), at the M'Boundi Oil Field to increase the onshore Water Treatment and Injection System of M'Boundi Oil Plant in order to meet the new design water injection flowrate requirements of 240 kBWPD.</td>
<td>Eni Congo SA</td>
<td>Engineering, Procurement, Construction &amp; Construction Supervision</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2012</td>
</tr>
<tr>
<td>Iraq</td>
<td>Basra (Khor Al Zubair field)</td>
<td>New Power Plant at Khor Al Zubair (KAZ)</td>
<td>New power plant 2x26 MW gas turbine generators ((rising to 150MW in subsequent phase), to increase the reliability of electrical feeder of existing KAZ NGL/LPG plant.</td>
<td>Shell Gas Iraq B.V.</td>
<td>Engineering, Procurement, Construction, Commissioning and Start-Up</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2012</td>
</tr>
<tr>
<td>Congo</td>
<td>M'Boundi</td>
<td>PW1 Gas Compression and Treatment Plant</td>
<td>EPC for Gas Treatment plant 3 MMSCMD with dehydration and a new gas compression station to deliver the gas to the CEC and CED power plants in Djeno.</td>
<td>ENI Congo SA</td>
<td>Engineering, Procurement, Construction, Transport, Installation and Commissioning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2011</td>
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<tr>
<td>Kuwait</td>
<td>Kuwait</td>
<td>New Crude Transit Line (TL-4)</td>
<td>EPC for new pipeline 30&quot; - 123 Km for a capacity of 315 mbopd with intermediate valve/gathering stations and relevant utilities</td>
<td>Kuwait Oil Company (KSC)</td>
<td>Engineering, Procurement, Construction, Transport, Installation and Commissioning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2010</td>
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<tr>
<td>Algeria</td>
<td>Haoud Berkaoui</td>
<td>Gas flaring recovering and re-instrumentation of the production centers in the Haoud Berkaoui Region</td>
<td>New gas compression trains (no.3) and reinstrumentation at Haoud Berkaoui, Guelalia and Benkhala</td>
<td>Sonatrach</td>
<td>Engineering, procurement, Construction, commissioning and Start-up</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2009</td>
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<tr>
<td>Algeria</td>
<td>Menzel Ledjmet East (Block 405b)</td>
<td>Menzel Ledjmet East development project</td>
<td>Utilities, Storages and Export facilities for the MLE Central Processing Facilities</td>
<td>Groupement First Calgary Petroleum / Sonatrach</td>
<td>Engineering, procurement, Construction, commissioning and Start-up</td>
<td>X</td>
<td>X</td>
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<td>2009</td>
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## EPC Plants
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<table>
<thead>
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<th>Country</th>
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<th>Scope of work</th>
<th>Start</th>
<th>Compl.</th>
<th>Execution Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congo</td>
<td>Djeno</td>
<td>Integrated Power Plant - work package 5</td>
<td>Power generation plant open cycle 320 MW (2 x 166 MW Gas Turbine Generators)</td>
<td>ENI Congo S.A.</td>
<td>Engineering, Procurement and Construction</td>
<td>X X  X</td>
<td>2008</td>
<td>2010</td>
<td>LSTK</td>
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<tr>
<td>Pakistan</td>
<td>Sawan</td>
<td>Sawan - Gas compressor station</td>
<td>Compressor station installed upstream of an existing Central Processing Plant to prevent reduced reservoir pressure. The plant includes no. 4 x 7.5 MW/each gas turbine compressors and auxiliaries</td>
<td>OMV Exploration Gmbh</td>
<td>Engineering, Procurement and Construction</td>
<td>X X  X</td>
<td>2007</td>
<td>2010</td>
<td>LSTK</td>
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<tr>
<td>Chile</td>
<td>Coya Sur</td>
<td>Coya Sur – KNO3 Crystallization Plant</td>
<td>Potassium Nitrate Crystallization Plant. Production capacity 48,000 kg/h</td>
<td>SQM - (Sociedad Quimica y Minera de Chile S.A.)</td>
<td>Engineering, Procurement and Construction</td>
<td>X X  X</td>
<td>2007</td>
<td>2010</td>
<td>LSTK</td>
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<tr>
<td>Algeria</td>
<td>Hassi R'Mel</td>
<td>Hassi R'Mel Boosting Station Phase II - Upgrading of no. 3 compressor stations</td>
<td>Gas compression station rehabilitation: No. 6 x 25 MW ISO/each gas turbine compressors, no. 6 air coolers, no. 11 compressor rebundles, upgrading of anti-surge system. Station DCS upgrading, electrical distribution, infrastructures, tie-ins to the existing plant systems</td>
<td>Sonatrach</td>
<td>Engineering, procurement, construction and commissioning</td>
<td>X X  X</td>
<td>2006</td>
<td>2009</td>
<td>LSTK</td>
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<tr>
<td>Algeria</td>
<td>Haoud El Hamra - Skikda</td>
<td>NK1 Oil Pumping Stations lot No.3 on 30* Oil Pipeline NK1</td>
<td>Pumping Stations: No. 3 x 800 kW/each centrifugal vertical type booster pumps, no. 3 x 2250 kW/each electrical driven centrifugal main pumps, no. 3 x 3 MW/each gas-turbine driven pumps, no. 2 x 2.5 MW/each turbogenerators</td>
<td>Sonatrach</td>
<td>Engineering, procurement, construction and commissioning</td>
<td>X X  X</td>
<td>2006</td>
<td>2008</td>
<td>LSTK</td>
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<tbody>
<tr>
<td>Mexico</td>
<td>KU-MALOOB-ZAAP Sonda de Campeche</td>
<td>PB-KU-H Production Platform</td>
<td>Offshore platform suitable for 100,000 BBLD oil and 60 MMscfd gas plus 3 x 4kVA power generation system</td>
<td>Pemex Exploration and Production</td>
<td>Engineering, Procurement and Supply, and Commissioning of process packages</td>
<td>X X X</td>
<td>2005</td>
<td>2009</td>
<td>LSTK</td>
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<tr>
<td>Italy</td>
<td>Poggio Renatico (Ferrara)</td>
<td>Compressor Station plus upgrading of the existing block valve and metering station</td>
<td>No. 2 x 11 MW gas turbine compressors + 1 x 25 MW gas turbine compressor, auxiliaries systems, station DCS and SCADA upgrading, electrical distribution, infrastructures, tie-ins</td>
<td>Snam Rete Gas</td>
<td>Engineering, procurement, construction, commissioning and start-up</td>
<td>X X X</td>
<td>2005</td>
<td>2008</td>
<td>LSTK</td>
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<tr>
<td>Thailand</td>
<td>Sriracha</td>
<td>CDU 3 Revamp Project 2006 - Sriracha Refinery</td>
<td>Revamping of CDU3 Unit to increase the capacity from 16,000 to 24,000 t/d. Revamping of connected units/facilities and installation of a new KMT and SCOT Units</td>
<td>Thai Oil Public Company Limited</td>
<td>Engineering &amp; Procurement</td>
<td>X X</td>
<td>2005</td>
<td>2006</td>
<td>LS</td>
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<tr>
<td>Algeria</td>
<td>Tin Fouye Tabankort, Rhouide Nous, Zina, Ouargla and Hassi R'Mel</td>
<td>TFT compressor station along GR1/GR2 gas pipeline and upgrading of four existing stations</td>
<td>No. 2 x 25 MW turbo compressors + No. 5 x 25 MW turbo compressor, utilities, dwelling facilities, tie-ins with the existing departure and arrival terminals of GR1/GR2 48&quot; gas pipeline</td>
<td>Sonatrach TRC</td>
<td>Engineering, Procurement, Fabrication, Commissioning &amp; Start-up services</td>
<td>X X X</td>
<td>2004</td>
<td>2007</td>
<td>LSTK</td>
</tr>
</tbody>
</table>
| Kazakhstan | Kashagan Field | Kashagan Field Power Generation Barge | - No. 4 x 30 MWe jet derivative turbo generators  
- No. 1 steel barge dimensions: 95 L x 16 W x 5 H meters  
- HV and MV switchboards and relevant control system  
- No. 3 diesel generators 2.5 MW/each | Agip KCO | Engineering, Procurement, Fabrication, Commissioning and Start-up services | X X X | 2004 | 2007 | LSTK |
| Algeria | Bir Berkine / Bir Berkine Nord | BBK/BBKN Oil fields development | Crude oil and gas processing facilities, oil (25,000 BOPD), gas (2.4 MMNm3/d), and infrastructure requirements. Well site facilities, pipelines including gathering of production fluids, crude oil export system, gas lift and water injection system | Sonatrach | Engineering, Procurement, Fabrication & Construction, Commissioning & Start-up | X X X | 2003 | 2007 | LSTK |
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<tr>
<td>Thailand</td>
<td>Khanchanaburi Province</td>
<td>Saiyok Gas Compressor Station</td>
<td>No. 3 x 23 MW turbo compressors, utilities, hot-tap tie-in at the existing block valve BVW#7 of the Yadana gas pipeline system</td>
<td>PTT Public Co. Ltd</td>
<td>Engineering, Procurement, Fabrication &amp; Construction, Commissioning &amp; Start-up</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2006</td>
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<tr>
<td>Algeria</td>
<td>Hassi R'Mel</td>
<td>Oil water treatment plants</td>
<td>Realization of no. 2 oil water treatment plants with a capacity of 500 m³/d including filtering, de-oiling, desalting and water conditioning units and gathering lines</td>
<td>Sonatrach</td>
<td>Engineering, procurement, fabrication and construction, commissioning &amp; start-up</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2003</td>
</tr>
<tr>
<td>Algeria</td>
<td>Haoud El Hamra Skikda</td>
<td>OK1 pumping station</td>
<td>Pumping station to increase pipeline flow-rate from 3,791 m³/h up to 4,734 m³/h by installing a new pumping station (SP3 bis) and revamping no. 4 existing pumping stations (SP1, SP2, SP3, SP4)</td>
<td>Sonatrach</td>
<td>Engineering, procurement, fabrication &amp; construction, commissioning &amp; start-up</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2002</td>
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<tr>
<td>Algeria</td>
<td>El Abiodh Sidi Cheick</td>
<td>GPDF Compressor Station SC-3</td>
<td>No. 2 x 25 MW turbo compressors, utilities, dwelling facilities, departure and arrival terminals of GPDF 48” gas pipeline (Maghreb - Europe)</td>
<td>Sonatrach</td>
<td>Engineering, procurement, fabrication &amp; construction, commissioning &amp; start-up</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2001</td>
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<tr>
<td>Ecuador</td>
<td>Villano</td>
<td>Expansion of the capacity of Villano producing facilities</td>
<td>Expansion of the CPF from 30,000 BOPD to 45,000 BOPD and addition of water separation and injection facilities</td>
<td>Agip Oil Ecuador B.V.</td>
<td>Engineering, procurement and project support services including project management, construction supervision, commissioning and start-up</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>2001</td>
</tr>
</tbody>
</table>
| Algeria         | Hassi Berkine / Nezla           | OH3 Storage Farm and delivery stations | - Realization of No.6 tanks (41,000 mc) with floating roof combined with No. 3 booster pumps and No. 4 transfer pumps.  
- Realization of pumping station complete with No.4 transfer pumps and No.4 oil filter units | Sonatrach                   | Engineering, procurement, fabrication & construction, commissioning & start-up                  | X             | X      | X      | 2001            | LSTK           |
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<tbody>
<tr>
<td>Nigeria</td>
<td>Santa Barbara</td>
<td>No. 1 Mobile Production Facilities</td>
<td>30,000 bpd</td>
<td>SPDC</td>
<td>Engineering, procurement, construction, transport, installation, commissioning and start-up</td>
<td>X X X</td>
<td>1998</td>
<td>2001</td>
<td>LSTK</td>
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<tr>
<td>Nigeria</td>
<td>Obiafu Obrikom</td>
<td>N-NLG Gas supply project</td>
<td>Upgrade and retrofit of existing gas plant from 80 up to 250 Msfcd</td>
<td>NAOC</td>
<td>Engineering, procurement, construction, commissioning and start-up</td>
<td>X X X</td>
<td>1998</td>
<td>2001</td>
<td>LSTK</td>
</tr>
</tbody>
</table>
| Nigeria | Odidi          | ODIDI Gas Gathering Project         | No. 1 utility module (weight 1,500 ton) + no. 2 compression modules (weight 650 ton each) | Shell West | - Basic and detailed engineering of utility module  
- Detailed engineering of compression bulk material  
- Construction  
- Transportation and Hook-up | X X X | 1998  | 2001   | LSTK            |
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