Contents

I. STX Diesel Power Plant

II. Conventional Diesel Power Plant (DPP)

III. Containerized Power Plant (CPP)

IV. Engine Program

V. Supply Record

VI. Iraq 900MW CPP PJT Intro.
1. Supply Chain of STX

Integrated Value Chain for Diesel Power Plant

**Manufacture**
- Engine Components
- Crank Shaft
- Turbo Charger
- Other Core Parts

**Assembly**
- Medium Speed 4-Stroke
- Low Speed 2-Stroke

**EPC Turn-key Supply**
- Customized Engineering
- Engine & BOP Equipment
- Erection & Construction
2. Technical Tie-up

MAN Diesel & Turbo (Germany)
- 250 Years Diesel History, World Leading Maker
- 4-Stroke Engine Lineup up to 19MW
- 2-Stroke Engine Lineup up to 80MW

Niigata Power Systems (Japan)
- 110 Years Diesel History, World Class Maker
- 4-Stroke Engine Lineup up to 12MW
- Specialized in Gas Engine Manufacture

STX Engine, STX Heavy Industries (Korea)
- Presently, Global Top Class Engine Maker based on, Engine Productive Horsepower
- Full range of 4-Stroke & 2-Stroke Engine Lineup
3. Engine Production Capacity

Annual 4-Stroke Medium Speed Engine Production Capacity of STX

<table>
<thead>
<tr>
<th>Korea</th>
<th>Products</th>
<th>Units</th>
<th>MWe</th>
</tr>
</thead>
<tbody>
<tr>
<td>STX Engine</td>
<td>Mid. &amp; Large bore 4st</td>
<td>530</td>
<td>2,247</td>
</tr>
<tr>
<td>STX H.I</td>
<td>Small Bore 4st</td>
<td>800</td>
<td>702</td>
</tr>
<tr>
<td>Korea Capacity</td>
<td></td>
<td></td>
<td>2,949</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>China</th>
<th>Products</th>
<th>Units</th>
<th>MWe</th>
</tr>
</thead>
<tbody>
<tr>
<td>STX Fushun</td>
<td>Small bore 4st</td>
<td>500</td>
<td>351</td>
</tr>
<tr>
<td>China Capacity</td>
<td></td>
<td>500</td>
<td>351</td>
</tr>
</tbody>
</table>

Total Capacity: 1,830 3,300

※Power Output : ISO 3046-1:2002
4. Diesel Power Plant Overview

- **TYPE I**: Diesel Power Plant (DPP)
- **TYPE II**: Containerized Power Plant (CPP)
5. Basic Work Scope Segment

<table>
<thead>
<tr>
<th>A) Offshore Works (Equipment Supply, S/V)</th>
<th>B) Onshore Works (Site Construction)</th>
<th>C) Customer Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic / Detail Engineering</td>
<td>Various Oil tank farm</td>
<td>Authority Permits, License.</td>
</tr>
<tr>
<td>Diesel Engine Generators</td>
<td>Land Transport to Job-site</td>
<td>Access Roads to Site</td>
</tr>
<tr>
<td>Mechanical &amp; Electric Auxiliaries</td>
<td>Installation of Plant Equipment,</td>
<td>Fuel Oil, Lub.Oil, Cooling Water,</td>
</tr>
<tr>
<td>Ocean Transport (if needed)</td>
<td>Construction of Civil &amp; Building</td>
<td>Chemicals etc. supply.</td>
</tr>
<tr>
<td>Commissioning, Supervision from erection up to start-up</td>
<td>Site Training</td>
<td>Insurance, Import Duties,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Taxation etc.</td>
</tr>
</tbody>
</table>

- Based on optimizing EPC cost for a customer.
- STX as EPC Solution Provider can execute entire diesel power plant works (A,B) by the international quality control system and local standards to meet local regulation.
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1. Conceptual Plant Lay-Out

90MW Class
- 16V34HLX x 12sets

Power House
Diesel Generator Sets
Air Vent system
Intake & Exhaust system
Piping Installation
Cooling system
Purifier & Pump house
Tank Farm
2. PJT Milestone

<table>
<thead>
<tr>
<th>Basic / Detailed Engineering</th>
<th>Supply of equipment</th>
<th>Transportation</th>
<th>Installation</th>
<th>Commissioning</th>
<th>Commercial Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>6~9 M</td>
<td>1 M</td>
<td>3~ 5M</td>
<td>1 M</td>
<td>Total 11~16 Months</td>
<td></td>
</tr>
</tbody>
</table>

- Contract
- Technical Specification for Diesel Power Plant
- Estimated Total Power Demand
- General Arrangement Drawing for Ge-nset
- General Layout for Power Plant
- Electrical Panel Layout
- Outline Drawings for Equipment
- Piping and Instrumentation Diagram
- Single Line Diagram
- Sequence Diagram for Panels
- Control Logic Diagram
- Instrument List
- Design Data for Engineering of Equipment
- Factory Test and Site Test Program
- Piping Layout
- Cable Layout including Cable Schedule Plan
- Spare and Tool List

- Site Test & Commissioning
- Ocean Freight
- Local Transport
- Manufacturing & Assembly
- Shop Test
- Factory Training
- Civil Work
- Equipment Installation
- Mechanical Work
- Electrical Work
- Completion
- Operating / Maintenance
I. STX Diesel Power Plant

II. Conventional Diesel Power Plant (DPP)

III. Containerized Power Plant (CPP)

IV. Engine Program

V. Supply Record

VI. Iraq 900MW CPP PJT Intro.
1. Advantages of STX CPP

VANDI: Variously Applicable New Diesel Power Plant

**High Reliability**
- Excellent engine maker STX
- Adoption of reliable, proven engine model
- 1.5MW (NPS), 4MW (MAN), 7.8MW (NPS), 8.7MW (MAN)

**Easy Transport**
- Compact design for special container
- The easy transport of container module, equipped with BOP auxiliaries etc.

**Quick Installation**
- Pre-fabricated equipment, pipe rack, etc.
- Modular designed application

**Various Application**
- Easy Extension
- Designed for heavy fuel oil operation under all kinds of hard conditions
2. EPC Schedule Comparison

◆ Easy & Quick Installation (Appr. 100~200MW Case, Same Site Assumption)
3. Conceptual Plant Layout

Power Capacity: 1.5 MW X 8 sets = 12 MW
Dimension of Layout: 120 x 70 (meter)

Power Capacity: 4 MW X 6 sets = 24 MW
Dimension of Layout: 160 x 80 (meter)

- **1** MDU (Main Diesel Unit)
- **2** HFO Supply Unit
- **3** Starting Air Unit
- **4** Main Control Unit
- **5** Central Control Room
- **6** Black Start D/G Unit
- **7** Step-up Transformer
- **8** Heat Recovery Unit
- **9** Pump Station Unit
- **10** DO Storage Tank
- **11** HFO Storage Tank
- **12** Raw Water Tank
- **13** Water Treatment Unit
- **14** Radiator

---

14 /45
I. STX Diesel Power Plant

II. Conventional Diesel Power Plant (DPP)

III. Containerized Power Plant (CPP)

IV. Engine Program

V. Supply Record

VI. Iraq 900MW CPP PJT Intro.
1. Engine Features - 8L22HLX

8L22HLX Main Data

<table>
<thead>
<tr>
<th></th>
<th>Cylinder No.</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore/Stroke</td>
<td>220/300mm</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>50Hz</td>
<td>60Hz</td>
</tr>
<tr>
<td>Power per Cylinder</td>
<td>270.5kWm</td>
<td>185kWm</td>
</tr>
</tbody>
</table>
| Power range
  (ISO-3046-1:2002)    | 1,577kWe     | 1,406kWe     |
| Speed                  | 1,000rpm     | 900rpm       |
| Mean piston speed      | 10.0m/s      | 9.0m/s       |

<table>
<thead>
<tr>
<th>RPM [rpm]</th>
<th>Engine Output [kWm]</th>
<th>SFOC [g/kWm·hr]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000 / 900</td>
<td>1,760 / 1,760</td>
<td>198.1</td>
</tr>
</tbody>
</table>

* 5% of tolerance is not included in the above figures.
# 2. Engine Features - 12V28HLX

## 12V28HLX Main Data

<table>
<thead>
<tr>
<th></th>
<th>12V28HLX Main Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder No.</td>
<td>12</td>
</tr>
<tr>
<td>Bore/Stroke</td>
<td>280/400mm</td>
</tr>
<tr>
<td>Frequency</td>
<td>50Hz</td>
</tr>
<tr>
<td></td>
<td>60Hz</td>
</tr>
<tr>
<td>Power per Cylinder</td>
<td>340kWm</td>
</tr>
<tr>
<td></td>
<td>325kWm</td>
</tr>
<tr>
<td>Power range</td>
<td>3,920kWe</td>
</tr>
<tr>
<td>(ISO-3046-1:2002)</td>
<td>3,740kWe</td>
</tr>
<tr>
<td>Speed</td>
<td>750rpm</td>
</tr>
<tr>
<td></td>
<td>720rpm</td>
</tr>
<tr>
<td>Mean piston speed</td>
<td>10.0m/s</td>
</tr>
<tr>
<td></td>
<td>9.6m/s</td>
</tr>
<tr>
<td>Fuel acceptance</td>
<td>HFO(700cSt/50°C)</td>
</tr>
</tbody>
</table>

### 12V28HLX Oil Consumption (100% Load)

<table>
<thead>
<tr>
<th>RPM [rpm]</th>
<th>Engine Output [kWm]</th>
<th>SFOC [g/kWm·hr]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750 / 720</td>
<td>4,080 / 3,900</td>
<td>183.3</td>
</tr>
</tbody>
</table>

* 5% of tolerance is not included in the above figures.
3. Engine Features - 18V28/32S

**18V28/32S Main Data**

<table>
<thead>
<tr>
<th></th>
<th>18V28/32S Main Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder No.</td>
<td>18</td>
</tr>
<tr>
<td>Bore/Stroke</td>
<td>280/320mm</td>
</tr>
<tr>
<td>Frequency</td>
<td>50Hz</td>
</tr>
<tr>
<td></td>
<td>60Hz</td>
</tr>
<tr>
<td>Power per Cylinder</td>
<td>235kWm</td>
</tr>
<tr>
<td></td>
<td>225kWm</td>
</tr>
<tr>
<td>Power range</td>
<td>4,061kWe</td>
</tr>
<tr>
<td>(ISO-3046-1:2002)</td>
<td>3,888kWe</td>
</tr>
<tr>
<td>Speed</td>
<td>750rpm</td>
</tr>
<tr>
<td></td>
<td>720rpm</td>
</tr>
<tr>
<td>Mean piston speed</td>
<td>8.0m/s</td>
</tr>
<tr>
<td></td>
<td>7.7m/s</td>
</tr>
<tr>
<td>Fuel acceptance</td>
<td>HFO(700cSt/50°C)</td>
</tr>
</tbody>
</table>

**18V28/32S Oil Consumption (100% Load)**

<table>
<thead>
<tr>
<th>RPM [rpm]</th>
<th>Engine Output [kWm]</th>
<th>SFOC [g/kWm·hr]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750 / 720</td>
<td>4,230 / 4,050</td>
<td>189.3 / 189.1</td>
</tr>
</tbody>
</table>

* 5% of tolerance is not included in the above figures.
4. Engine Features - 16V34HLX

- 16V34HLX Oil Consumption (100% Load)

<table>
<thead>
<tr>
<th>RPM [rpm]</th>
<th>Engine Output [kWm]</th>
<th>SFOC [g/kWm·hr]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>8,030</td>
<td>181</td>
</tr>
</tbody>
</table>

16V34HLX Main Data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder No.</td>
<td>16</td>
</tr>
<tr>
<td>Bore/Stroke</td>
<td>340/500mm</td>
</tr>
<tr>
<td>Frequency</td>
<td>50Hz</td>
</tr>
<tr>
<td>Power per Cylinder</td>
<td>501kWm</td>
</tr>
<tr>
<td>Power range (ISO-3046-1:2002)</td>
<td>7,789kWe</td>
</tr>
<tr>
<td>Speed</td>
<td>600 rpm</td>
</tr>
<tr>
<td>Mean piston speed</td>
<td>10.0m/s</td>
</tr>
<tr>
<td>Fuel acceptance</td>
<td>HFO(700cSt/50 ℃)</td>
</tr>
</tbody>
</table>

* 5% of tolerance is not included in the above figures.
5. Engine Features - 18V32/40

### 18V32/40 Main Data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder No.</td>
<td>18</td>
</tr>
<tr>
<td>Bore/Stroke</td>
<td>320/400mm</td>
</tr>
<tr>
<td>Frequency</td>
<td>60Hz</td>
</tr>
<tr>
<td>Power per Cylinder</td>
<td>500kWm</td>
</tr>
<tr>
<td>Power range (ISO-3046-1:2002)</td>
<td>8,730kWe</td>
</tr>
<tr>
<td>Speed</td>
<td>720rpm</td>
</tr>
<tr>
<td>Mean piston speed</td>
<td>9.6m/s</td>
</tr>
<tr>
<td>Fuel acceptance</td>
<td>HFO(700cSt/50℃)</td>
</tr>
</tbody>
</table>

### 18V32/40 Oil Consumption (100% Load)

<table>
<thead>
<tr>
<th>RPM [rpm]</th>
<th>Engine Output [kWm]</th>
<th>SFOC [g/kWm·hr]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750 / 720</td>
<td>9,000</td>
<td>181</td>
</tr>
</tbody>
</table>

* 5% of tolerance is not included in the above figures.
## 6. Engine Features (GAS) - 18V28AGS

### 18V28AGS Main Data

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder No.</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Bore/Stroke</td>
<td>295/400mm</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>50Hz</td>
<td>60Hz</td>
</tr>
<tr>
<td>Power per Cylinder</td>
<td>343.6kWm</td>
<td>329.3kWm</td>
</tr>
<tr>
<td>Power range (ISO-15550:2002)</td>
<td>6,000kWe</td>
<td>5,750kWe</td>
</tr>
<tr>
<td>Speed</td>
<td>750rpm</td>
<td>720rpm</td>
</tr>
</tbody>
</table>

### 18V28AGS Fuel Consumption (100% Load)

<table>
<thead>
<tr>
<th>RPM [rpm]</th>
<th>Engine Output [kWm]</th>
<th>Specific H/R [kJ/kWm·hr]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750 / 720</td>
<td>6,184 / 5,927</td>
<td>7,585</td>
</tr>
</tbody>
</table>

* 5% of tolerance is not included in the above figures.
I. STX Diesel Power Plant
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VI. Iraq 900MW CPP PJT Intro.
1. Overseas Experiences

Total 821 Unit Worldwide
3,084 MWe

As of July. 2013

Ongoing Project
Completed Project
<table>
<thead>
<tr>
<th>Country</th>
<th>Company</th>
<th>Project Details</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>CFE</td>
<td>12K80MC x 1 set</td>
<td>42.8MW</td>
</tr>
<tr>
<td>Colombia</td>
<td>EI</td>
<td>8L22HLX x 8 sets</td>
<td>11.2MW</td>
</tr>
<tr>
<td></td>
<td>PIL</td>
<td>8L22HLX x 5 sets</td>
<td>7MW</td>
</tr>
<tr>
<td>Brazil</td>
<td>EPASA</td>
<td>18V32/40 x 40 sets</td>
<td>340MW</td>
</tr>
<tr>
<td>Aratu-1</td>
<td></td>
<td>18V32/40 x 20 sets</td>
<td>175MW</td>
</tr>
</tbody>
</table>

*Ongoing Project
*Completed Project

(As of July, 2013)
<table>
<thead>
<tr>
<th>Region</th>
<th>Project Name</th>
<th>Power Plant</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRAQ</td>
<td>MOE Phase-1</td>
<td>16V34HLX x 28 sets, 18V28/32S x 168 sets</td>
<td>900MW</td>
</tr>
<tr>
<td></td>
<td>NRC</td>
<td>16V34HLX x 12 set</td>
<td>85MW</td>
</tr>
<tr>
<td></td>
<td>Hanwha E&amp;C</td>
<td>18V28/32S x 5 sets</td>
<td>20.3MW</td>
</tr>
<tr>
<td>IRAN</td>
<td>PTA(STPC)-Daelim</td>
<td>12V32/40 x 1 set</td>
<td>4.7MW</td>
</tr>
<tr>
<td>SUDAN</td>
<td>Daewoo-ITMD</td>
<td>12V28/32H x 2 sets</td>
<td>5.6MW</td>
</tr>
<tr>
<td></td>
<td>Daewoo-NIC</td>
<td>12V28/32H x 3 sets</td>
<td>8.1MW</td>
</tr>
<tr>
<td></td>
<td>Daewoo-NCTC</td>
<td>12V28/32H x 4 sets</td>
<td>10.8MW</td>
</tr>
<tr>
<td></td>
<td>Sudan Port Corp.</td>
<td>8L28/32H x 2 sets</td>
<td>3MW</td>
</tr>
</tbody>
</table>

(As of July. 2013)
### Bangladesh

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Quantity &amp; Details</th>
<th>Power (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPA</td>
<td>12V28/32H x 1 set</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td>SPGC</td>
<td>16V34HLX x 7 sets</td>
<td></td>
<td>54</td>
</tr>
<tr>
<td>SPGC</td>
<td>16V34HLX x 7 sets</td>
<td></td>
<td>54</td>
</tr>
<tr>
<td>SEL</td>
<td>16V34HLX x 7 sets</td>
<td></td>
<td>54</td>
</tr>
<tr>
<td>VERL (Gas P·P)</td>
<td>18V28AGS x 4 sets</td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

### Malaysia

<table>
<thead>
<tr>
<th>Location</th>
<th>Model</th>
<th>Quantity &amp; Details</th>
<th>Power (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAHAD DATU</td>
<td>12V28/32H x 1 set</td>
<td></td>
<td>16.5</td>
</tr>
<tr>
<td>KUDAT</td>
<td>12V28/32H x 2 sets</td>
<td></td>
<td>4.4</td>
</tr>
</tbody>
</table>

### Indonesia

<table>
<thead>
<tr>
<th>Location</th>
<th>Model</th>
<th>Quantity &amp; Details</th>
<th>Power (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIDE.CO 7th</td>
<td>8L28/32H x 3 sets</td>
<td></td>
<td>5.4</td>
</tr>
<tr>
<td>KIDE.CO 8th</td>
<td>8L28/32H x 3 sets</td>
<td></td>
<td>5.4</td>
</tr>
<tr>
<td>PLN</td>
<td>6L28/32H x 6 sets</td>
<td></td>
<td>8.1</td>
</tr>
</tbody>
</table>

(As of July. 2013)
2. On-going Projects

Client: SINHA Group
Location: Katpatti & Homna, Bangladesh
Work Scope: Equipment Supply, Supervision
Fuel Type: HFO, DO
Total Capacity: 54MW
Engine Model: STX-NIIGATA 16V34HLX
COD: (E) Mar. 2014

54MW x 2 sites in Bangladesh
2. On-going Projects

**Client:**
Energy International

**Location:**
Colombia

**Work Scope:**
Equipment Supply, Supervision

**Fuel Type:**
HFO, DO

**Total Capacity:**
11.2MW

**Engine Model:**
STX-NIIGATA 8L22HLX
1.4MW x 8 sets

**Equipment Delivery:**
Jan. 2013

**E.I Rental 11.2 MW CPP Project**
2. On-going Projects

Client:
North Refinery Company

Location:
Iraq

Work Scope:
EPC Turnkey

Fuel Type:
HFO, DO

Total Capacity:
85MW

Engine Model:
STX-NIIGATA 16V34HLX
7.8MW x 12 sets

COD:
(E) Aug. 2013

NRC 85MW DPP, IRAQ
2. On-going Projects

Client:
CFE (Mexico’s State Power Company)

Location:
Mexico

Work Scope:
Equipment Supply, Supervision

Fuel Type:
HFO, DO

Total Capacity:
42MW

Engine Model:
STX-MAN 12K80MC-S
42MW x 1 set

Delivery Date:
Jan. 2013
2. On-going Projects

Client: PROYECTOS INTEGRALES SAS

Location: Columbia

Work Scope: Equipment Supply, Supervision

Fuel Type: HFO, DO

Total Capacity: 7MW

Engine Model: STX-NIIGATA 8L22HLX 1.4MW x 5 sets

Equipment Delivery: (E) Sep. 2013

PIL 7MW CPP Project
2. On-going Projects

Client:
Venture Energy Resources Ltd.

Location:
Bhola, Bangladesh

Work Scope:
Equipment Supply, Supervision

Fuel Type:
Gas

Total Capacity:
24MW

Engine Model:
STX-NIIGATA 18V28AGS
6MW x 4sets

Equipment Delivery:
(E) Dec. 2013
I. STX Diesel Power Plant

II. Conventional Diesel Power Plant (DPP)

III. Containerized Power Plant (CPP)

IV. Engine Program

V. Supply Record

VI. Iraq 900MW CPP PJT Introduction
# STX Position in Iraq

<table>
<thead>
<tr>
<th>Diesel Maker</th>
<th>Accumulated Output [MWe, ISO]</th>
</tr>
</thead>
<tbody>
<tr>
<td>STX (Korea)</td>
<td>1,014</td>
</tr>
<tr>
<td>Wartsila (Finland)</td>
<td>490</td>
</tr>
<tr>
<td>Hyundai (Korea)</td>
<td>451</td>
</tr>
<tr>
<td>MAN (Germany)</td>
<td>403</td>
</tr>
</tbody>
</table>

Sourced by Maker website  
Data accumulated since 1990

- **STX** 43%  
- **Wartsila** 21%  
- **Hyundai** 19%  
- **MAN** 17%  

Sourced by Maker website  
Data accumulated since 1990
Fast-Track Solution for Severe Power Shortage in Iraq

Complete turn-key execution just **11 months**
(Signing Contract ‘11.09 to 900MW Commercial Operation as of ‘12.07.01)

4 Scattered Sites 900MW execution in central regions

North Diwaniyah 200MW / East Diwaniyah 200MW
Karbala 300MW / Missan 200MW

 Totally Integrated modular Containerized Power Plant

[18V28/32S (4MW) x 168 units + 16V34HLX (7.8MW) x 28 units]
900MW Progress of Each Site

- North Diwaniyah (200MW)
  - 6/30
  - 4/26
  - 2/29
  - 11/30

- Karbala (300MW)
  - 6/30
  - 4/23
  - 2/26
  - 11/30

- Missan (200MW)
  - 6/30
  - 4/26
  - 2/29
  - 11/30

- East Diwaniyah (200MW)
  - 6/30
  - 4/10
  - 4/5
  - 2/15

Signings:
- 9/28 - Signing 900MW

Events:
- 10/22 - 1st Shipment Departed
- 11/11 - Civil Started
- 11/30 - Groundbreaking ceremony
- 11/30 - Completion of Civil
- 11/30 - Start of Commissioning
- 11/30 - Completion of Mech. & Elec. Installation
- 11/30 - Provisional Acceptance Cert. (PAC)
- 11/20 - Provisional Acceptance Cert. (PAC)

Dates:
- 2011
  - 9/28
  - 10/22
  - 11/11
  - 11/30

- 2012
  - 2/15
  - 4/5
  - 4/10
  - 5/20
  - 6/10
  - 6/30

Turn Over:
- 6/30

Legend:
- ▼ Gen-sets Arrived at Site
- ▼ Completion of Civil
- □ Start of Commissioning
- ▼ Completion of Mech. & Elec. Installation
- ▼ Provisional Acceptance Cert. (PAC)
Client: IRAQ Ministry of Electricity

Location: East Diwaniyah, Iraq

Work Scope: EPC + 1yr Maintenance

Fuel Type: HFO, DO

Total Capacity: 218MW
31MW Power block x 6

Engine Model: STX-NIIGATA 16V34HLX 7.8MW x 28 sets

COD: July 1, 2012
East Diwaniyah 200MW Diesel Power Plant

Comprising of 32 x 16V34 HLX Four-stroke Engines

HFO Operation

Republic of Iraq
Ministry of Electricity
Client: IRAQ Ministry of Electricity

Location: Karbala, Iraq

Work Scope: EPC + 1yr Maintenance

Fuel Type: HFO, DO

Total Capacity: 288MW
24MW Power block x 12

Model: STX-MAN 18V28/32S
4MW x 72 sets

COD: July 1, 2012
3D Plant Completion View - K.A

Karbala 300MW Diesel Power Plant
Comprising of 72 x 18V28/32S Four-stroke Engines

Republic of Iraq
Ministry of Electricity
North Diwaniyah (200MW)

Client: IRAQ Ministry of Electricity

Site: North Diwaniyah, Iraq

Work Scope: EPC + 1yr Maintenance

Fuel Type: HFO, DO

Total Capacity: 192MW
24MW Power block x 8

Model: STX-MAN 18V28/32S
4MW x 48 sets

COD: July.1.2012
3D Plant Completion View-N.D

North Diwaniyah 200MW Diesel Power Plant
Comprising of 72 x 18V28/32S Four-stroke Engines
HFO Operation

Republic of Iraq
Ministry of Electricity
Missan Power Plant, Iraq (200MW)

Client: IRAQ Ministry of Electricity

Site: Missan, Iraq

Work Scope: EPC + 1yr Maintenance

Fuel Type: HFO, DO

Total Capacity: 192MW
24MW Power block x 8

Model: STX-MAN 18V28/32S
4MW x 48 sets

COD: July 1, 2012
3D Plant Completion View - M.S

Missan 200MW Diesel Power Plant
Comprising of 48 x 18V28/32S Four-stroke Engines
HFO Operation

Republic of Iraq
Ministry of Electricity