The customer

ABB’s partner and customer is KAR Group, a full spectrum oil & gas sector services company working throughout Iraq providing expertise in project design, engineering and construction, plant design and installation, pipeline design, health, safety and security services.

KAR intends to develop a 1200 MW power plant for electricity power generation at Khormala /Erbil. The Khormala Power Plant will include:

- **Phase I**: 4 simple cycle, 160 MW GTs,
- **Phase II**: 6 HRSC plus 3 steam turbines and
- **Phase III**: installation of 2 additional gas turbines (2 x 160 MW).

The task

Iraq’s need for electrical energy is huge. The country currently generates around 10,000 MW but requires around 20,000 MW of electricity to meet the daily demand.

The main goal and task was to reach a real fast track approach to get the project synchronized to the electrical grid helping to overcome the shortage on electricity. Khormala Phase I is the first joint power plant with Siemens Energy and ABB as system supplier. It is the first power plant in the Kurdistan Region that exports power on 400 kV level directly into the national grid of Iraq. Further challenges were the project coordination with the customer’s team and the strict security requirements on site.

The solution

Above all, a key factor in the successful project execution is the teaming up of the three partners (KAR, Siemens and ABB). As the project is being implemented with a minimum number of contractual partners, the number of interfaces is substantially reduced and there is much less coordination work required in terms of project management, engineering and jobsite activities. This approach helps to assure a higher project quality and cut the overall project processing time. In close cooperation KAR, Siemens and ABB completed the Phase I of the power plant successfully.
Scope of supply and services

Key figures

<table>
<thead>
<tr>
<th>Site</th>
<th>Khormala, Northern Iraq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of power plant</td>
<td>640 MW GTTP</td>
</tr>
<tr>
<td>Gas turbines</td>
<td>Siemens SGT5-2000E, each unit 160 MW (ISO)</td>
</tr>
</tbody>
</table>

Supply

Automation system
- DCS- and HMI-equipment, instrumentation
- RTU and SCADA
- Camera monitoring and telephone system

Electrical systems
- 400 kV high voltage substation
- Generator step up transformers
- Transformer protection
- Unit auxiliary and low voltage transformers
- Generator bus ducts
- Medium- and low voltage switchgears
- High speed change over device
- DC power supply incl. batteries
- Emergency- and blackstart diesel generators
- Earthing systems
- Lightning protection system

Mechanical Systems
- Liquid fuel oil systems
- Fuel gas systems
- Fire detection system incl. electronic devices
- Fire protection and fire fighting systems

Services

Engineering
Complete plant design, general layout, site leveling, construction and infrastructure design
- Arrangement design
- Automation and DCS engineering
- Electrical engineering
- Mechanical engineering

Project Management
Professional handling of the multiple challenging tasks supported by comprehensive overall engineering and time scheduling by certified project managers
- Quality control
- Factory acceptance tests
- Purchasing and logistics

Site Management
Erection and commissioning with the following key elements
- Strong ABB HSE and security standards
- Experienced team of technical field advisors (TFA)
- Experienced team of supervisors and commissioning engineers with close cooperation with the client and all involved contractors

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