E-House solutions
For oil, gas and petrochemical industries
Introducing ABB

ABB is a leading solutions supplier of power and automation products for the oil, gas and petrochemical industries. In addition to the supply of leading edge equipment, ABB provides fully engineered solutions in accordance to the individual needs of each customer.

Customized E-House solutions

An E-House is a pre-fabricated, walk-in, modular, outdoor enclosure designed to house a range of electrical, automation and telecom equipment and ancillaries.

A self-contained customized solutions.

Traditionally companies in the oil and gas industry receive their switchgear, drives, periphery distribution equipment and automation systems from multiple electrical equipment suppliers and obtain the electrical house from a fabricator. But the need to reduce risk, costs and delivery time has steered the industry away from this practice.

Today, there is a clear trend toward delivering an integrated, installed and pre-commissioned electrical and automation system together with the complete electrical house. ABB has just the right portfolio to meet this demand and has already delivered many such installations.
Expertise earned through experience

The footprint, layout and management of E-Houses are indirectly affected by the dynamic changes in industry requirements and the introduction of enhanced systems and products. Over the years, ABB has built up flexibility in its design and execution methodologies that constantly optimize each of these factors to ensure a cost-effective solution is provided to the customer.

Application

ABB’s E-Houses are customized to suit various environmental conditions and applications. Our extensive experience and proven engineering, design, fabrication, assembly, testing and transportation allows us to customize effectively in accordance to requirements. This has resulted in successful projects that meet international standards with the highest level of professionalism.

Offshore E-House buildings:
- FPSO
- FSO
- FLNG
- Wellhead platform
- Processing platform

Onshore E-House buildings:
- Onshore Oil & Gas upstream and downstream facilities
- Petrochemical & chemical plants
- Mining

Image Courtesy of Maersk FPSOs
### Typical structural details

<table>
<thead>
<tr>
<th>Structural codes</th>
<th>As per API RP 2A/WWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module analysis software</td>
<td>Using SACS or STAAD Pro software</td>
</tr>
<tr>
<td>Structural materials</td>
<td>ASTM A283 or ASTM A500 or EN 10025 (2004) Grade S275JR or BS 4360 grade 43B for beam and plates</td>
</tr>
<tr>
<td>API 5L or ASTM A106 for tubular pipes</td>
<td></td>
</tr>
<tr>
<td>ASTM A500 or EN 10219-1:1997 for structural tubing in rounds and shapes</td>
<td></td>
</tr>
</tbody>
</table>

- **External steel wall**: Mild steel crimped plate, thickness in accordance to project requirement
- **Internal steel wall**: Thickness in accordance to project requirement
- **External roof**: Mild steel plate, thickness in accordance to project requirement
- **Base frame, columns and flooring**: Floor thickness in accordance to project requirement
- **Thermally insulated underside**: Floor construction meets A60 fire rating

<table>
<thead>
<tr>
<th>Lift arrangement and devices</th>
<th>Lifting pad-eyes provided on the lower deck</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single point lifting arrangement provided</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wall mounted equipment</th>
<th>Equipment, panels and cabinets secured by steel angels or ‘U’-channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire and blast rating</td>
<td>Exterior wall, roof and underside insulated with non-combustible mineral wool</td>
</tr>
<tr>
<td>Internal partitions and internal roof insulated with metal liner panels and rockwool</td>
<td></td>
</tr>
<tr>
<td>All the external and internal doors and frames are made of SS316 material and designed according to A60 fire rating</td>
<td></td>
</tr>
</tbody>
</table>

### Typical equipment in E-House

#### Electrification and instrumentation

<table>
<thead>
<tr>
<th>Emergency lighting</th>
<th>Emergency lighting with 1.5hrs battery power pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple cable transit (MCT)</td>
<td>Mild MCT’s provided</td>
</tr>
<tr>
<td>Cable ladders/hoys</td>
<td>Outdoor cable ladders/hoys are made of BS316L material</td>
</tr>
<tr>
<td>Switchgear</td>
<td>Designed based on project requirement</td>
</tr>
<tr>
<td>Transformers</td>
<td>Designed based on project requirement</td>
</tr>
<tr>
<td>Drives</td>
<td>Designed based on project requirement</td>
</tr>
<tr>
<td>UPS and DC supply</td>
<td>Designed based on project requirement</td>
</tr>
<tr>
<td>Bus ducts</td>
<td>Designed based on project requirement</td>
</tr>
<tr>
<td>Automation</td>
<td>Distributed control system and safety system, designed based on project requirement</td>
</tr>
</tbody>
</table>

#### Heating, ventilation and air-conditioning (HVAC)

- **Ex’d or non-Ex’d rated 2 x 100% HVAC unit**
- **Split air-conditioner with climate control for specific applications**
- **Zone 1 ventilation system for battery applications**
- **Ventilation system for transformer and drives applications**

#### Fire protection system and communication system

<table>
<thead>
<tr>
<th>Fire detection system</th>
<th>Smoke/hot detectors and manual call points will be installed and wired up to fire alarm panel (FAP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire suppression system</td>
<td>All FAP’s are connected to the main FGS panel</td>
</tr>
<tr>
<td>Fire extinguisher system</td>
<td>Inergen or CO2 system</td>
</tr>
<tr>
<td>Warning sign</td>
<td>Portable CO2 fire extinguishers provided at each entrance throughout the E-House</td>
</tr>
<tr>
<td>Communication system</td>
<td>WARMING SIGN for the discharge of fire extinguishing agent provided</td>
</tr>
<tr>
<td>Lighting</td>
<td>Communication equipment is provided throughout the E-House meeting the requirements of the certification</td>
</tr>
<tr>
<td>Internal and external lighting</td>
<td></td>
</tr>
</tbody>
</table>
One stop solution

ABB has a complete suite of electrical and automation products required for a complete E-House solution. Coupled with full engineering capabilities ranging from structural, electrical to instrumentation, we are able to provide greater flexibility and minimizes interface for customers.

**E-house utilities**
- Heating, ventilation and air-conditioning (HVAC)
- F&G detection system
- Fire suppression system
- Internal and external lighting system
- PA/GA system

**Electrification & Instrumentation**
- Low voltage MCC and switchgears
- Medium voltage MCC and switchgears
- Low voltage and medium voltage drives
- Transformers
- Integrated controls and safety system
- Power management system
- UPS and DC supply
- Bus ducts

Market credibility. ABB adheres to our Code of Conduct, which contains our core set of values and guiding principles. It sets a group-wide culture where employees are expected to uphold the highest standard of ethical behavior and integrity. This translates to high business ethics and integrity to our customers.

Engineering. Customers can be assured of the highest engineered E-House solution by a team of highly competent engineers with backgrounds ranging from structural and electrical engineering, to automation and instrumentation. These multi-discipline engineers are responsible for front end engineering design to detailed engineering design. ABB also ensures every project goes through rigorous engineering good practices and adheres to international or industrial standards.

Service. ABB believes in smooth transition from project execution to post-execution support, to minimize support disruption to customers. We are able to provide customized service plans based on our customer’s needs. These include troubleshooting, 24/7 hotline support, spare parts delivery, repairs, system upgrades and maintenance.

ABB believes in long term partnership built through credibility and expertise.
Management

Benefits of ABB’s E-House solution

- Low investment risk
- Shorter lead time
- Operational effectiveness and flexibility
- Effective change management during project execution
- Product life cycle support
- Standardized equipment gives ease of service and maintenance
- Responsibility for interface engineering provided
- Field proven technology
- Products from a comprehensive portfolio ensuring ease for future modifications
- Engineering application expertise
- Comprehensive documentation provided
- Professional project management
- Certified in accordance with ISO quality standards
- Occupational health and safety design features
- Single contract for different functional disciplines

Project management

ABB understands project management is a key driver for value creation throughout the project life cycle and fulfills the expectations of the customer and other stakeholders. Hence, all project managers go through rigorous training and are certified before they are tasked with project responsibility.

A dedicated project manager will be assigned to the project from the initial design phase right up to the construction phase, where he will be assisted by a site/construction supervisor/manager.

Construction and site management

Health, safety and environmental issues are of utmost importance to ABB. Hence, a site/construction supervisor/manager is assigned once the project moves to construction phase. He will be in charge of managing site related issues, including maintaining safety at site and adhering to the OHSAS 18001 standard.