EA References & Capabilities in Power Plant Projects
Empresarios Agrupados – Company Profile

- An Architect-Engineering and Construction Management Company
- Created in 1971
- Main focus: **Power plants and related facilities**
- Leading engineering organization in Spain
- Project experience in more than 30 other countries
- Full range of engineering services provided to the electric power industry: from preliminary studies to complete engineering services for EPC turnkey projects.
Fields of activity

Nuclear Projects
- New-build nuclear power plants
- Engineering support services to plants in operation
- Decommissioning and Radioactive Waste Management
- Research Reactors and Generation IV Reactors

ITER Fusion Reactor-Cadarache (France)
- Architect-Engineering and Construction Management

Thermal power plants
- Combined-cycle thermal power plants
- Coal and FO-fired thermal power plants

Renewable energies
- Solar, Wind and Biomass

Special projects
- Large Telescopes: Grantecan and E-ELT

Fields of activity
Scope of Services as an A-E and CM Company

Pre-Construction Phase

- Consulting
- Preliminary Project Studies and Reports
- Site and Environmental Investigations
- Plant or Main Eqpt. Specifications (BIS)
- Bid Evaluation
- Support to Owner in Contract negotiations
- Support to Licensing and Permits

Project Execution Phase

- Project Management
- Engineering and Design
- Procurement
- Construction Management
- Plant Testing and Commissioning

Plant Operation Phase

- Engineering Support Services to Plants in Operation
EA Engineering and Design Services

Engineering Division

- Civil Structural
- Mechanical
- Electrical
- I & C
- Design
- Nuclear Safety & Licensing

EA performs the complete basic and detail design for all project disciplines
EA participation in NPP projects in Spain

- Jose Cabrera
  PWR – Westinghouse
  160 MWe

- Garoña
  BWR – GE - 466 MWe

- Almaraz
  PWR – Westinghouse
  2 x 980 MWe

- Ascó
  PWR – Westinghouse
  2 x 980 MWe

- Cofrentes
  BWR - GE - 1000 MWe

- Vandellós 2
  PWR – Westinghouse
  980 MWe

- Trillo
  PWR - Siemens KWU - 1066 MWe

- Valdecaballeros
  BWR - GE - 2 x 975 MWe

EA has been the full scope Architect-Engineer for the Plants framed in red
Main EA References in Power Plant Projects

Summary of EA’s experience as a full scope Architect-Engineer

<table>
<thead>
<tr>
<th>Power Plant Type</th>
<th>Units</th>
<th>MWe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear Power Plants [3 PWRs + 3 BWRs]</td>
<td>6</td>
<td>6,316 MWe</td>
</tr>
<tr>
<td>Combined - Cycle Power Plants</td>
<td>37</td>
<td>22,845 MWe</td>
</tr>
<tr>
<td>Coal and/or Oil – Fired Power Plants</td>
<td>24</td>
<td>7,780 MWe</td>
</tr>
<tr>
<td>Solar Power Plants</td>
<td>3</td>
<td>80 MWe</td>
</tr>
<tr>
<td>Hydroelectric Power Plants</td>
<td>2</td>
<td>250 MWe</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>72</strong></td>
<td><strong>37,271 MWe</strong></td>
</tr>
</tbody>
</table>

EA’s scope of services in these projects

- Project Management *all*
- Engineering and Design *all*
- Procurement Management *some*
- Construction Management *some*
- Commissioning Management *some*
Summary of EA International Experience over 40 years.
Conventional Power Plant Projects

USA, NPs
Mexico (2 CF, Boiler-FW/ST – Alstom Boiler-Alstom/ST Toshiba)
Brazil, NPs (1 CC, GT-GE/ST-GE)
Peru (SC, GT-GE)
Chile (2 CF, Boiler-FW/ST-Skoda)
Argentina, NPs (1 CF, Boiler-FW/ST-Siemens 2 CC GT-Si/ST-Si)

Latvia (1 CC, GT-GE/ST-Siemens)
Romania (1 CC, GT-GE/ST-GE)
Netherlands (1 CC, GT-GE/ST-GE)

Lithuania, NP

France, NPs (1 CC, GT-GE/ST-GE)

Portugal (1 CC, GT-GE/ST-GE)

Algeria (2 CC, GT-GE/ST-GE 1 Desalination plant)

Greece (6 CC, GT-GE/ST-GE)

Turkey NP, (1 CC, GT-GE/ST-GE, 1 CC GT-Si/ST-Si)

South Africa, NP

Syria (2 CC, GT-Ansaldo/ST-Ansaldo)
Qatar (1 CC, GT-GE/ST-GE)
Oman (1 SC, GT-GE)
KSA (1 FF, Boiler-ST Alstom)
Bulgaria, NP
Ukraine, NP

Czech Republic, NPs
Slovakia, NP
Poland, NP
Switzerland, NP
China, FEED Project

Russia, NPs, (1 CC, GT-GE/ST-GE)

Finland, NPs

Vietnam (1 CF)

Poland, NP

KSA (1 FF, Boiler-ST Alstom)
Bangladesh (2 SC, GT-Alstom CC GT/ST SI)

Mexico (2 CF, Boiler-FW/ST – Alstom Boiler-Alstom/ST Toshiba)
Thank you for your attention