Dunamenti, Hungary

230 MW
The first John Cockerill HRSG in Hungary

Project Description
In 1991, MVM, the Hungarian Electricity Authority added a Siemens Model V94.2 gas turbine and a heat recovery boiler at their Dunamenti steam plant, 50 km south of Budapest. Later, in preparation for privatization, the power station became a separate business unit: Dunamenti Erőmű Rt with responsibility for extending the gas turbine plant into a combined cycle CHP scheme, supplying power to the grid, steam to the Szazhalombatta refinery and district heating to the neighboring community. Tractebel Belgium became the majority shareholder in Dunamenti Erőmű.

The new steam cycle comprises a back pressure turbine between HP and the LP output, which feeds the original process steam line, and a condensing turbine on the LP, with extraction to district heating condensers. The new plant adds 234 MW and 57 MJ/s to district heating.

The contract
John Cockerill Energy were in consortium with Mitsui (Japan) and Skoda Plzen (Czech Republic) and had the technical leadership of the project. The contract was awarded in November 1995. John Cockerill Energy were responsible for the manufacture, erection and commissioning of the boiler, steam turbines, generators and the transformer.

Plant operation
The plant operates over 7,000 hours/year as a base load unit to supply steam to the refinery and district heating, with higher electrical output in the summer time when there is no district heating load.

Gas turbines
- Siemens Model V94.2
- ISO rated 159 MW at 15°C on natural gas
- Site rated 150 MW
- Fuel: natural gas

Heat recovery steam generators
- One John Cockerill vertical, assisted-circulation design, unfired, indoor HRSG
- Two output pressures: HP to back pressure steam turbine; LP to process steam header
- District heating coil installed at top of heat exchanger stack

Performances

<table>
<thead>
<tr>
<th>GAS</th>
<th>°C</th>
<th>kg/s</th>
</tr>
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<tbody>
<tr>
<td>Inlet</td>
<td>540</td>
<td>514</td>
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<tr>
<td>Outlet</td>
<td>94</td>
<td>514</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>STEAM</th>
<th>°C</th>
<th>barA</th>
<th>t/h</th>
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</thead>
<tbody>
<tr>
<td>HP</td>
<td>520</td>
<td>82</td>
<td>230</td>
</tr>
<tr>
<td>LP</td>
<td>340</td>
<td>17.5</td>
<td>41</td>
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Schedule
- Contract Award (HRSG & BOP) October 1995
- First firing of gas turbine September 1996
- Commissioning of HRSG completed March 1998
- Full combined cycle output April 1998