Senoko Energy, largest power generation company in Singapore, chose Symphony Plus S+ Operation human machine interface, HMI for upgradation of their control system at units 3, 4 and 5, for a secure and reliable operations environment.

Senoko Energy produces close to one-third of Singapore’s electricity from two power plants on the north and south sides of Singapore Island.

By far the largest of the two plants is the Senoko Power Station, which comprises seven combined cycle units and two thermoelectric units. Units 3 – 5 at Senoko Power Station have a generating capacity of 1,095 MW. They were converted from smaller oil-fired units in 2005.

Senoko selected ABB to upgrade the control system for units 3, 4 and 5 to S+ Operations due to the intuitive and easy-to-use HMI for Symphony Plus. Senoko recognizes that S+ Operations will provide an ideal HMI due to its rich features and offerings. With Symphony Plus, no alteration on the network architecture is required. The existing system hardware can be reused and the new S+ Operations HMI can run in parallel with the existing HMI, enabling the operators to acclimatize during the process of system evolution.

ABB’s stepwise evolution approach provides Senoko Energy with the flexibility to improve plant operations over time while maintaining its investment in human knowledge and in the existing DCS. Compared to rip-and-replace alternatives, S+ Operations was the lowest cost and lowest risk option for Senoko Energy to extend the operating life and attain the highest efficiency of its control system assets.

<table>
<thead>
<tr>
<th>Project name</th>
<th>Symphony Plus HMI Upgrade for CCP 3, 4 and 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Singapore</td>
</tr>
<tr>
<td>Customer</td>
<td>Senoko Energy</td>
</tr>
<tr>
<td>Completion</td>
<td>June 2013</td>
</tr>
</tbody>
</table>

**ABB solution**
- Supply of complete system design, engineering, project management, testing and supervision of installation and commissioning of the Symphony™ Plus human machine interface, S+ Operations.
- ABB’s ‘Evolution without obsolescence’ policy protects customer’s investment by retaining the existing Harmony controllers and I/O modules.

**System benefits**
- Improved overall plant reliability through upgrade of critical hardware and software in accordance to ABB’s unique and long-term life cycle policy of ‘Evolution without obsolescence’.
- Improved system integrity and cyber protection through inherent security features of S+ Operations.
- Extended operating life for the control system
- Upgradation without plant shutdown, reducing operational losses
ABB will upgrade all the critical hardware and software components of the existing Symphony control system and perform the upgrade online without any interruption to plant operations. To ensure a risk-free transition, S+ Operations will operate in parallel with the Process Portal B consoles throughout the upgrade process.

“The enhanced features of Symphony Plus will definitely be a plus for the operators. S+ will enable them to drill down further into the process and pinpoint the root cause of a deficiency and take the necessary action to improve plant performance. This know-how will enable the operators to make prompt and decisive decisions to prevent plant outages. In adverse plant conditions, the additional features of S+ will provide more plant information that will assist the operators to gradually and safely reduce the load on the affected unit and prevent significant additional equivalent operating hours (EOH) of the gas turbine due to a forced outage or PLST (protective load shedding trip),” said Mr Lim Leong Chuan, head of instrumentation and control of Senoko Power Station.

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