

SOAPP-CT Workstation Version 8.2 Now Available

Upgraded Software Offers New Features for Planning and Development of Gas Turbine-Based Power Plants

SOAPP® (State-of-the-Art Power Plant) is a fully integrated, easy-to-use tool for conceptual design and economic analysis of gas turbine-based projects. SOAPP incorporates site-specific performance, equipment sizing, piping and GA drawings, O&M and capital costs, cash flow and return on investment to support plant design decisions based on life-cycle cost economics.

EPRI recently released Version 8.2 of the State-of-the-Art Power Plant–Combustion Turbines (SOAPP-CT) Workstation software with significant enhancements, including updates to capital cost estimates for combined-cycle and simple-cycle plants.

Background

Companies in the electric utility industry are often unable to allocate sufficient resources to study the latest developments, evaluate alternatives, and optimize solutions for new plants. The impact of different configurations and scenarios on plant cost and performance, and consequently on the most cost-efficient plant design, is often neglected. Competitive pressures have driven engineering towards more standardized designs, which may have good performance and cost for “average” applications, but are often sub-optimal for any specific application.

SOAPP-CT Workstation

SOAPP-CT is an easy-to-use and powerful software program for detailed conceptual design of gas turbine-based power plants. Utility engineers and project developers apply SOAPP-CT in the project development process for resource planning, screening opportunities, evaluating options, optimizing design criteria, developing proposals, and preparing bid documents. The software generates site-specific heat balances, emissions estimates, equipment lists and sizing, process flow and piping diagrams, general arrangement drawings, project schedules, capital and O&M cost estimates, and annual cash flow estimates. This fully integrated framework supports a life-cycle cost approach to decisions.

How to Apply the Results

SOAPP helps to optimize the numerous decisions tied to a typical \$200–\$500 million combined-cycle project. Under resource-constrained conditions, use of the SOAPP products leads to better informed decisions regarding construction of new power plants and the upgrading of existing plants, reducing the cost of electricity and environmental impact, while improving the competitive position in the industry. Productivity savings to the domestic power industry in the support of planning studies alone could reach \$10 million per year.

The SOAPP Workstation reduces a task that otherwise could take several man-months of effort to less than several hours, resulting in productivity savings. More importantly, it enables users to evaluate many more alternatives than they could afford to evaluate without SOAPP, and thus achieve an optimal design. Substantial benefits can be realized when the use of the SOAPP Workstation results in the choice of technologies that produce a different, more economical plant design, in which case economic savings could range from \$1 million to more than \$10 million per year over the life of an individual power plant.

What's New

Version 8.2 of SOAPP-CT includes some new configuration options as well as updated costs, providing you with additional flexibility and improved support for conceptual design analysis. New features in Version 8.2 include:

- **New Combustion Turbine Performance Estimates.** The combustion turbine performance estimates for the General Electric PG7241 fourth (7FA.04) and fifth (7FA.05) generation models have been added to the combustion turbine database. The performance estimates are for natural gas only fuel.
- **Motor-Driven Mechanical Chillers.** This new inlet air cooling option has been added to the selection list. This cooling technology is similar to the steam turbine-driven mechanical chillers option except that the steam turbine drive is replaced with an electric motor. This inlet air cooling technology may be used in either simple, cogeneration, or combined cycle configurations.
- **Increased Non-reheat Steam Turbine Size Limit.** The output range of the largest of the non-reheat steam turbine options has been increased to include steam turbine sizes from 60 to 275 MW in keeping with industry advances.
- **Updated Capital Cost Estimates.** The capital cost estimates have been updated to reflect 2010 pricing for both major equipment and balance-of-plant equipment items. The cost increase of "turbine generator sets" that occurred in 2007-2008 was almost offset by a comparable cost decrease in 2009, and the forecasted decrease (from 2009) in 2010 was about 10%. In addition, the User can update the labor wage rates (based on 2010 estimates for Kenosha WI reference location) based on a spreadsheet supplied with the software. The SOAPP software calculates the total capital cost of the project in base-year dollars and presents the total plant investment and total capital requirement on a \$ per kW basis.
- **One CD for Version 8.2 Service Release and New Installations.** The v8.2 CD contains a complete install of Version 8.2 for New Users and Service Release 8.2 to simplify update for current users of Version 8.1.

For more information about SOAPP software, visit the SOAPP Web Site (www.soapp.com). To request a demonstration of SOAPP-CT Workstation via a personalized webcast, or to find out how you can obtain SOAPP products through the SOAPP Supplemental Project, contact Dale Grace, Project Manager, dgrace@epri.com.