

# Updated Tool for Combustion Turbine Projects: SOAPP-CT O&M Cost Estimator—Version 3.3

## Advanced Capabilities for Estimating CT/CC Plant O&M Costs

**Palo Alto, CA November 17, 2003:** The SOAPP Team of EPRI/EPRI Solutions has released the latest version of the SOAPP-CT O&M Cost Estimator, a spreadsheet software tool for calculating operating and maintenance costs, developing a cash flow projection, and providing a present value analysis for combustion turbine-based simple cycle and combined cycle projects. Using this tool, the incremental cost per start or per hour can be determined, depending on the type of service intended for the unit.

Built as a spreadsheet, the SOAPP-CT O&M Cost Estimator enables the user to define the unit duty type or mission and then either accept a series of default values or provide specific inputs for items such as service factor, number of normal starts, number of full load trips, operating time on primary and secondary fuel, staffing quantities, direct and indirect labor rates, fixed non-labor operating costs, major and minor overhaul costs, and auxiliary power costs. The software also includes the GE, Alstom (ABB), Siemens KWU and Siemens-Westinghouse algorithms for calculating factored operating hours and starts, equivalent hours, or baseload hours and starts as appropriate. With this information, the O&M Cost Estimator calculates operating and maintenance costs, develops a cash flow projection for use in a pro forma, and provides a present value analysis.

New Features in Version 3.3 include:

- **O&M Estimates for Existing Plants.** The SOAPP-CT O&M Cost Estimator has been modified to allow estimates of O&M on a “going forward” basis. For existing plants that have run for a period of time and have perhaps already had maintenance inspections, the user can enter the accumulated factored hours and factored starts for “aged parts” on a component type basis, as well as factored hours and starts since the last inspection of each type. The SOAPP-CT O&M Cost Estimator then uses this information as a starting point for estimating maintenance intervals and parts repair and replacement intervals, in the same method as for new plants.

- **Insurance Premium Revisions.** The methodology and cost estimates for Boiler and Machinery Insurance (i.e. Machinery Breakdown) and for the associated Business Interruption Insurance have been significantly reworked to provide more accurate estimates based on current market conditions and industry input. Insurance is an important part of technical risk mitigation, providing an indication of the risk perceived by the insurers and their response to market conditions.
- **Property Insurance Updates.** Premium estimates for property insurance, with and without additional business interruption coverage, are now provided. Property coverage insures against a broad range of property damage exposures including fire, explosions, floods, earthquakes, and other perils. Property insurance covers not only the process equipment but also support equipment and buildings.
- **Maintenance Intervals Refinements.** A user override feature has been added to the Quarterly Inputs sheet to provide more realistic scheduling of Major Inspections for certain unique circumstances. The user can specify the minimum time interval following the Hot Gas Inspection prior to the Major Inspection. In certain circumstances where the maintenance interval is a mixture of starts-limited and hours-limited intervals (a condition that can occur with GE and Siemens-Westinghouse algorithms only, depending on inspection limits), a Major Inspection (starts limited) could occur shortly after a Hot Gas Path Inspection (hours limited). A provision has been added such that the Hot Gas Inspection is redefined as a Major Inspection if it would have occurred within several quarters time frame. This approach provides a more rational cost estimate and approach to maintenance scheduling.
- **Siemens-Westinghouse 501D5A, 501FD2 and V84.3A2 Maintenance Costs.** Model-specific maintenance estimates now includes the 501D5A and V84.3A2 machines, as well as an update to the 501F costs. These are in addition to the GE 7EA, 7FA+e, and Alstom GT11N2 machines currently included. Initial default values for parts costs and life based on factored hours and starts (or equivalent operating hours, as applicable) can be adjusted on model-specific input sheets. Any Alstom (ABB), General Electric, Siemens KWU or Siemens-Westinghouse machine can be modeled using the framework provided. In addition, vendor-specific algorithms for maintenance intervals have been updated.

- **Additional Enhancements.** CT Parts Rotation Sparing can now accept any number of spares, up to the number of CTs being considered, to provide more flexibility in the sparing decisions. Quarterly escalation factors are now readily available for use with the user-defined maintenance cost and contract cost adders. Additional Maintenance Contract types are available, such as repair-only, labor-only or replacement parts-only contracts, inclusion of steam turbine maintenance, etc. Cash Flow sheets now include greater details, such as display of repair costs and replacement costs separately.

#### Features Added in Previous Version

- Rotation Sparing
- Quarterly Analysis
- Repair Fallout

The SOAPP-CT O&M Cost Estimator requires Microsoft Excel 97 or later, operating under Microsoft Windows 98/NT or later. The SOAPP-CT O&M Cost Estimator can be used as a standalone product or in conjunction with the SOAPP-CT WorkStation.

The SOAPP-CT O&M Cost Estimator was developed by EPRI with continuing support and maintenance by the SOAPP Team of EPRI and EPRI solutions. For more information on the SOAPP-CT O&M Cost Estimator, please contact us by phone at 1.650.855.2666 or by e-mail at [info@soapp.com](mailto:info@soapp.com).

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