March 15, 2008

Dear Customer,

We are pleased to enclose a major upgrade to our software suite, Version 18, with the following highlights:

(1) PEACE cost estimations have been revised significantly upward. Expect plant cost increases of 25 to 35% relative to estimates from Version 17.

(2) The PEACE Schematic outputs for GT PRO and GT MASTER now include a 3 dimensional view of your plant.

(3) Improvements made to THERMOFLEX provide more details for boiler design, and include a grate-fired furnace, an independent fuel pulverizer, a radiantly cooled passage, and addition of water wall heat transfer coincident with convective heat exchangers.

(4) New components in THERMOFLEX accommodate modeling solar thermal cycles, which also prompted introduction of a new fluid type, Heat Transfer Fluid, to represent thermal oils.

(5) GT PRO now includes a District Heating Wizard, and allows integration of an economizer in the HRSG with the district heating system.

(6) A new file comparison feature compares GT PRO or GT MASTER files to reveal differences among their inputs.

These developments along with a number of other smaller improvements are described in more detail below.

GT PRO / GT MASTER / PEACE

PEACE cost estimations have been revised sharply upwards since we last calibrated our cost functions, for release with Version 17. Significant increases in labor and commodities costs, as well as in major equipment costs, are now implemented in PEACE. The Regional Cost Multipliers and the Reference Exchange Rates have been adjusted for locations outside the U.S.

A 3-dimensional view of the Site Layout can now be selected from among the PEACE Schematics. You can rotate or tilt the view as desired, providing a more comprehensive vision of the plant as a whole. Similar views are available for major plant systems.

The District Heating Wizard, triggered with the now wider selection of district heating configurations in the Plant Criteria topic, will appear in the ST/DH Inputs topic. The wizard assists the design of the DH system which now includes ability to integrate an HRSG economizer with the bled steam district heating condensers.

The Compare Files feature accessible from the menu bar, allows a thorough comparison of GT PRO or GT MASTER files, quickly revealing any differences among their inputs.

File documentation has improved - warning and advisory messages displayed during computation can now be viewed as part of the Text Output, in the System\Messages tab, and the user can now append notes to the GT PRO or GT MASTER file via the Notes tab of the Plant Criteria topic, or the System\Notes tab of Text Output.

Inputs have been reorganized to place emissions and water accounting entries in a new Environment topic.

Additional auxiliary load inputs have been added, and the heat balances produced by GT PRO alone and GT PRO with PEACE are now identical.

A new Methodology selection has been added to the New Session topic, affecting the assumptions made about water & steam pressure drops, stack losses, and certain heat transfer parameters. Details are presented in the Guidance window when you make your selection.

Additional heat rejection loads, including that from the PEACE auxiliary cooling water heat exchanger, can now be imposed upon the cooling tower's duty.

Improvements have been made to HRSG modeling: a fourth HP economizer can now be included in GT PRO and GT MASTER, and the HRSG hardware input menus and output reports now include more graphic interaction.

A few other changes worthy of note include: inclusion of LTE recirculation pump power consumption, control of steam turbine HP end shaft leakage enthalpy, inclusion of desalination system and/or district heating system in plant summary graphics, and restoration of the GT PRO-only mode simplified financial analysis.

Gas Turbine Data Base

The gas turbine data base, used by the various Thermoflow products was updated, as shown below.

Engines added to the database			
352	Siemens SGT-800	353	Siemens SGT5-2000E (41 MAC)
354	GE 6FA		
Existing engines with modified performance			
201	GE 7241 FA	251	ALSTOM GT11N2 (60Hz, DLN)
324	Siemens SGT5-4000F	252	ALSTOM GT11N2 (50Hz, DLN)

222	P&W FT8 Swift Pac 25 (60Hz, DLN)	307	P&W FT8 Swift Pac 25 (50Hz, DLN)
223	P&W FT8 Swift Pac 25 (60Hz)	308	P&W FT8 Swift Pac 25 (50Hz)
224	P&W FT8 Swift Pac 50 (60Hz, DLN)	309	P&W FT8 Swift Pac 50 (50Hz, DLN)
225	P&W FT8 Swift Pac 50 (60 Hz)	310	P&W FT8 Swift Pac 50 (50 Hz)

Estimated price was updated for each engine.

Anyone using the GE APPS program to compute GT performance in GT PRO or GT MASTER should download APPS 3.6.5 from the GE website. A number of changes were made in that version of APPS to improve compatibility with Thermoflow programs.

THERMOFLEX / PEACE

Many new features enable more detailed boiler system models. A pulverizer component is now available independent of the furnace. A grate-fired furnace component is applicable to industrial and smaller utility boilers, particularly boilers using biomass or waste fuels. Direct and indirect fuel dryers can be applied to pretreat moist fuels, and a radiant cooler can extend the boiler to two or three radiant cooling passes. Heat transfer to water-cooled duct walls enclosing convective heat exchangers can now be represented, as can dry flue gas desulphurization.

Several new developments permit modeling of solar thermal power systems, including a detailed parabolic trough design to size and simulate a solar collector field, a new fluid category - Heat Transfer Fluid - with a database of properties of thermal oils, and new shell and tube heat exchangers for steam generation from a hot liquid stream.

The Fuel/Brine/Others component group has been re-named Fuel/Other Fluids to include fuel, refrigerants, ammonia-water mixtures, brine, and now the Source and Sink for the Heat Transfer Fluid.

A fluid type converter, another new component in the Fuel/Other Fluids group, will enable interchange of Gas/Air streams with gaseous Fuel streams for connection to components that would otherwise be prevented.

A general condenser has been added which will serve as a pressure dictator as well as a heat exchanger for condensing power cycles using working fluids other than water.

A general pump, with performance controls like the PEACE water pump, can now be used for any liquid stream, and should be used in place of earlier fluid-specific pump components.

Similarly, a new general heat exchanger encompasses all of the features that were previously available with three separate general heat exchanger components.

Seawater may be selected for use with PEACE cooling towers and the natural draft cooling tower.

A **Legacy** tab was added to the component bar. It houses components that you may have used in earlier versions, but which now have improved substitutes, such as the pumps and general heat exchangers cited

above. They are preserved for continuity of your existing models, but we recommend using their replacements for any new models.

ST PRO / ST MASTER / PEACE

PEACE cost estimations for the conventional steam power plants have been revised sharply upwards for Version 18, as described for the gas turbine programs.

GENERAL

The fuel database has been expanded and four solid fuel groups are now available: Coal, Coke, Biomass, and Waste Materials. The Biomass and Waste Materials groups contain almost 40 fuels, most added in this version.

The structure of folders holding our programs and your personal files has been revised for Version 18 to be more compatible with operating systems with stronger administrative controls. Although there may be some hurdles the user must overcome, it will run under Windows Vista. The process of migrating Thermoflow software to be fully compatible with Windows Vista is ongoing.

Starting with Version 18, the software will only run on computers using Windows 2000 Service Pack 4 or later. That requirement means Thermoflow software will only run on computers with the following operating systems: Win2000 SP4; Windows XP Professional or Home Edition; or Windows Vista. It will no longer run on Windows 98 or Windows ME. A simple check for this requirement is performed during installation.

The software installation process was modified to accommodate the new 3D drawing feature in PEACE. Please be sure to carefully read all screens presented during software installation process. That procedure now installs third party support libraries from Autodesk, Inc. and Microsoft, Inc.

In the interests of expediting the availability of Version 18, particularly the strongly revised cost estimations, the on-screen documentation, the HELP file system accessible from within the programs, was not updated at this time. Revised HELP will be made available later, through revisions to be downloaded from our website. Registered users will be notified by email when that download is available.