



Curtiss-Wright Nuclear Division

Announces New Version Release

PEPSE

Version 88

December 2023

Curtiss-Wright is excited to announce the release of the new version of Scientech's PEPSE in December 2023. The Version 88 release includes many new features and enhancements as requested by our clients and end users. These improvements are designed to enhance PEPSE's user productivity while increasing its thermal analysis capabilities. PEPSE's annual releases sustain its leading role as the most powerful predictive and design analysis tool on the market.

The demand for optimization technology has advanced significantly over the past few years, driven by competitive generation, the environment, and the need to connect critical thermal performance data with end users who contribute to the thermal efficiency of the power plant. PEPSE with its annual upgrades is pushing the envelope and leading the industry with state-of-the-art, optimization technology through accurate modeling, analysis and simulation software to improve the heat rate of generation assets. Accurate models producing a few tenths of one percent heat rate improvement can make a difference of several hundreds of thousands of dollars in fuel reduction costs or in increased generation sales annually for a single unit.

Specifically, PEPSE's best achievable and "What-If" analysis allow performance engineers to establish key performance indicators (KPIs) that produce the lowest cost of production for dispatch operations, e.g., capacity marketing. Additionally, PEPSE allows the evaluation of equipment and process changes required for justification of capital expenditures, e.g, coal to gas fuel conversion. With the release of Version 88, PEPSE continues to be the industry benchmark for optimizing power plants' thermal efficiency and process cycles. This has been proven by the selection of PEPSE by many utilities as their gold standard in its ability to realize improved heat rate and generation goals.

We have listened to our clients and incorporated lessons learned from our technical support and services into our annual PEPSE upgrades. The markets are changing, and Curtiss-Wright is listening and changing our software accordingly.

PEPSE's Version 88 provides engineers with the ability to readily and accurately analyze and optimize a system's efficiency, and plants that employ it derive a number of direct and important benefits. PEPSE is your key to accurately analyzing plant performance and identifying ways to increase generation and reduce heat rate. PEPSE helps to eliminate causes of inefficiency allowing a plant to produce every possible kilowatt and conserve every possible BTU thus providing for reductions in plant emissions and carbon footprint. This also lowers operating costs through higher efficiency, fewer repairs, less downtime, and lower fuel costs.

PEPSE program enhancements have been improved to enhance its ease of use, e.g., speed, reporting capabilities, displays/graphics, data reduction, help functionality, error corrections, and "user friendly" operation. These enhanced features complement its business value for a complete performance improvement program.

PEPSE V88 Enhancement Summary

PEPSE upgrades are implemented to enhance user productivity and introduce the latest calculation standards as provided by the power production industry. Outlined below is a summary of several of the major features of Version 88.

PEPSE Program Enhancements

- Modified PEPSE calculations for cooling towers with very low air inlet temperatures and 1997 steam tables to prevent numerous fixups due to temperature out of range. Extended the TSAT calculation to lower pressure regions where values calculated by the 1997 steam table equation still produce monotonically reducing values
- Modified PEPSE HX Effectiveness calculations in the case of subfreezing air on 1 side and water on the other to exclude a duty that would produce a sub-freezing water temperature on the water side

On the graphical interface the following enhancements have been made:

- Allow general calculations (add/subtract/multiply/divide, etc.) in input cell
- Allow locking of sets with a password to prevent future changes
- Keep track of model changes via a ChangeLog which is stored with the model file
- Improved scaling of results table and allow zooming in/out in Component Output Data
- Attempt to create missing folders for job/res files

PEPSE Error Corrections

In the PEPSE thermodynamic analysis program, the following error corrections have been made:

- Fixed a problem with Feed Water Heater variable TTDO where that variable was ignored in a set with performance mode after switching from a set with design mode
- Fixed a problem with Nuclear Reheater tube out quality (XXTORH) where it does not work properly when SI or Metric units of measure are selected
- Fixed handling of water flow specified in GT when used for Evaporative Cooling

On the graphical interface, the following error corrections have been made:

- Fixed display of warnings/failure messages so they are displayed for the current case
- Fixed issue where Variable Cross and 123 forms prevent display of stream/component information when hovering over
- Fixed issue where connectors are not clickable when they are over HPT/IPT supercomponents
- Restricted ALEQ equalization IDs to the range -999 to 999

PEPSE Version 88 will run on Windows 7 and newer operating systems; and Windows Server 2008 and newer operating systems, including 32-bit or 64-bit versions.

We look forward to working with you and continuing to provide the most powerful off-line thermal performance modeling tool available. Upgrading to Version 88 will provide enhanced functionality of the leading performance analysis and simulation tool, PEPSE, and demonstrate a valued return on your investment.

To upgrade to PEPSE Version 88 or to receive more information, contact please contact Josh Bartlett at (208) 497-3547 or jbartlett@curtisswright.com.