

The Power Behind PEPSE

PEPSE is a general-purpose Windows-based software package that is sophisticated, yet easy to learn and apply. The program works by allowing you to simulate a modular representation of your plant's component hardware and piping systems. Plant performance can then be calculated through the user-created schematic that mimics your plant's operation and connections.

Compelling Reasons to Invest in PEPSE

When engineers have the ability to readily and accurately monitor and maintain a system's efficiency, the operation derives a number of direct and important benefits. PEPSE is your key to:

- Accurately monitoring plant performance and identifying ways to **reduce your heat rates**
- Eliminating causes of inefficiency and **conserving every possible kilowatt**
- **Lessening emissions** and directly impacting your carbon footprint
- Managing **your operating costs** through more efficient operation, fewer repairs, and less down-time
- **Gaining confidence** in the accuracy of your measurements

User Options Address Varied Testing Needs

PEPSE has a number of different modes, which means you can use the tool for conducting a **range of measurements**:

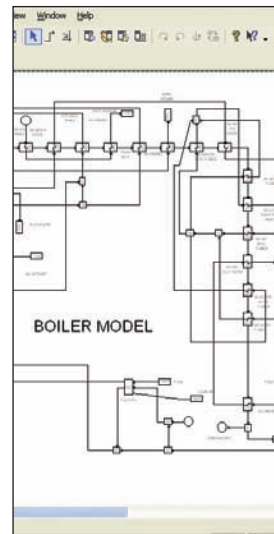
- Compare actual data to expected values
- Evaluate the system affect of changes in individual system components
- Analyze test data as specified in ASME® performance test codes

An Integrated System Analysis Drives Optimal Plant Performance

PEPSE provides engineers with integrated performance data and the means to construct detailed system models for evaluating heat rates and plant performance.

The functioning of controllable parameters in your plant – equipment condition, system interaction, steam operation, gas and other fluid systems – all contribute to your overall efficiency.

PEPSE is the advanced computational tool for easily and accurately monitoring your entire plant, a portion of the facility, or individual components.



Multiple Uses Enhance Software Value

In addition to evaluating and monitoring overall plant performance, PEPSE will let you perform a host of other important tasks, increasing the value of your investment. Additional ways to employ PEPSE include:

- Isolating individual component performance – **pinpoint specific hardware malfunctions before they escalate and create costly systemic problems**
- **Evaluating potential design modifications** – before new systems or equipment investments are made
- **Determining desirable cycle heat rates** for new nuclear, fossil, or combined cycle units
- Auditing NSSS, boiler, heat exchanger, feed water heater, condenser, HRSG, or turbine vendor (steam or gas) claims during a **proposal evaluation**

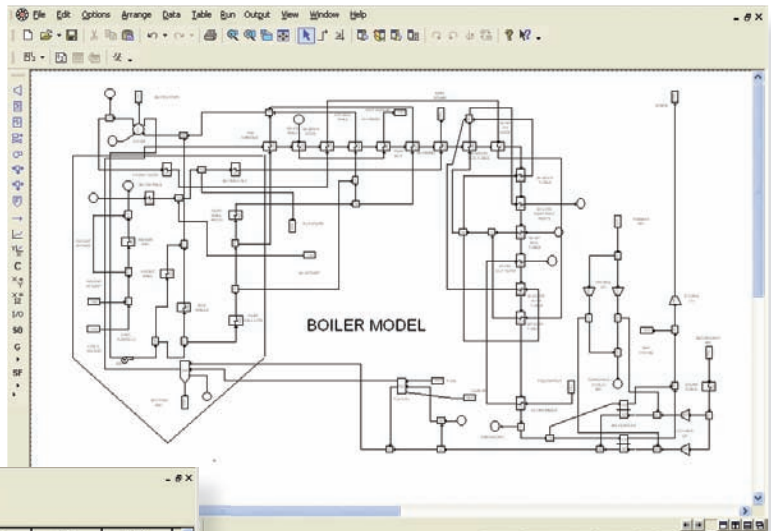
Comprehensive Testing Capabilities Ensure Utility

PEPSE can be readily employed to test any part of your plant system: hydraulic parameters, equipment hardware, cycle piping arrangements, component characteristics, and ambient conditions. With your ability to monitor a full range of operating variables and conduct a comprehensive assessment, the power to affect **overall plant efficiency increases**.

Flexible, Adaptable and Easy-to-Use

PEPSE may be used as both a standalone program or in a network environment. It also allows you to interact and pass data and results between other software programs such as PMAX®, Excel® and Visual Basic®.

PEPSE software is further enhanced through the outstanding technical support available to all users. Ease of use contributes to minimal ramp-up time, while technical assistance contributes to minimal downtime if problems or questions should arise.



| ID | Description | Variable Name | Variable ID | Case 1 | Case 2 | Case 3 | Case 4 | Case 5 |
|----|-----------------------------|---------------|-------------|--------------|--------------|--------------|--------------|--------------|
| 1 | Man 5 - VwID | OPVB | 500 | 0 | 0 | 0 | 0 | 0 |
| 2 | Man Steam Flow | WwF | 10 | 1764500 | 1988751 | 1980248 | 1990248 | 1990228 |
| 3 | Man Steam Temperature | TT | 10 | 1050.5 | 1051.869 | 1051.869 | 1051.869 | 1051.869 |
| 4 | Man Steam Pressure | PP | 10 | 2418 | 2414.349 | 2414.349 | 2414.349 | 2414.349 |
| 5 | LP Inlet Enthalpy | HH | 10 | 1493.789 | 1481.45 | 1481.45 | 1481.45 | 1481.45 |
| 6 | LP Inlet Pressure | PP | 300 | 127.449 | 143.0263 | 143.0261 | 143.0761 | 143.0762 |
| 7 | LP Inlet Enthalpy | HH | 300 | 1368.402 | 1363.437 | 1363.387 | 1363.387 | 1363.388 |
| 8 | LP Inlet Temperature | TT | 300 | 680.6257 | 672.6769 | 672.5943 | 672.5943 | 672.5946 |
| 9 | LP Inlet Flow | WwF | 300 | 1450917 | 1638952 | 1637036 | 1627636 | 1627621 |
| 10 | LP 1 Ex Flow | WwF | 300 | 68775.26 | 67625.31 | 67631.29 | 67632.59 | 67632.45 |
| 11 | LP 2 Ex Flow | WwF | 350 | 65887.6 | 62707.29 | 62712.0 | 62737.81 | 62724.86 |
| 12 | LP 3 Ex Flow | WwF | 370 | 30120.71 | 32922.69 | 32917.6 | 33402.81 | 33163.95 |
| 13 | LP 4 Ex Flow | WwF | 390 | 63961.63 | 58760.35 | 58762.16 | 63123.66 | 64011.79 |
| 14 | HP Power | HKSEC | 100 | 83.7614 | 86.14999 | 86.16484 | 86.16485 | 86.16517 |
| 15 | IP Power | HKSEC | 250 | 63.69457 | 78.71768 | 78.73951 | 78.73952 | 78.73942 |
| 16 | LP Power | HKSEC | 300 | 137.4298 | 146.8845 | 146.9487 | 156.2988 | 148.2524 |
| 17 | Gen Generation w/Gen Losses | BKGDOS | 0 | 286.8086 | 306.2364 | 306.3077 | 310.7012 | 308.4791 |
| 18 | HP Exhaust Pressure | PP | 400 | 511.2754 | 538.5712 | 538.9344 | 538.9343 | 538.983 |
| 19 | HP Exhaust Enthalpy | HH | 400 | 1329 | 1330.904 | 1330.99 | 1330.99 | 1330.988 |
| 20 | HP Exhaust Temperature | TT | 400 | 651.1786 | 657.7951 | 657.9498 | 657.9497 | 657.949 |
| 21 | HP Exhaust Flow | WwF | 400 | 1720559 | 1951181 | 1952054 | 1952054 | 1952034 |
| 22 | HP Ex Flow | WwF | 210 | 142672.2 | 154372.5 | 154354.9 | 154354.9 | 154326.7 |
| 23 | IP 1 Ex Flow | WwF | 240 | 70502.49 | 69515.03 | 69576.85 | 69576.82 | 69574.62 |
| 24 | IP 2 Ex Flow | WwF | 270 | 77096.57 | 96824.36 | 97436.69 | 97436.75 | 97422.64 |
| 25 | Final Pul Flow | WwF | 641 | 1768814 | 2004819 | 2004819 | 2004819 | 2004824 |
| 26 | Final Pul Temp | TT | 641 | 488.2057 | 471.2261 | 471.2129 | 471.2128 | 471.2117 |
| 27 | Final Pul Pressure | PP | 641 | 2604.719 | 2620.01 | 2620.01 | 2620.01 | 2620.01 |
| 28 | Final Pul Enthalpy | HH | 641 | 451.7048 | 455.0731 | 455.1641 | 455.1641 | 455.1616 |
| 29 | Reheater Heat Duty | BHHPFL | 190 | 3.031093E+08 | 3.368008E+08 | 3.368895E+08 | 3.368895E+08 | 3.368925E+08 |
| 30 | HP Condenser Pressure | PP | 640 | 1.9 | 2.789385 | 2.789386 | 2.195292 | 2.487713 |

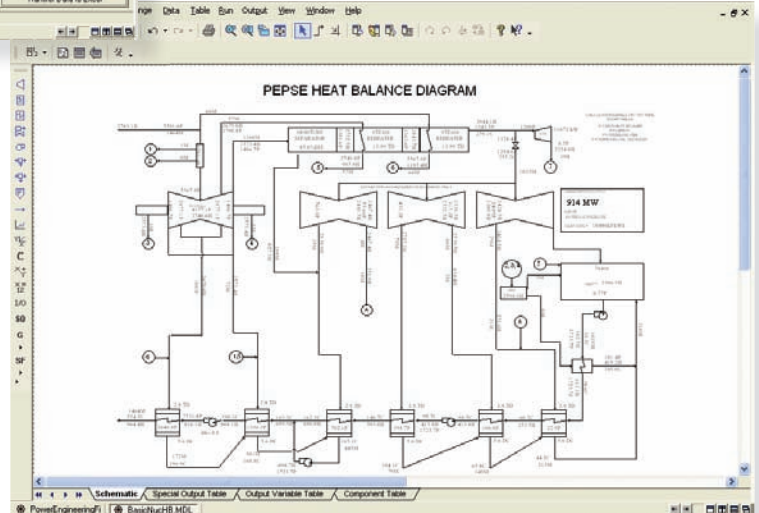
- Create custom diagrams for turbine, boiler, and other original equipment manufacturers.
- Choose from a comprehensive library of components for developing your custom schematic.
- Create your diagrams through the use of easily identifiable, drag and draft icons.

The Value of User Input and Measurable Results

PEPSE systems have been used for more than 30 years, and input from an active user group has driven product enhancements and contributed to the software's status as the most valued and practical application of its kind.

Perhaps the best proof of PEPSE's value and utility lies in the impressive results that many customers have achieved through use of the computational tool. Consider the following cost-savings reported in an independent study of PEPSE users:

- \$3,500,000 saved on a planned boiler modification upgrade
- \$12,000,000 saved on a turbine replacement
- Average operating cost savings of \$250,000 per year



The Sciencetech Approach Optimizes Your Performance

Sciencetech's PEPSE product, in conjunction with the other FAMOS™ condition monitoring tools, brings efficiency, superior protection and a total system for effectively monitoring your operation.

For additional information contact Sciencetech at 208-524-9200 or visit <http://famos.sciencetech.us>.



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