

SIGMAPOWER PERFORMANCE MONITORING AND OPTIMIZATION SYSTEM

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ABSTRACT

In this work, performance monitoring and optimization system that turns process data into performance information, and puts that information - both real-time and historical - on your PC desktop which is SigmaPOWER Performance Monitoring and Optimization System software, reviewed.

WHY PERFORMANCE MONITORING?

- Competing in global energy market demands that your company produce more with less input by increasing capacity and lowering costs. This means efficient operation of your machinery as well as optimizing the operational costs.
- Machine condition monitoring can help you get the most out of your assets by continuously assessing equipment performance and its impact on the bottom line.
- Accurate and timely data collected, manipulated and presented to management in support of decision-making is the cornerstone of any information system



• **SigmaPOWER** Performance Monitoring and Optimization System is a world-class performance monitoring and optimization system that turns process data into performance information, and puts that information - both real-time and historical - on your PC desktop.

BASIC FEATURES

- Online Performance Monitoring for power and process plants that observes the actual performance of systems and components.



- Comparison of actual performances with the expected values.

BASIC FEATURES

- Graphical online monitoring environment.
- Historical storage of data that contains both plant field readings and calculated values.
- Automate reporting of plant operating data; model alternative operating scenarios; and minimize controllable losses.
- Simulation and testing of system by changing one/more variables. This gives user to test different operating modes before giving a decision.
- Finding a wrong data and correcting the measurement online. This also helps the maintenance team for continuously monitoring the variables and finding the faulty measurements.
- An enterprise-wide software platform with a suite of tools and serverware that enables accurate and convenient implementation of asset monitoring solutions.
- Implementation of a **SigmaPOWER** will give a chance to the operating stuff to check all the field readings as well as the operation modes. So, a lot of faulty readings will have a chance to be repaired. This will improve the quality of production and also give correct and accurate information to the decision makers.

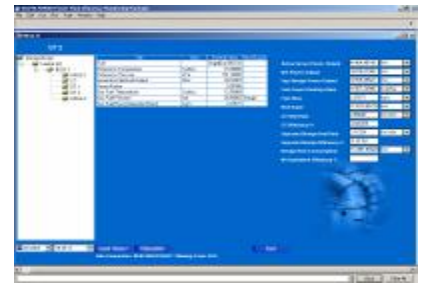
TOOLS

- *Thermodynamics Tables*
For compressed water, saturated and superheated steam, all thermodynamic properties, such as specific volume, enthalpy, entropy, can be calculated by this tool.
- *Unit Conversion*
All units are classified in different physical titles such as pressure units, mass flow rate units, energy units etc. Hundreds of units are included in this conversion tool.
- *Exhaust Gas Calculation*
This tool calculates the amount and energy of exhaust gas which formed by any burning reaction. For instance, exhaust gas of a gas turbine, used in HRSG heat input, can be calculated.

MODULES

- *"What-if" Analyzing Module*
Any past data from database can be loaded and results are calculated. "What-if" tool allows manipulation for testing any other condition by changing any process data manually.

MODULES



- *"Correct/Modify" Correction Module*
In addition to "What-if" module features, "Correct/Modify" module allows up-dating and correction of database. The fault process data, either past data or present one, can be changed manually, then, the data and results can save to database.



- *"On-line" Monitoring Module*
"On-line" module is just for monitoring. Manipulation is not allowed. On-line process data and calculated values can be observed.

PRODUCTION PLANNING

- *Load Forecasting*
Load forecasting done according to customers consumption trend for next 1 week. Forecasting electricity consumption of customers, determines predicted production supply. Customer steam demands, determines minimum operation condition.
- *Performance Data*
By assessment of historical performance data, the best operating condition of each element (Gas Turbine, HRSG, Steam Turbine, Condenser, Fired Steam Generator etc.) calculated by **SigmaPOWER**.
- *Capacity Forecasting*
All forecasting results are corrected according to capacity forecasting which is based on weather forecasting. Optimization occurs by processing weekly capacity and load forecasting data. As a result of Production Planning, **SigmaPOWER** gives the required (the best) operating condition for each element of each plant.

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