Continuous monitoring of process quality is an essential way of discovering optimization potentials in power plant operation.

Deviations from optimum operation develop slowly and are often concealed by the effects of external boundary conditions, such as environmental parameters.

The result is a considerable deviation from maximum efficiency.

SR::EPOS continuously monitors the power plant process under technical and economic aspects. Important plant components are assessed cyclically.

Within the scope of online diagnostics, additional operating costs are shown to reflect deviations from the optimum conditions that are possible at that time. This allows to weigh the individual deviations and to take the required measures.

SR::EPOS outputs the results in process images and trend diagrams. Color changes draw the user’s attention to significant deviations. The user can then jump from an initial overview to other more detailed levels.

Using “what-if” calculations based on current operation measurements, changes in the mode of operation can be simulated continuously and automatically.

Depending on the plant’s design and on the possible modes of operation, SR::EPOS can suggest an optimum mode of operation from both economic and ecological aspects. Typical applications for optimizing operation with SR::EPOS are setting the optimum cooling water volume, especially in partial load operation, optimizing the use of soot blowers, and optimizing grinder operation.
SR::EPOS Modules

Process quality monitoring and unit optimization can be extended modularly with SR::EPOS.

Example = Optimized Soot Blowing

Necessary cleaning of the steam generator can be optimized with SR::BCM. To do this, the optimum time of operation is calculated for individual blower levels. System-specific required parameters and cost functions are considered as criteria for assessing existing boundary conditions. The individual impacting factors are evaluated in SR::BCM with fuzzy technology. The soot blowers can be activated automatically by SR::BCM (closed loop).

Other modules to extend an SR::EPOS system include:

- Optimization of cooling water volume
- Measured data reconciliation acc. to VDI 2048
- Classification of the use of energy to modes of operation (start-up, equilibrium, shutdown...)
- Grinder module

Calculation Kernel = EBSILON® Professional

EBSILON® Professional is integrated into SR::EPOS as the calculation kernel. The simulation system for thermodynamic cycle processes known from process design is thus used for continuous online evaluation.

When the actual status has been balanced, what-if-calculations are carried out cyclically; the results of these calculations provide detailed information about the current quality of the process and individual components.

Figure 4: Example for SR::BCM

Data Management = SR::xServer

The input values for SR::EPOS and the results from SR::EPOS are stored on the SR::xServer. Depending on the server configuration, measured values and calculation results are available on the SR::xData Server for up to 20 years in different compression levels (minute values to year values). The data is therefore available centrally for visualization and for other uses, for example, in Excel.