

Enhanced Consideration of Process Quality Monitoring (I) - Systematically Assessing External and Operational Boundary Conditions



The economically efficient operation of power plants is a very complex task. In daily business, however, plants often do not achieve the efficiency according to the design point. Causes of process losses are, among others, external and/or operational boundary conditions that cannot be influenced with regard to an optimized mode of operation. A new solution by the division System Technologies of STEAG Energy Services now allows to represent such boundary conditions in an enhanced process quality monitoring and to specify them more precisely by means of a potential analysis in order to e.g. obtain reliable figures for analyses and reports.

Valuable Supplement to Classic Process Quality Monitoring

STEAG provides a number of solutions for classic process quality monitoring. These supply important information as well as decision support on process variables and conditions of components that allow to identify weak spots or changes in the process by considering manipulable factors and thus to increase the efficiency and availability. Examples of this include lifetime monitoring, condition monitoring, or the monitoring of thermodynamic quantities. By means of an enhanced process quality monitoring as a supplement to classic process quality monitoring, causes of process losses that were often impossible to specify with greater precision thus far and lie outside the range of manipulable variables can now be identified, too.

Effective Support of Decision-Makers

Besides the information from classic process quality monitoring that contains manipulable factors like e.g. condenser pressure, live steam temperature, reheat steam temperature, etc., other – non-manipulable – factors that enable an enhanced process quality monitoring are used in addition. Such factors can be both external boundary conditions such as fuel quality, load profile, ambient temperature, etc. and operational boundary condition like soot-blowing steam, auxiliary steam, water lance blowers, etc.

As a kind of benchmark, the potential analysis of an enhanced process quality monitoring provides important information on whether and above all why the current efficiency deviates from the design efficiency of a plant, and which specific causes are responsible for this. Thus the user of the solution is able to accurately quantify how great the influence of non-manipulable specific external and operational boundary conditions on the deterioration of the plant condition is, for instance of certain ambient conditions or a load profile on the heat rate. This way, reliable figures are available for individual reports as well as analyses as a basis for communication and planning for the power and energy industry.



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Comfortable Visualization and Further Processing of the Results

The standard process quality monitoring solutions by STEAG Energy Services can be used for the potential analysis. The results of an enhanced process quality monitoring are displayed via SR::xVis, the powerful system for data visualization. Moreover, the results can be exported via interfaces as well as export functions into Excel charts or other data formats for the purpose of comfortable further processing for an individual reporting.

Benefits of an Enhanced Process Quality Monitoring Consideration for Assessing Boundary Conditions:

- Identification of non-manipulable factors that lead to process losses
- Distinction of the process losses in
 - external influences (fuel, ambience)
 - operational influences (soot blowing, auxiliary steam,...)
 - manipulable factors
- Reliable figures for the power and energy industry as a basis for communication and argumentation
- Identification and archiving of dependencies
- Deduction of targeted measures for production and maintenance