Finding solutions is our business....

.... and we're pretty good at it

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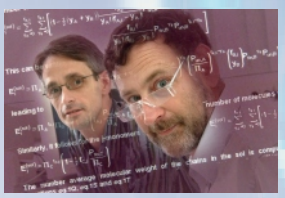
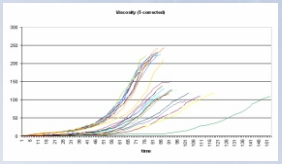
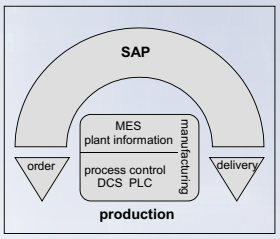
Technical note
Resolve 054







Analysis of historical plant data

You have got the data, now extract the hidden information

Archives of plant data.
In most plants the important process variables like temperatures, pressures, flows, are monitored continuously by Plant Information and Control Systems. The numerical values of these process variables are stored at regular time intervals. Thus huge archives of historical plant data have been built up. The consultants of the group Mathematics & Statistics can assist you in exploiting these data mines and in extracting valuable information from raw data. Our resources are many years of industrial experience, state-of-the-art software tools and statistical expertise of the highest academic level.

Consistency with Standard Operating Procedures (SOP's).
By statistically analysing the time profiles of the process variables, it is possible both for continuous processes as for batch processes to

- quantify the variability in your process/plant and calculate the capability indices;
- detect systematic deviations from the SOP's;
- assess the effectiveness and possibilities for improvement of the plant's measurement systems (with respect to accuracy, frequency, delays, ...) and control loops;
- tighten control limits and specification limits.

Multivariate Statistical Process Control.
Historical plant data can be used to build statistical models that capture both the *systematic* and the *random* components in the normal operating modes of the plant. Once the SPC models are built, they can monitor the process in real time and can detect deviations from normal operating conditions, thus allowing for corrective action in an early stage.

Black box models, predicting the values of quality variables.
Based on historical plant data, statistical *black box* models can be built. Functional relationships are constructed that link process conditions and quality variables (like: yield, viscosity, purity, water content, ...). Once these relationships have been found and quantified, the values of the quality variables can be predicted in real time, i.e. while the process is running. Set points or trajectories can be chosen to maximize or minimize the values of the quality variables.

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