

# PROCESS CONTROL TECHNOLOGY



INNOVATION

ENGINEERING

OPTIMIZATION

## Advanced Process Control, Controller Performance Monitoring and Alarm Management

### Our service ...

We develop efficient and cost-effective process control solutions based on our experience in numerous investment projects. Our engineers have been involved in plant support and plant optimization activities for many years.

Key aspects of our consulting services are:

- Advanced Process Control
- Controller Performance Monitoring
- Alarm Management

### Advanced Process Control

Optimal plant operation requires:

- appropriate control strategies
- suitable designed control loops
- optimal tuned controllers

We analyze your control concept, identify potential for improvement, quantify the benefit, and develop tailor-made solutions ready for implementation within your control system.

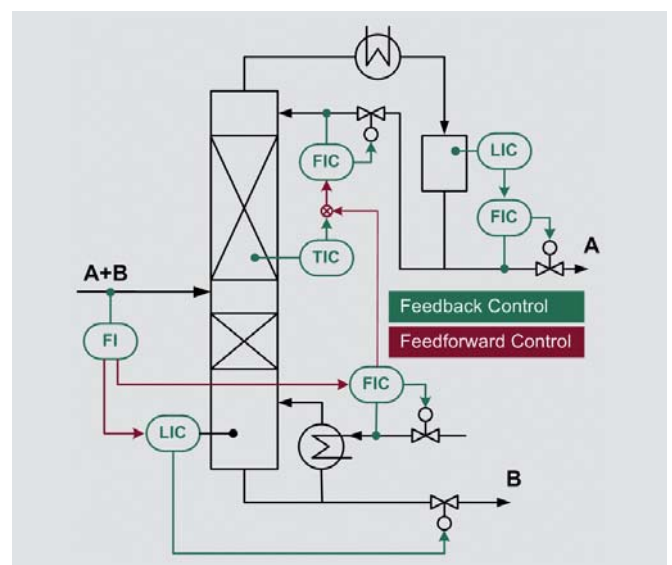
### Your gain ...

- maximum utilization of your plant capacity
- economically optimal plant operation
- reduced process variability, leading to uniformly high product quality
- reduced operator work load
- decreased energy consumption
- reduced number of process upsets

### Our approach

Starting with an in-depth analysis of your production process, we follow a systematic and proven approach, typically comprising of the following steps:

- control structure checkup
- sensor and final control element checks
- specification and execution of field tests in close co-operation with production personnel
- mathematical modeling of control loops based on experimental or historical process data
- design and detailed specification of control structures
- commissioning and controller tuning
- verification of control improvements



Example control structure of a distillation column



Bayer Technology Services  
Powering Your Performance

## Controller Performance Monitoring

The tuning parameters of a controller are optimal only at the time of tuning. Changes of process or operating conditions lead to a slow degradation of control quality. We continuously analyze the performance of all your controllers and visualize the results in a way that the condition of your plant becomes transparent at a glance.

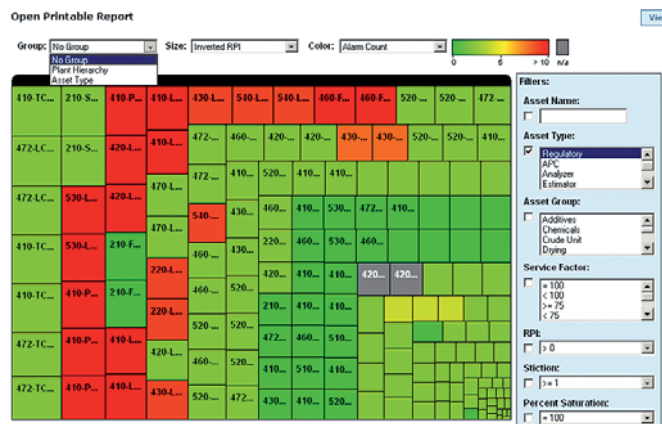
### Your gain ...

The utilization of controller performance monitoring provides:

- information about the effectiveness of every single control loop within your plant
- insight about promising starting-points for process control optimization
- timely identification of faulty field devices or equipment (e. g. wear of sensors or actuators, fouling)
- avoidance of unscheduled shutdowns by condition-based maintenance

### Our approach

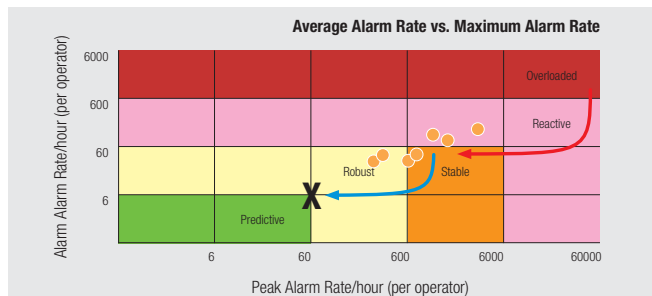
- continuous recording of all necessary process data tags
- calculation, evaluation and interpretation of statistical loop performance indices
- correlation analysis to identify the root cause for problems with interacting control loops
- hierarchical presentation of results from plant overview down to detailed analysis of single control loops
- integration of hardware and software within your control system infrastructure



Source: Matrikon

## Alarm Management

We analyze and evaluate the alarm system of your production plant based on international standards and best practices (e. g. EEMUA Guideline 191). We provide solutions for efficient alarm management – for alarms originating from various sources (e.g. from a DCS).



Source: Matrikon

### Your gain ...

- increased operator awareness through significantly reduced number of alarms
- increased productivity due to less unscheduled shutdowns
- faster reaction to plant upsets due to improved alarm analysis capabilities e. g. using KPI reports

Our experience with automation systems and our consistent alarm philosophy assure an undisturbed and safe operation of your production plants.

### Our approach

We utilize industry standard alarm management tools (e. g. from Matrikon). We provide support with the installation of alarm management software.

We structure the alarm management process in six consecutive steps:

- assessment of the as-is situation (top ten alarms etc.)
- definition of an “alarm philosophy” (alarm priorities, required operator interventions etc.)
- alarm rationalization (systematic reduction of alarms)
- state-based alarming (e. g. temporary alarm shelving)
- benchmarking and documentation
- continuous improvements

Not all steps are necessary in each case. We analyze your situation and recommend the most appropriate measures in terms of cost-benefit considerations.