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MAKING PLANTS
SMARTER AND SAFER

FALCONEER™ IV Suite

Process and Instrumentation Reliability

Automating the controls of the process is a critical step for both improving on-stream time while reducing operating costs. Online validation and incipient fault detection of process data would be essential to ensuring that instruments didn't lie when being relied on for automated process control. ***"We all know that instruments fail and they never send e-mails before they do,"*** an FMC engineer says[1].

FALCONEER™ IV Process Performance Monitoring System is a key tool for this critical step and provides real-time intelligent process performance monitoring on a high-level basis:

1. Provides up to 100% real-time diagnostic coverage of instrumentation, process, and equipment conditions
2. Validates the reliability of process instrumentation, equipment, and conditions;
3. Detects incipient failures, faults, or abnormal situations;
4. Helps maintain optimal operations using virtual statistical process control;
5. Provides and records results to meet ISO, PSM, and EPA documentation requirements.

Many maintenance and asset management initiatives are driving instrumentation self-diagnostics and equipment condition monitoring investments, both hardware and software. These solutions are inherently designed to perform at the lowest level, i.e. the individual sensor or equipment level. These include Hart Diagnostics, Foundation Fieldbus and Profibus, Smart Sensor Technology, and software such as Emerson's AMS. However, these solutions can be very expensive for processes with an existing installed base of instrumentation that does not have access to these new diagnostic technologies. There are also large gaps in these low-level diagnostic capabilities. The new diagnostic solutions only cover about a fifth to a third of potential faults, failures, or abnormal situations[2].

FALCONEER™ IV addresses these cost and capability gaps with its high level, process centered approach and design.

- Our validation & fault diagnostic technology is based on a combination of models that are already being used to design and operate the process, i.e. unimpeachable sources of plant knowledge.
- We couple this model-based approach with normal plant operations obtained from any control system data historian. This combination allows for detection of any and all deviations from normal, rather than only those deviations that have already been identified and built into the diagnostics. We don't have to "learn" or "train" like the other model-based approaches. It's all built into how our patent-pending diagnostic methodology works.

Compared to other approaches, ours is more fundamental with easily configurable and understandable equations and logic, according to FMC. A former Foxboro manager appreciates our approach as: ***being rigorous enough to identify the problems without being too complex or expensive, combined with being easy enough to configure and maintain.*** Basically, our approach only requires the existing process knowledge about normal operation (in the form of equations and models) and simple statistical analysis of normal operating data. Our program automatically generates additional diagnostic models, all possible single and multiple fault rules and virtual control charts. This feature greatly reduces the configuration and startup time and any on-going maintenance requirements, making this patent-pending technology essentially auto-generating and self-maintaining.

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[1] Chemical Processing, "Real-Time Sensor Validation Makes FMC Plant Smarter", Feb 2004
[2] www.emersonprocess.com