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MAKING PLANTS
SMARTER AND SAFER

FALCONEER™ IV PROCESS PERFORMANCE SOLUTION

KEY PERFORMANCE INDICATORS (KPIs) & "SOFT" or VIRTUAL SENSORS

One of FALCONEER™ IV's most powerful and versatile features is the ability to define and use Key Performance Indicators (KPIs) and "soft" or virtual sensors. Key Performance Indicators are quantifiable measurements, generally calculations or equations, which reflect the critical success factors of an organization. Manufacturing KPIs turn information collected through the production enterprise into actionable tasks and decisions for employees and management.

The concept of a "soft" sensor has been around for several years. Instruments, especially specialty instruments, can be expensive. If you have an equation or correlation that converts existing measurements into another process variable that is desired, then the result of that equation is a "soft" sensor. Both of these types of equations or models are considered Performance Equations in FALCONEER™ IV.

What is a Performance Equation?

In FALCONEER™ IV, performance equations are more powerful than ordinary KPI's or "soft" sensors. What makes them more powerful is that, ***before the values are used, the equations are validated.*** If any process measurement used in the equation has a bad value, a fault, or a failure occurring, then the Performance Equation is considered invalid. This means that any KPI or soft sensor or other application that uses the Performance Equation can have confidence in its value.

Where are Performance Equations used?

In FALCONEER™, Performance Equations can be used in both the Fault Analysis and Virtual SPC modules. In the Fault Analysis module, a Performance Equation can stand alone, be included in a model equation, or be in another Performance Equation. A Performance Equation is invalid if ANY of the sensors used to calculate its value have a bad value, fault, or failure. This situation will generate an alert or advisory.

A Performance Equation can also be monitored by the Virtual SPC module. Performance Equations can be treated as uncontrolled or pre-control variables. This module provides a very powerful, real-time tool to help monitor and maintain good operational performance and to guide optimization programs, such as Six Sigma.

What are some examples of Performance Equations?

There is almost no limit to what might be represented as a Performance Equation. Typical operational parameters that are monitored using KPI or Soft Sensor Performance Equations are:

- Heat and Mass Transfer Coefficients
- Extent of Reaction (or Conversion)
- Boiler, Pump, or Turbine Efficiency

Typical process parameters that are monitored using KPI or Soft Sensor Performance Equations are:

- Inventory (raw material, or product)
- Process Efficiency
- Total Energy Use or Cost (as a rate or cumulative)
- Total Cost (as a rate or cumulative)
- Profit (as a rate or cumulative)

There are, of course, many other potential uses for Performance Equations. If business decisions are currently being made from off-line calculations, FALCONEER™ IV can bring those calculations to you on-line in real-time.