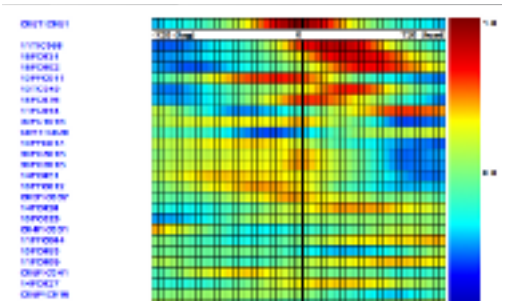
Find The Root Cause of Process Upsets

The Process Interaction Map finds the Root Cause of process upsets. The map:

Identifies the Root Cause of Upsets
Quantifies the Impact of Improvements
Solves Interacting Loop Problems
Provides In-depth Process Insight
Tune Over 60 Loops a Day

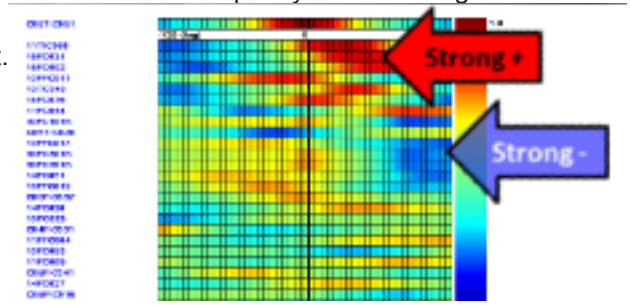


How the Interaction Map Works

The Process Interaction Map is a graphical display of the correlations between process variables. The strength of the correlation is shown by the strength of the color on the chart. Both positive (red) and negative (blue) correlations are shown.

Sort by strength of correlation, and you can immediately see which process variables have the strongest influence.

NewUnit operation assessments on Process Interaction Map. The Process Interaction Map will now show the correlations between loop Process Variables and Unit Operation Assessments. These are the OPC inputs you have assigned for a unit operation's energy cost, material cost, quality, reliability or throughput.



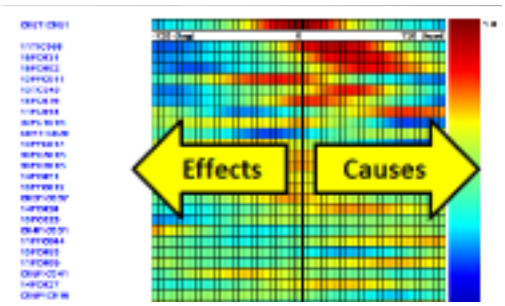
Find the Root Cause

Time-Shift Shows Cause and Effect

Process Interaction Map excels at finding the root cause of interaction problems. You can quickly identify root causes by looking for the strongest colors, furthest to the right.

Left and Right Shows Lag and Lead
On the Interaction Map, left and right represent the time axis. Strong colors on the left show likely "effects", because these variables lag behind the reference loop. Strong colors on the right are leading indicators, so these are likely causes.

The Interaction Map allows you to understand correlations between:



Control Loops
Valves
Disturbances
Process Conditions
Ambient Temperature
Don't waste time. Go straight to the root cause with
Process Interaction Maps.

Fix One, Solve Many

Quite often, the root cause is found upstream, often in the utilities area of the plant. When you identify the single root cause of the problem, you often stabilize many parts of the downstream process.

Quantify the Impact of Improvements

When you make an improvement to the process and controls, there is a “ripple effect” of benefits. Quite often, the major economic savings occurs downstream, away from the loop you tuned. To document the true value, you need to know where to look.

The Process Interaction Map makes it easy for you to identify affected control loops. Solving a level control problem might actual be reducing your energy costs! You just need to know where to look.

Solve Interacting Loop Problems

Some common types of interacting loops include:

Cascade Controls
Ratio Controls
Feedforward Controls
Recycle Streams
Heat Integration
Upstream or Downstream Process

Unless you know where to look, you can’t solve these problems. The Process Interaction Map points you in the right direction, so you always know which loops have the strongest interactions.

PlantTriage also includes the tools you need to solve interaction problems. With these tools, you can Tune Cascade Loops easily, and solve interaction problems.

Incredible Process Insights

Process engineers are often the most impressed with the Process Interaction Map. This is because it offers incredible insights into the performance of the process. You can answer questions like these:

Which process setpoints have an impact on finished product quality?
What is the effect of product mix on energy consumption?
When we change raw materials, how long before the finishing unit is affected?
Does the reactor temperature affect the product quality? By how much?
What is the greatest source of process variability?

Get the Big Picture with Interaction Hot Spots

Interaction Hot Spots graphically highlight interactions from across the plant. Using this tool, engineers can quickly find the root cause of process interactions. Upsets to quality, energy and shut downs are easily seen.

Interaction Hot Spots is also very useful as a tool for developing the scope of MPC projects.