



# Avoid Costly Batch Inconsistencies with Real-Time Process Information

*“Across the industry, we have found yield variations up to 30% from batch to batch and campaign to campaign.”*

**McKinsey&Company  
Outpacing Change  
in Pharma Operations**

## What if ...

- You could get early warnings of upset conditions?
- Your operators could react and make corrections to batches in progress?
- You could identify the exact source of problems?
- You could decrease the amount of time and money spent understanding why bad batches went bad?

The goal of every batch process is to safely produce the maximum yield that meets product quality specifications in the shortest amount of time. Not meeting any part of this goal can result in increased costs. Today, batch operations take place in complex, highly correlated and dynamic environments. Process holdups, access to lab data, feedstock variations, unsteady operations, data organization and concurrent batches all play into that complexity. Your operators are challenged to correlate all these variables in processes they may not fully understand. These factors increase the risks of producing a poor quality batch.

Increased competition pressures you to increase yield at a quicker pace. At the same time, budget constraints drive you to increase production efficiency while maintaining product quality—often with reduced operations personnel. In short, you have to do more with less. And in today’s manufacturing environment, even with the most experienced staff and sophisticated devices, you can’t always detect faults in the process until product quality is already compromised. Late detection can mean costly rework or, worse yet, a lost batch.

## PROCESS VARIATIONS RESULT IN INCONSISTENT PRODUCT YIELD

Variations in your product yield are not only frustrating, they’re costly. Every batch of sub-optimal yield means less marketable product for the same investment of resources. But in order to squeeze maximum yield out of your process, you must know all the variables that might be affecting yield. Raw materials from a new supplier, variations in equipment performance on a different production unit, different procedures from one operator to the next can cause variations in product quality and yield. But isolating and making adjustments for changing variables can be like trying to solve a mystery.

## UNMET PRODUCTION CAPACITY MEANS UNFILLED CUSTOMER ORDERS

The complexity of managing multiple concurrent batches can slow your processes and result in unmet production capacity and inability to meet customer demands. With resources stretched to the limit, you’ve got to streamline to do more with less. But monitoring multiple batches and relying on data from multiple sources can overload your operators and impede those critical real-time decisions and adjustments they have to make to ensure assets and batch cycle time are used to full capacity.

## PRODUCT DISCARD OR RE-WORK EQUALS LOST REVENUE

Producing an out-of-spec batch can be a complete surprise, because no problems were detected during the process. In other instances, your operators can’t react fast enough when process parameters were out of line, or they can’t determine the root cause of the problem and make the necessary adjustment. The causes can be multiple and vary, but each time you have to discard or re-work a batch, it impacts your bottom line.

## BATCH ANALYTICS

### PREDICT BATCH QUALITY WHILE IN PROCESS

Emerson's Batch Analytics gives you real-time prediction of end-of-batch product quality through multi-variate analysis. This predictive information serves as a window to your process, enabling operators to make adjustments as needed to preserve batch quality. Predictability can save valuable process and equipment time for improved capacity.

### REAL-TIME FAULT DETECTION MEANS ACTIONABLE CORRECTION

Real-time fault detection allows your operators to receive probable reasons for deviation. This allows operators to focus their attention. A streamlined view indicates when a batch has a problem, relieving operators of the need to monitor all the data—all the time. This timely, focused, actionable information can mean the difference between on-spec and off-spec product, while maximizing process yield.

### WEB-BASED DATA FOR REAL-TIME PROCESS ANALYSIS & ADJUSTMENTS

The easy-to-use web-based interface in Batch Analytics allows your operators to share data anytime, anywhere, with individuals and groups for real-time analysis and action. The effect can be more eyes on your process and data, better decision-making, faster adjustment, and reduced risk of batch re-work or loss.

### REAL-TIME CORRELATED MODELS HELP IMPROVE YIELD

Batch Analytics makes complex model-building easy by stepping you through the process. You get a thorough view of your entire batch process through analysis of each independent stage, automatically integrating multiple models to analyze the batch. Visibility of real-time, correlated data helps your operations personnel understand process interactions and their impacts on end-of-batch product quality. This understanding enables your operators to make better decisions, and focus on the parameters that impact the process most.



*Batch Analytics' web-based interface makes it easy for the operator to see immediately where a problem is occurring. In the example shown, a variable is trending below the level indicated by the model.*

**“With Batch Analytics, we’re now able to focus on right-first-time and produce high quality product right out of the gate without any need for blending in the back end.”**

**Senior Process Engineer  
North American  
Brewing Company**

For more information, contact your local sales office or visit: [www.EmersonProcess.com/DeltaV](http://www.EmersonProcess.com/DeltaV)

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