

PROCESS AUTOMATION

ABB Ability™ BatchInsight

Detect and correct anomalies early in your batch processes



Repeatable quality is essential to lower costs and maximize profitability for process operations. Petrochemical, chemical and pharmaceutical batch management systems are needed to ensure that consistent quality is maintained throughout batch processes.

Introduction

ABB Ability™ BatchInsight identifies and monitors anomalies in the batch process. It helps process specialists and plant operators detect and resolve abnormalities by conducting batch-level analysis.

Using time-level analysis, it recognizes the time of occurrence of the deviation and isolates the process variables that contributed to the deviation, enabling effective and timely corrective action.

BatchInsight can also be used with semi-batch processes, such as those commonly found in industries with repeatable stages and downtime events (eg, drying and grinding processes).

Challenges

- Multi-product plants need to increase speed to market without diminishing their quality and productivity requirements
- Highly automated process can be completed with fewer personnel
- Demographical changes require knowledge transfer to new workers or producers must migrate to a more highly automated system
- Precision analysis and visualization for enhanced production efficiency must be based on large amounts of historical batch and process data
- Root cause analysis is vital for identifying abnormal batches with multiple influencing variables
- Batch processes are complex to monitor due to non-stationary process behavior
- 80% of work effort and hours expended by process experts are consumed by data handling - that leaves only 20% for the most valuable batch analysis tasks, such as root cause analysis, identifying corrective measures and recipespecific batch monitoring



01

- 01 Root cause analysis of quantity deviations: compares multiple batches to identify abnormalities in batch process
- 02 Cycle time reduction: Compares multiple batches to identify delayed operations and abnormal idle time

ABB Ability™ BatchInsight

BatchInsight combines specialized batch analysis and monitoring applications into one tool, including:

- BatchInsight Server (data hub)– consolidates all data into one repository
 - Provides intelligent data handling for storage and processing of both real-time and historical information
 - Compatible to DCS systems and MES historians using common data transferring protocols
 - Collects data from different sources (eg, process, batch and alarm and event data)
- Batch Analysis – Provides batch-level and timelevel comparison and root cause analysis, such as:
 - Process variable view: Creates Batch-to-Batch overlay plot of process variable trends for selected batches and recipe procedurals
 - Duration view: Creates Batch-to-Batch comparison plot of batch procedural durations
 - Gantt view: Creates Batch-to-Batch comparison plot in Gantt chart
 - Root cause analysis view: Benchmarking batches against given batch models at batch level, variable contribution level and time level
- Batch Modeling – Creates a template to ensure batch quality, including:
 - Batch model building and verification using multivariate algorithms
 - Batch model management systems
- Batch Monitoring – Creates online monitoring templates using the model created in Batch Modeling to enable real-time monitoring, using:
 - Single process variable monitor
 - Multivariate monitor
 - Integration into DCS system using HTMLS applet



02

- ABB Advanced Services – Data handling, analysis and monitoring support from ABB expert engineers

Benefits

- Increases production efficiency and productivity
- Certifies that batch production meets established specifications
- Increases on-spec throughput
- Provides Batch-to-Batch comparisons to confirm quality
- Supports process experts with intelligent visualization to analyze and optimize their process
- Enables operational excellence in batch production through:
 - Root cause analysis of quality deviations
 - Reduction of unplanned downtime
 - Batch monitoring
 - Cycle time reduction
 - Predicting the most probable evolution of a batch profile
- Helps plant operators be more responsive to unexpected issues and provide mitigation suggestions. Helps answer critical production questions, such as:
 - Which batches are faulty?
 - Is this a quality issue or a cycle time issue?
 - When did the error occur?
 - What are the best practices to ensure product quality?
- Saves time and lowers costs of solution installation and maintenance through HTML5-based web client technology

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