Batch Digester Fingerprint
Identify opportunities for improvement in the batch digester process

The ABB Batch Digester Fingerprint identifies and documents opportunities for process improvements in the batch digester process. Analysis of pulp variability, cook response, chemical loading and steam flow stability are used to establish performance benchmarks. The resulting diagnostic report provides improvement recommendations and associated estimated return on investment.

Benefits
– Facilitates management decision process by focusing on high impact opportunities for improvement
– Provides clear path to quickly close the performance gaps by using the proposed improvement plan
– Provides a solid foundation for continuous improvement based on data

Features
– Access to ABB optimization experts
– Batch Digester performance benchmarking
– Detailed ROI-based improvement plan
– Clear communications during data collection and of diagnosis activities

The ABB Batch Digester Fingerprint is a process diagnostic service for batch digester optimization. This diagnosis is a platform-independent, non-invasive service that can be applied to an existing batch digester process where improved quality and productivity are desired.

The fingerprint includes executing a series of specialized diagnostic and benchmarking methodologies for the batch digester process to identify barriers that hamper stable and productive digester performance. The analysis generates both a performance benchmark and an improvement plan for enhancing the batch digester process performance and improving profitability.

Batch digester performance indicators
The fingerprint involves comprehensive testing and analysis designed to measure four key performance indicators (see Figure 1). These indicators are used to assess overall and individual digester performance and identify potential areas for improvement.

– Pulp Variability
– Cook Response
– Chemical Loading
– Steam Flow Stability

Batch digester analysis
Each performance indicator is made up of a series of indices derived from repeated testing of individual digesters and species. The resulting index is used to evaluate the performance level of different aspects of the batch digester operation, including but not limited to:
– Kappa Variability and H-factor Biasing
– Temperature, Steam Flow, Pressure and Relief response and repeatability
– Liquor Strength, Liquor Target Management and Charging accuracy
– Steam Quantity and Variability

The performance indicators are defined by specific tests and data analysis associated with the performance indicator (see Figure 2).

The complete fingerprinting process involves performing multiple levels of testing and analysis. The process requires the collection of digester Blow Report data, digester Trend data, main steam flow(s) Trends, setup parameters, kappa values and white/black liquor strength values. On line kappa measurement or extensive kappa lab testing is required. Analysis and recommendations are based on this information.
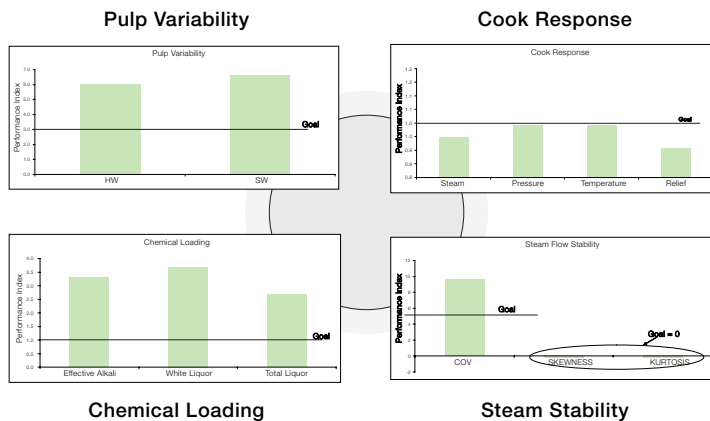
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Figure 1: Performance indicators

Figure 2: Critical digester components

Once ABB performs the fingerprint, the steps to optimize the process are identified. The implementation plan is developed using the fingerprint information.

Reporting

An Executive Report and a Technical Report are provided to disclose the findings and recommendations of the Batch Digester diagnosis.

– **Technical Report** provides supporting data collected during the fingerprinting process.
– **Executive Report** provides benchmark results, summary of findings, financial impact of recommendations, and an actionable improvement plan, based on the batch digester diagnosis.

Improvement plan

The improvement plan defines how to resolve the performance related issues and steps to take to improve pulp variability, cook response, chemical loading and steam flow stability.

In addition, the associated financial impact for each recommendation is provided.

Based upon the findings, recommendations may include, but are not limited to, management of H-factor biasing, transmitter recalibration, scheduling modifications, updating operating procedures, and adding control logic.

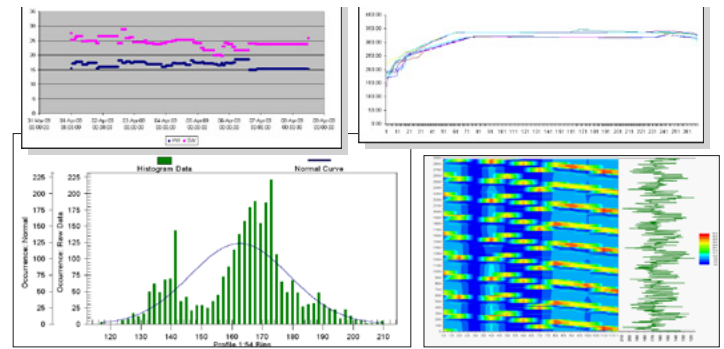| Delivery Schedule |
| --- |
| Preliminary |
| Project introduction meeting |
| Setup and verify data collection |
| Collect 5 to 10 digester cycles |
| Collect hardwood and pine grades |
| Analysis |
| Perform detailed data analysis |
| Identify kappa variability and digester dependent characteristics (H-factor bias) |
| Identify profile repeatability for temperature, steam, pressure and relief |
| Verify liquor quality and repeatability |
| Identify liquor charging accuracy (liquor/wood and alkali/wood ratios) |
| Evaluate impact on steam usage (quantity and variability) |
| Complete ROI analysis based on recommendations |

Reporting
Create Executive and Technical reports
Review reports with the customer

The Batch Digester Fingerprint Service is the first step in achieving and sustaining higher performance levels. ABB offers the following services to complete the continuous improvement cycle.

Other ABB Services
Process Performance Implementation Service

ABB offers this service to implement the improvement plan outlined in the Batch Digester Fingerprint report. An ABB Utilization Engineer, experienced in pulp and paper controls and process improvement, is assigned to lead the improvement activities.

Process Performance Sustaining Service

Once identified process improvements are achieved, sustaining services are available to maintain optimal performance. These may include annual/seasonal fingerprints and implementation services, coupled with a plan to monitor performance and provide site personnel with timely recommendations to maintain improved performance levels.

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