
SeeQ
conneqt
PERFORMANCE OPTIMIZATION TRACK

Process Cost Curve Visualization

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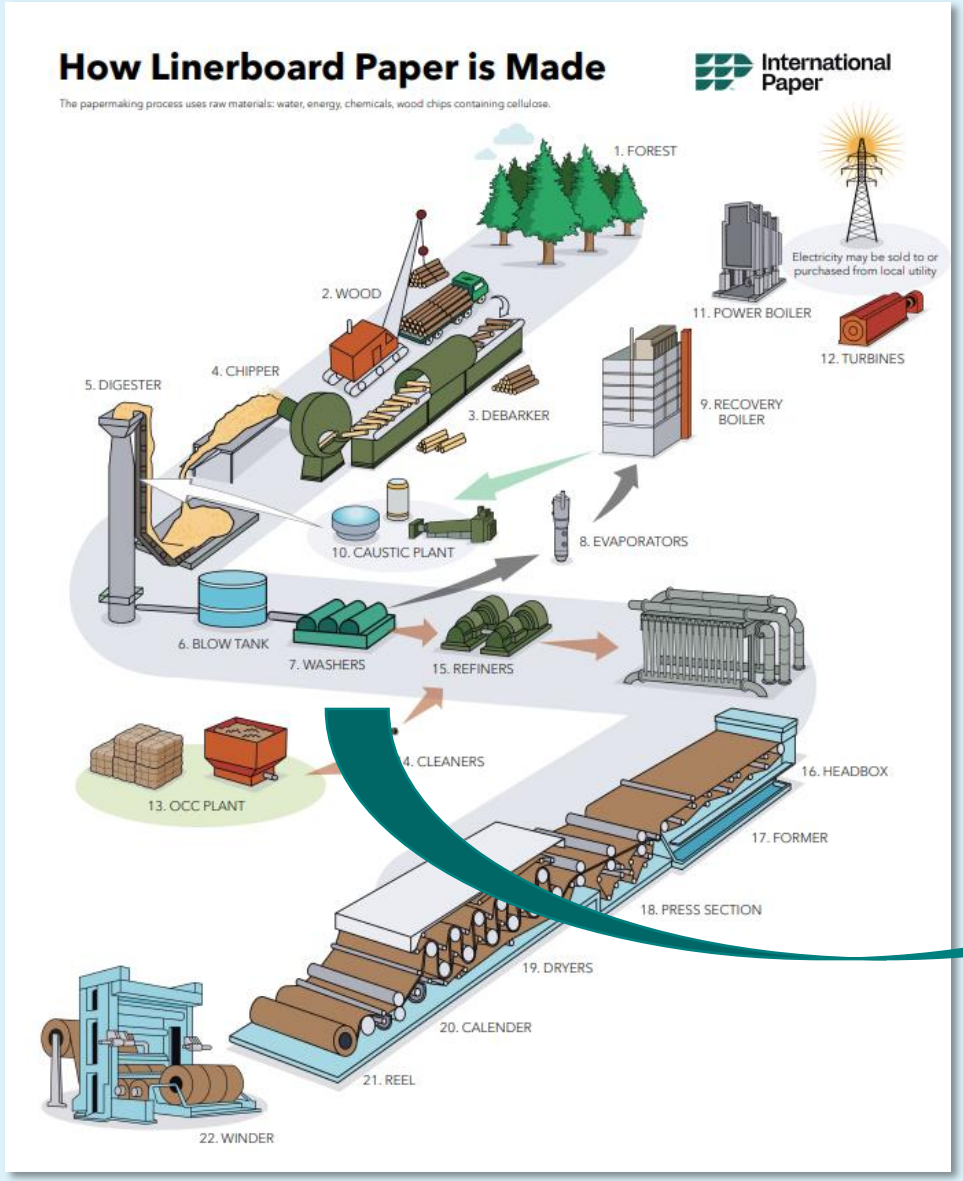
International Paper

For more than 125 years, International Paper has been a catalyst in the global economy. We make essential products people depend on every day — from sustainable packaging to absorbent pulp for personal care and other products.

Building on our strong foundation, we're here for what's now and we're creating what's next.

Source: International Paper – Corporate Communications

Manufacturing Process



Source: International Paper – Corporate Communications

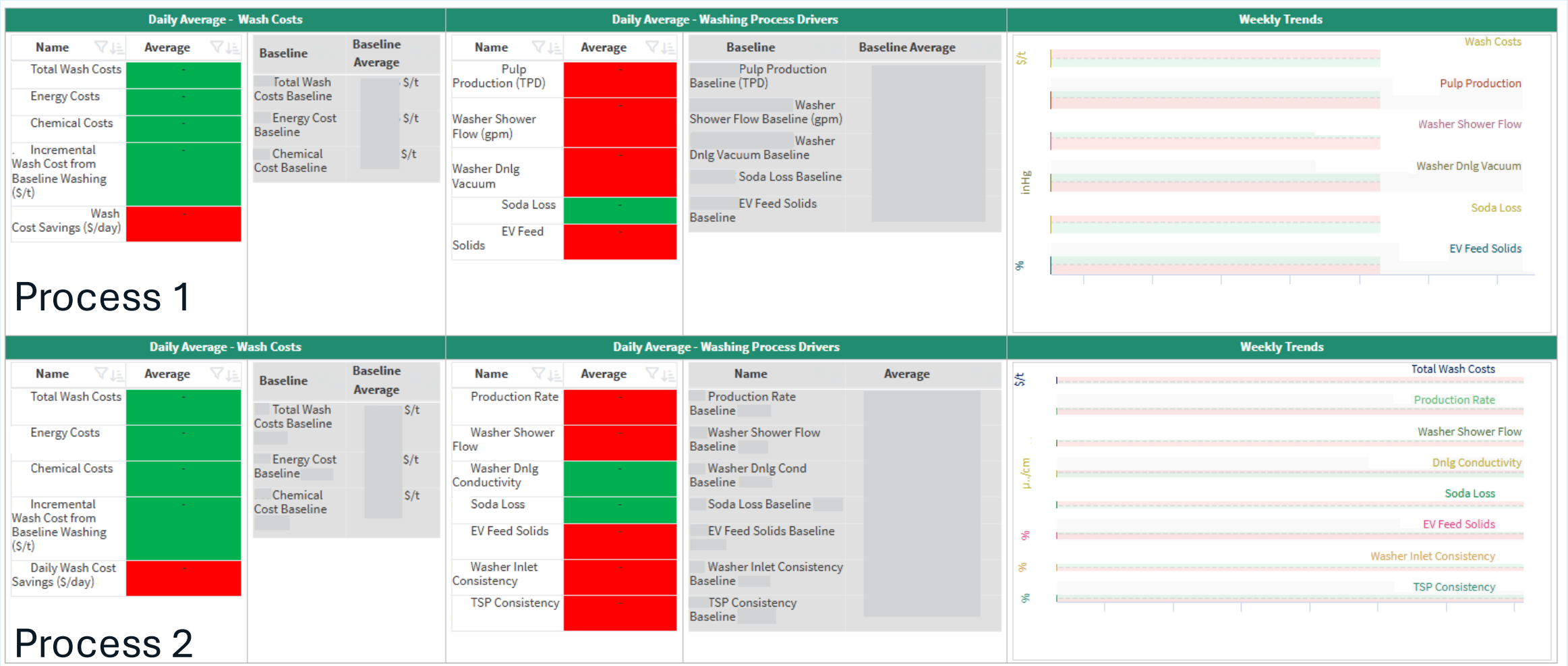
Problem Statement

Every few years, our production facilities undergo internal audits that provide recommendations for improving processes by analyzing historical data and expenses.

Mills would need to wait for an audit cycle to assess previous performance against standard costs.

What if we could gain insights into the connections between our monthly expenses and ongoing processes in real time?

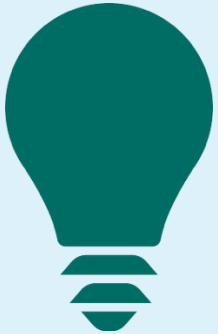
Daily Washing Costs Dashboard



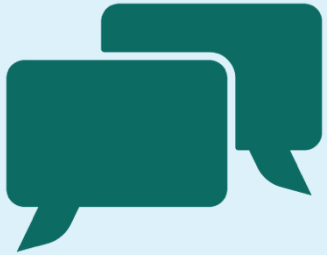
Goal

The purpose of the wash cost curve was to establish a real-time washing cost visualization that would allow the mill to evaluate the effects of pulp washing within the fiber and liquor cycle.

Dedicated Cross Functional Team



Brainstorming Sessions

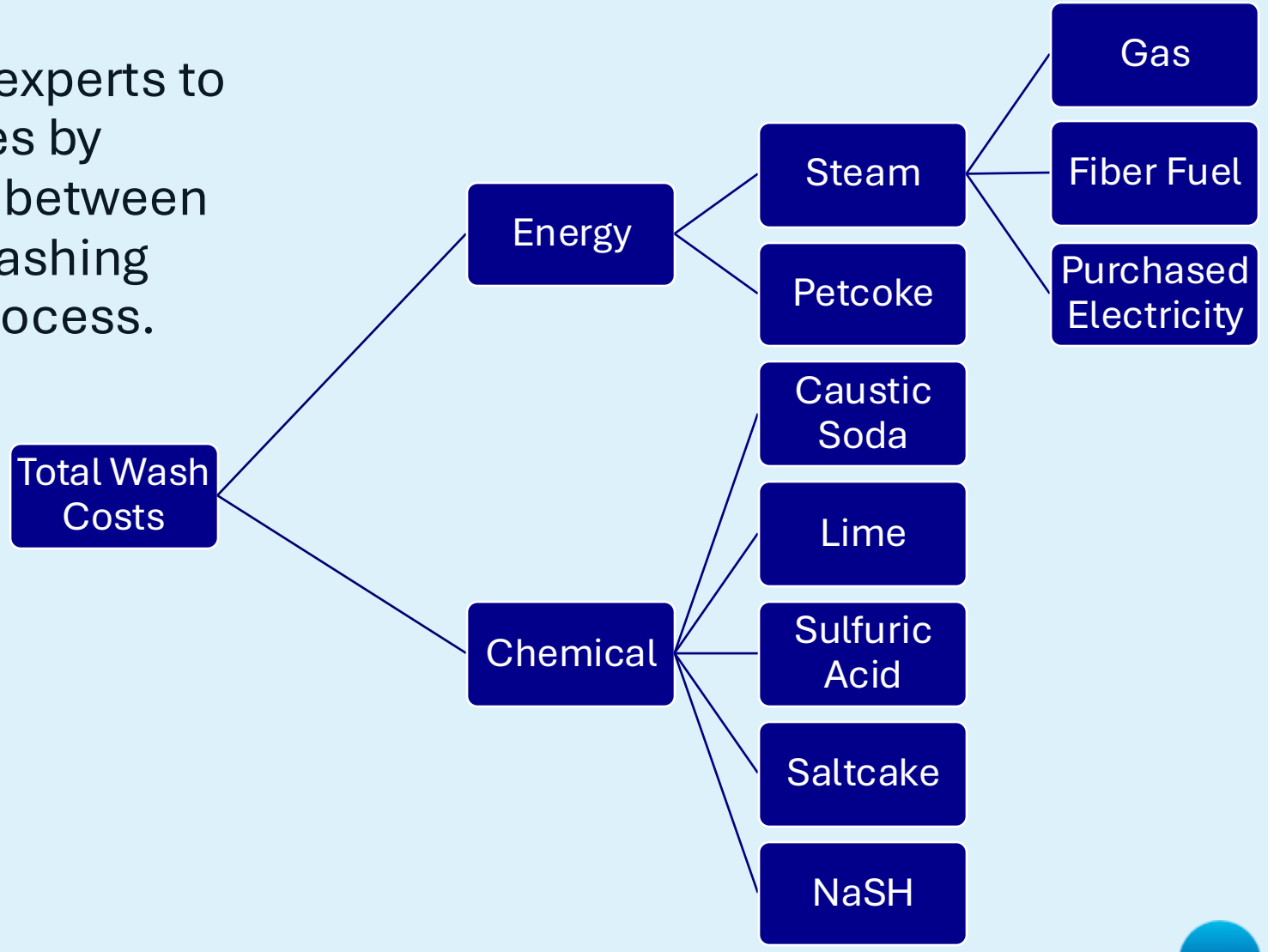


Customer Ideation Sessions

Sustainable Innovation

Development – Data Acquisition

Collaborated with subject matter experts to develop real-time wash cost curves by utilizing established relationships between process raw materials and pulp washing within the brown stock washing process.

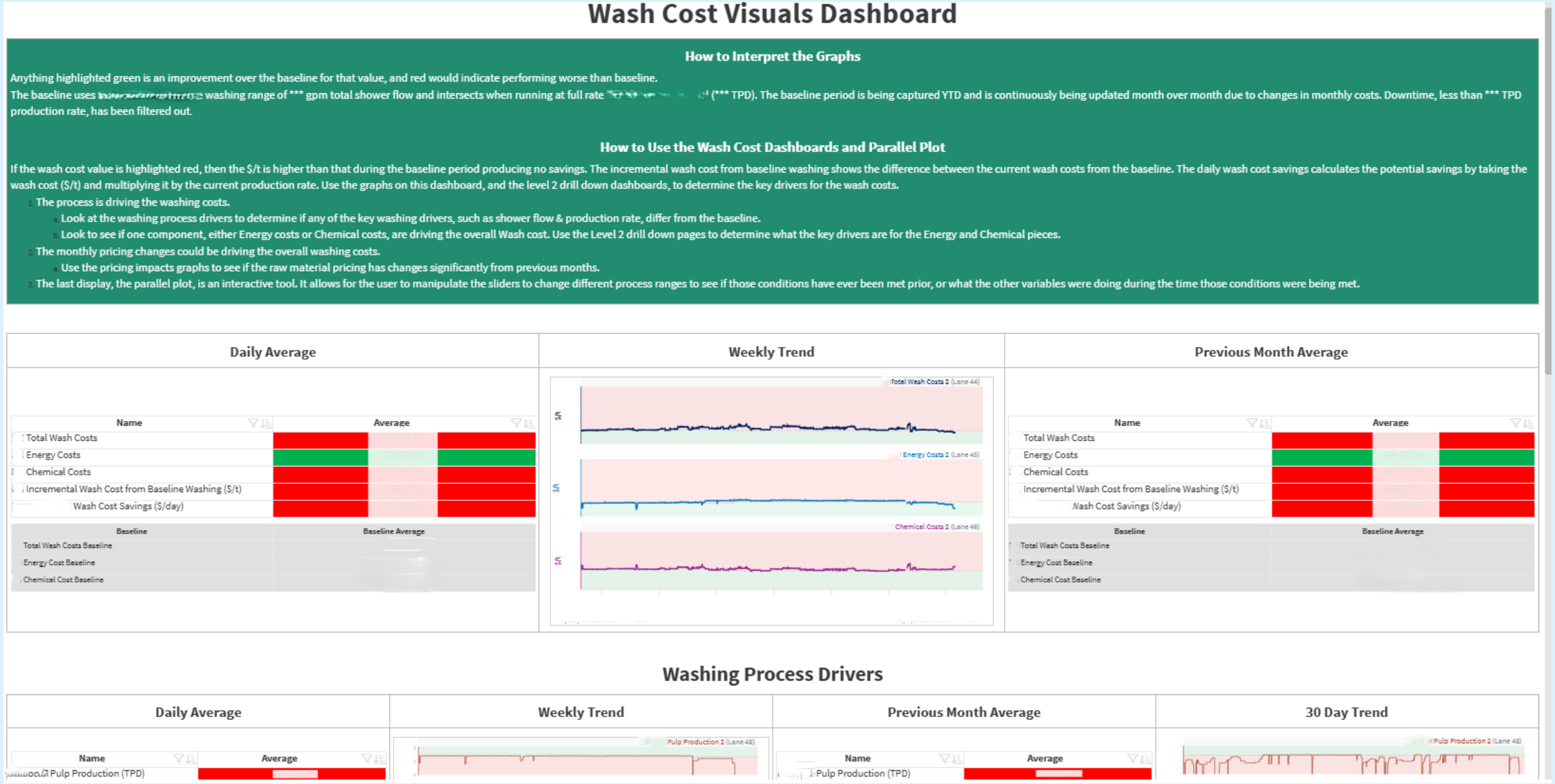


Development

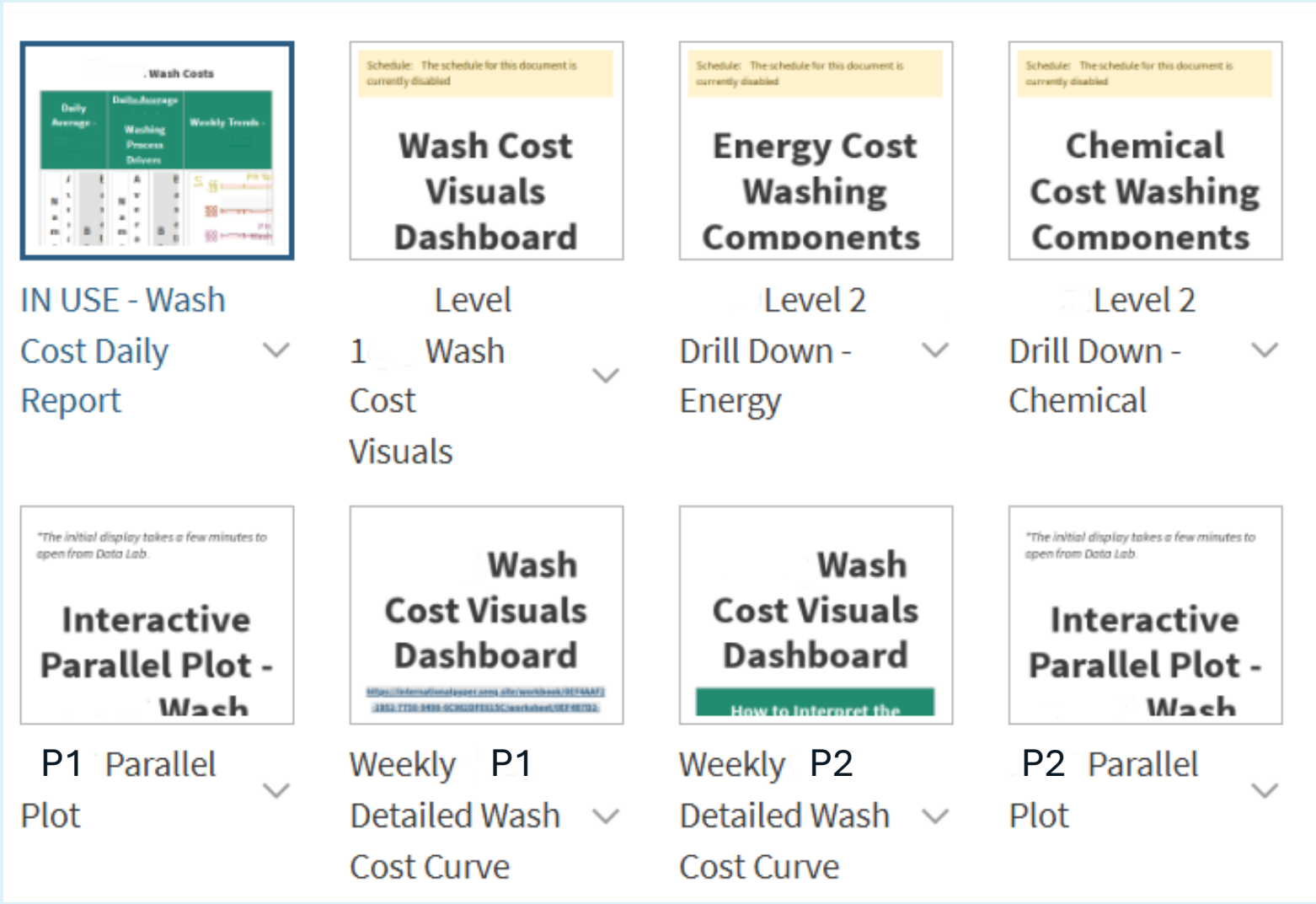
- Created continuous indicators to monitor the usage and costs of raw materials
- Used the data on raw material consumption and prices to calculate overall energy and chemical washing expenses ($/t)
- Formulated indicators for assessing metrics based on standard washing conditions
- Set up signals to evaluate the variance between present washing costs and the baseline
- Generated daily savings in washing expenses ($/day)

Name	Average
Total Wash Costs	-
Energy Costs	-
Chemical Costs	-
Incremental Wash Cost from Baseline Washing ($/t)	-
Wash Cost Savings ($/day)	-

Visualization

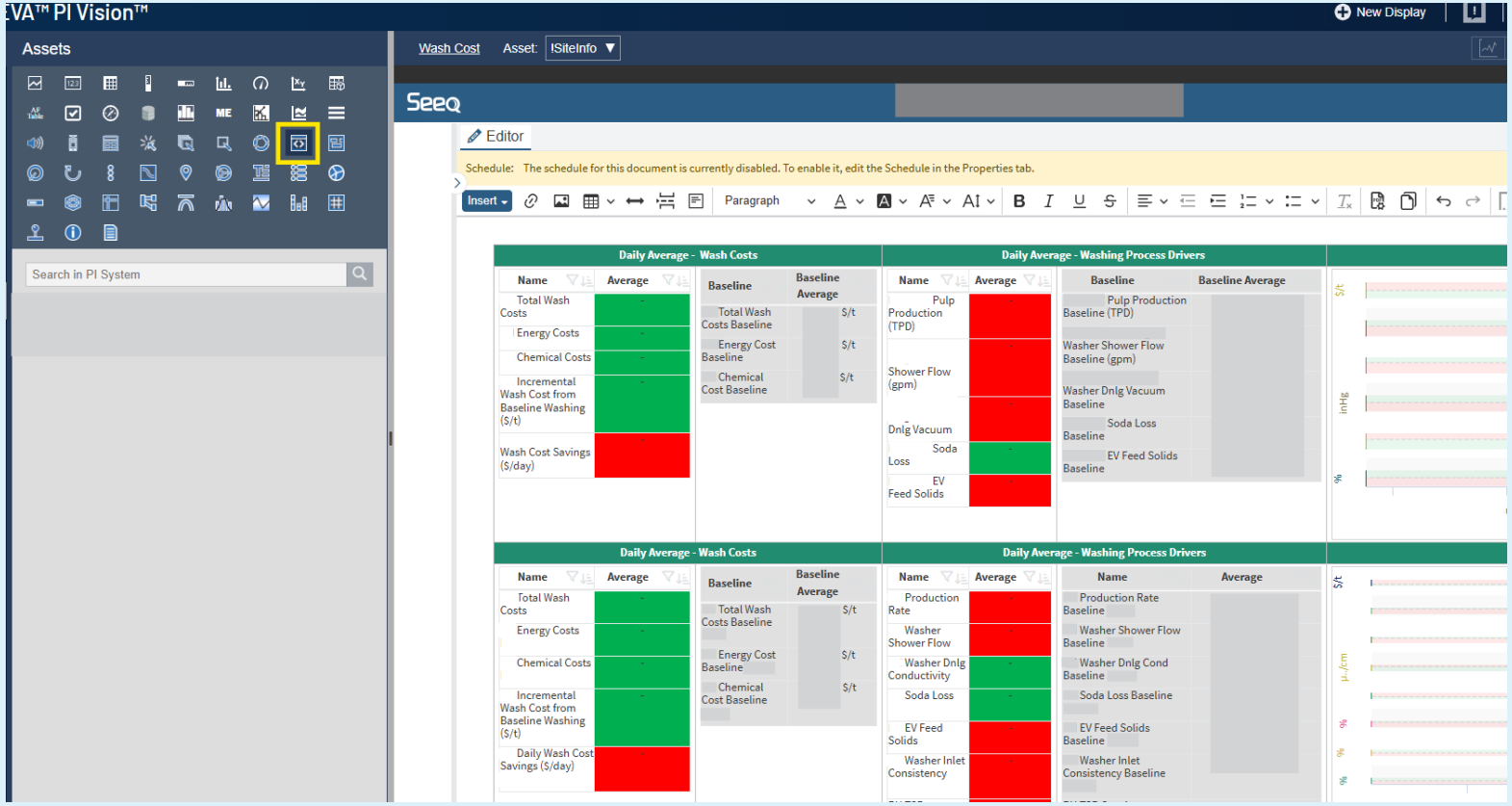


Visualization



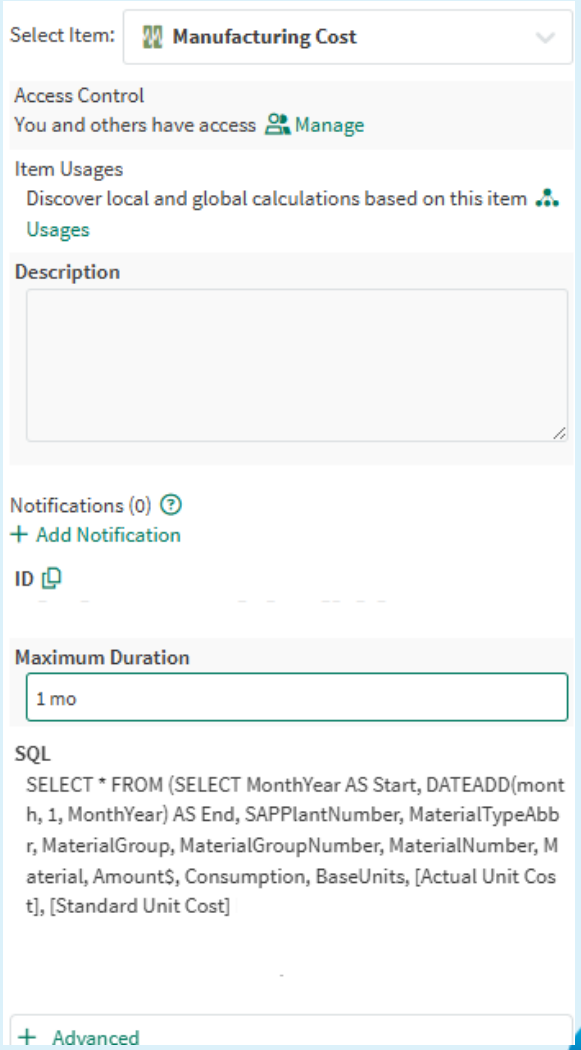
Deployment

Alongside the auto-updating and scheduling features in Seeq that enable the automatic sharing of daily reports, the Seeq Organizer can be accessed in PI Vision through the Werusys weruEmbedder.



Ongoing Enhancement

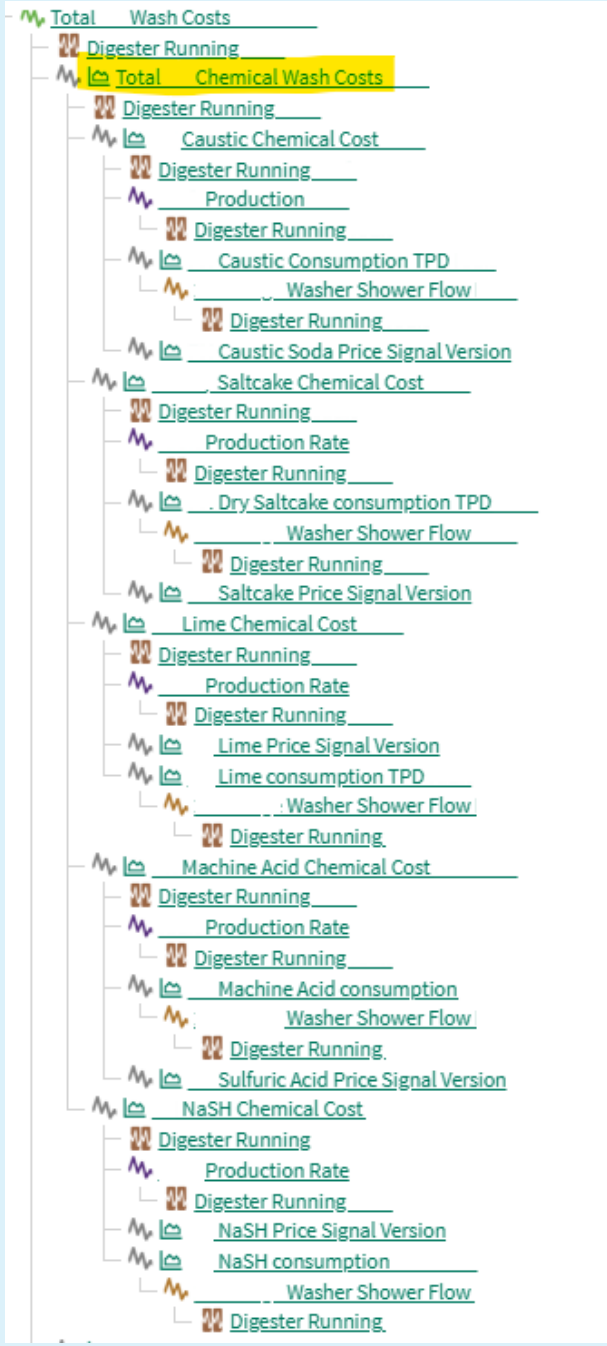
A SQL table that holds the monthly cost data from SAP was imported into Seeq, completely automating the reporting process.



Seeq Utilization

Seeq Features Used:

- Workbench
  - Conditions and capsules
  - Formula
  - Scorecard metrics
  - AI assistant
- Data Lab
  - Asset tree creation
  - Parallel plot
  - SPy, ipyvuetify, and plotly
- Organizer
  - Auto-updating reports
  - Seeq/IOTA content connector
- Impact Reporting



Learnings

CHALLENGE

Visualization complexity and usability

SOLUTION

Create tailored visualizations for different stakeholders that offer in-depth data with drill-down capabilities and straightforward dashboards. Continuously enhance the interface based on user feedback and testing.

RESULTS

Dashboards that enhance clarity and organization prevent user overwhelm, enabling faster and more accurate decision-making by making trends and cost factors easily identifiable.

Execution Summary

- Several models were simulated employing recognized external modeling methods.
- Calculations were conducted using the Seeq workbench.
- A preliminary prototype was developed in Data Lab.
- Feedback sessions were organized to collect input from end users.
- A Seeq organizer was created to improve user functionalities.
- The Seeq organizer was incorporated into PI Vision using the Werusys weruEmbedder.
- Auto-updating reports were enabled for the Seeq organizer.
- Links to SAP cost data were established.

Impact

Achieved a **64% reduction in washing costs** ($/t) in comparison to the costs from six months ago, following the implementation of dashboards.

What's Next

Plans include incorporating additional operational conditions from the pulp mill into the model and calculations.

There are also plans to expand usage to other facilities, with the system currently operational at two mills and applicable to other processes.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THANK YOU!