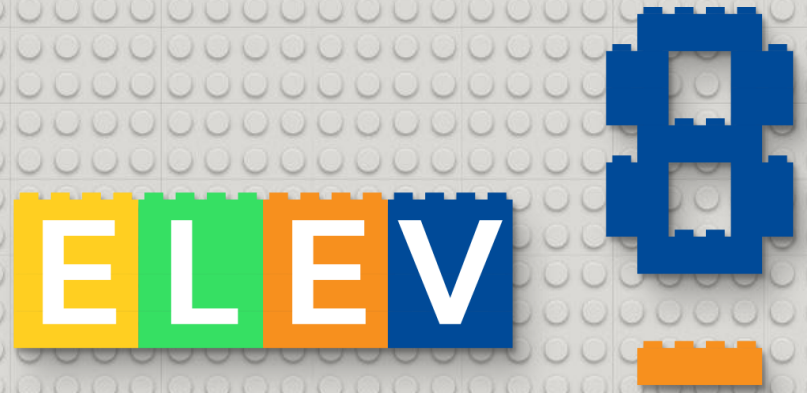
ELEV 8

BUILDING YOUR DIGITAL INFRASTRUCTURE



ENABLE

BUILD

EMPOWER

Digital Infrastructure: Information Management with Flow

Take Your Analytics To The Next Level

FLOW SOFTWARE

A STRATEGY FOR INFORMATION MANAGEMENT IS LACKING ACROSS MOST MANUFACTURING AND INDUSTRY

Data Management

Foundational step of gathering and storing raw data from across the operation.

- *Focused on Collecting and Storing raw data*

Information Management

Transforming collected raw data into actionable information.

- *Data Integration, Processing & Analysis, Contextualization, Information Dissemination, and Decision Support*

Flow Simplifies Information Management Using Three Key Components

INFORMATION MODELING

An information model defines the key data an organization focuses on and establishes governance for how that data is created, managed, and used.

The model contains the rules for how data is transformed into useful information and then distributed.

Flow Simplifies Information Management Using Three Key Components

INFORMATION MODELING

INTELLIGENT EXECUTION ENGINES

Specifically built for manufacturing environments, Flow’s execution engines centralize data processing, real-time notifications, and automate data flows, executing the rules defined in the Flow Information Model.

Flow Simplifies Information Management Using Three Key Components

INFORMATION MODELING

INTELLIGENT EXECUTION ENGINES

UNIVERSAL INFORMATION ACCESS

Flow serves as an information hub, offering comprehensive dashboards and reports that garner user trust.

The REST API provides a single access point for all the entire information model – calculation results, metadata, and the raw data stored in the underlying databases.

What Value Is Data Without Contextualization?

▲ 87,290

▲ 37.456

Inherit Minimal Context at the Edge

Real Time
Gateway

▲ 87,290 GAW_78730_FQ.PV

▲ 37.456 austin\line_7\filler_87\power_meter30

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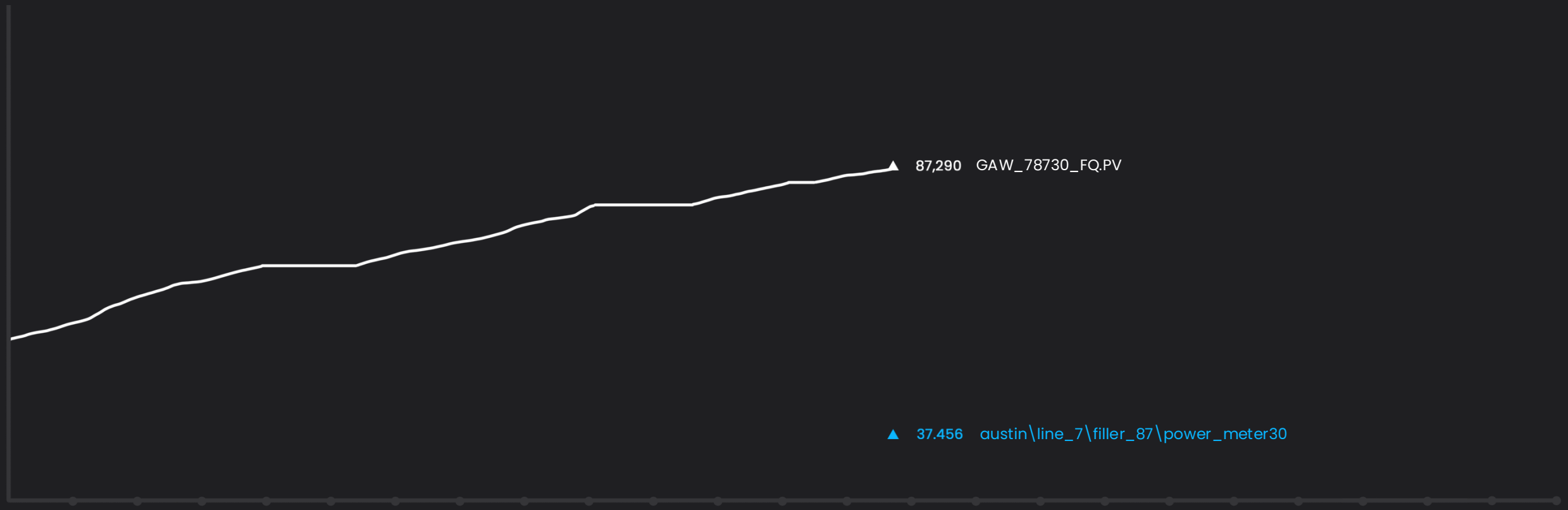
We Need More than Just Real Time Data

Real Time Gateway

Process Historian



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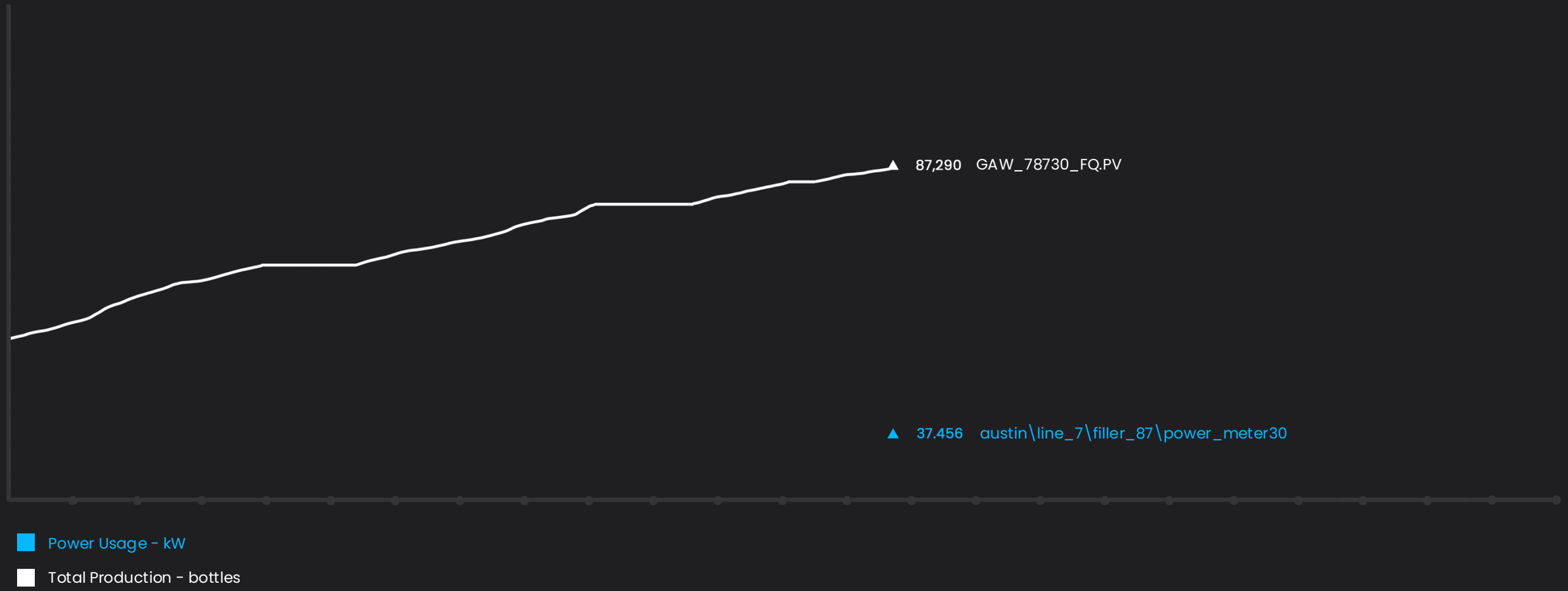
Abstract a Common Information Model

Real Time Gateway

Process Historian



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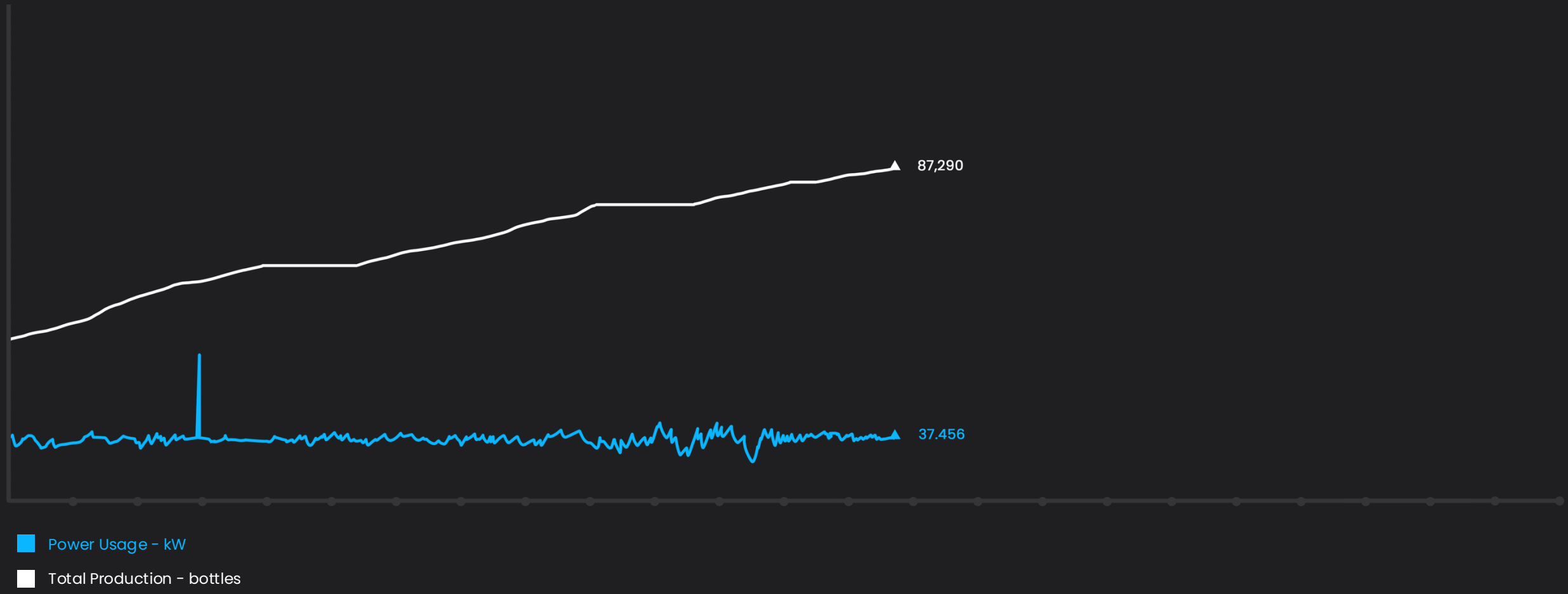
Add History for Real Time Sources

Real Time Gateway

Process Historian



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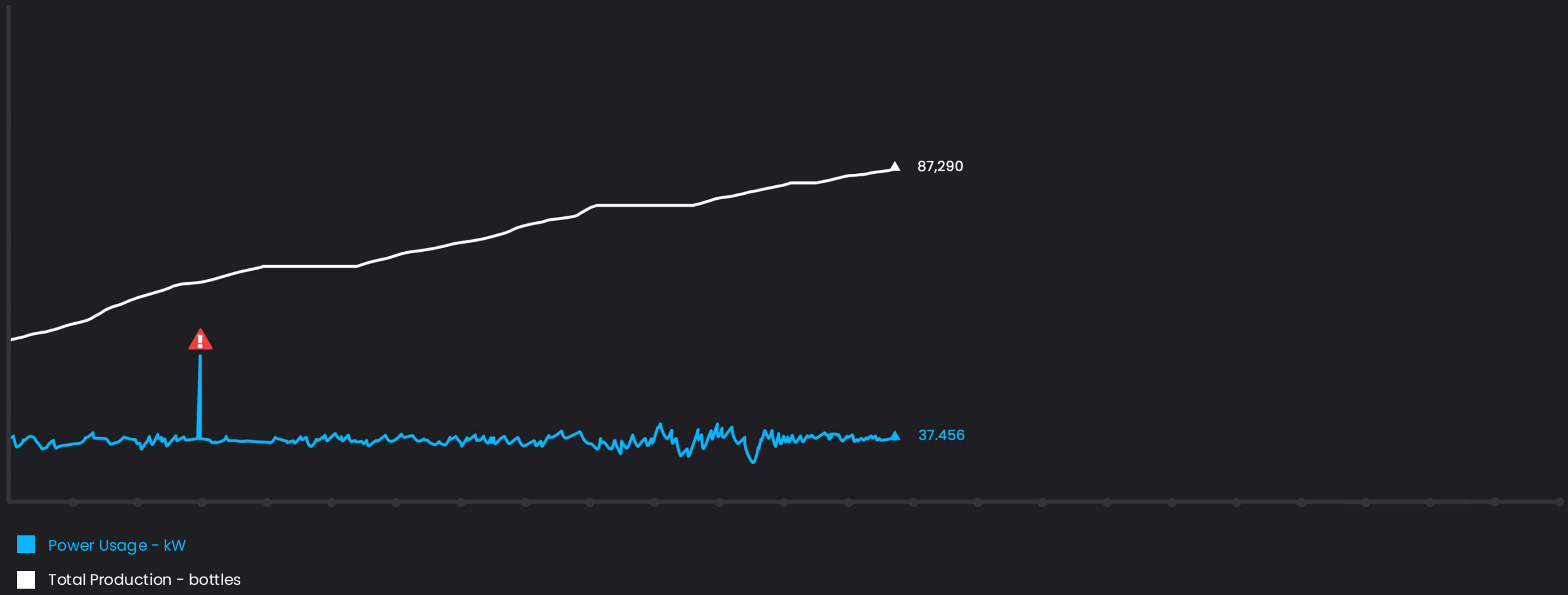
Provide Data Cleansing

Real Time Gateway

Process Historian

Flow Calc Engine



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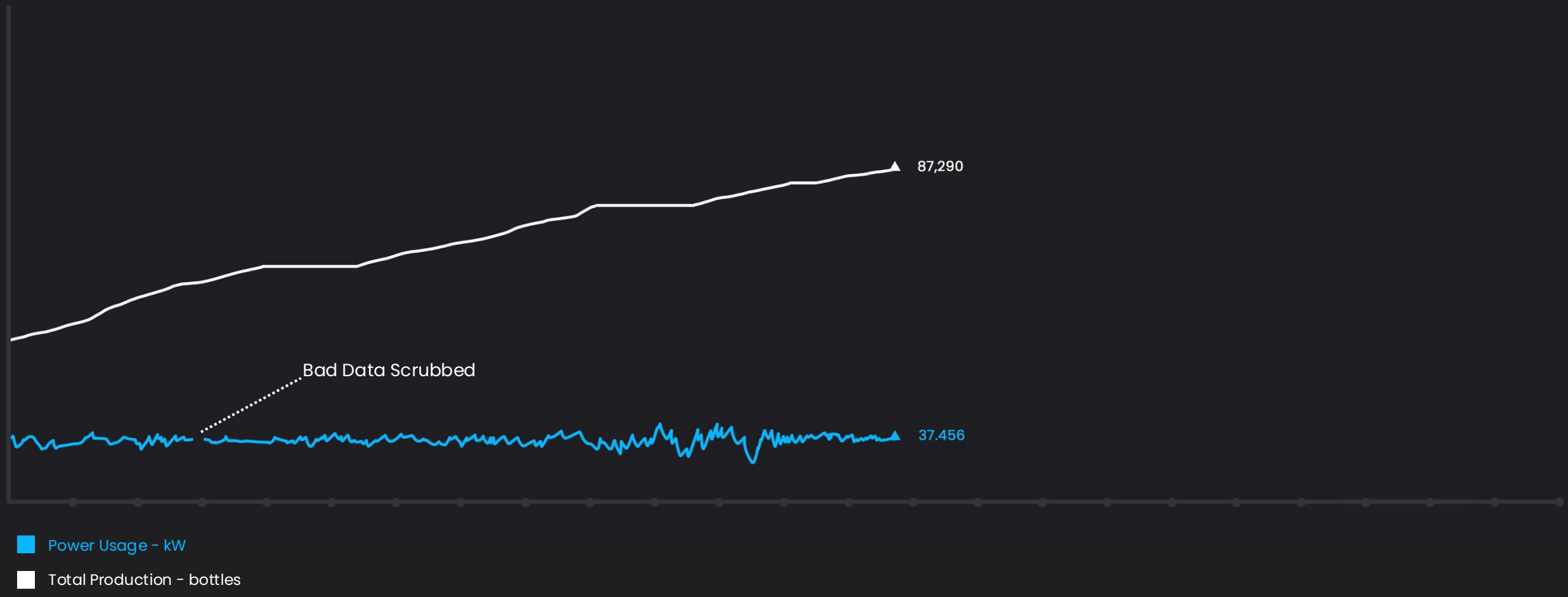
Provide Data Cleansing

Real Time Gateway

Process Historian

Flow Calc Engine



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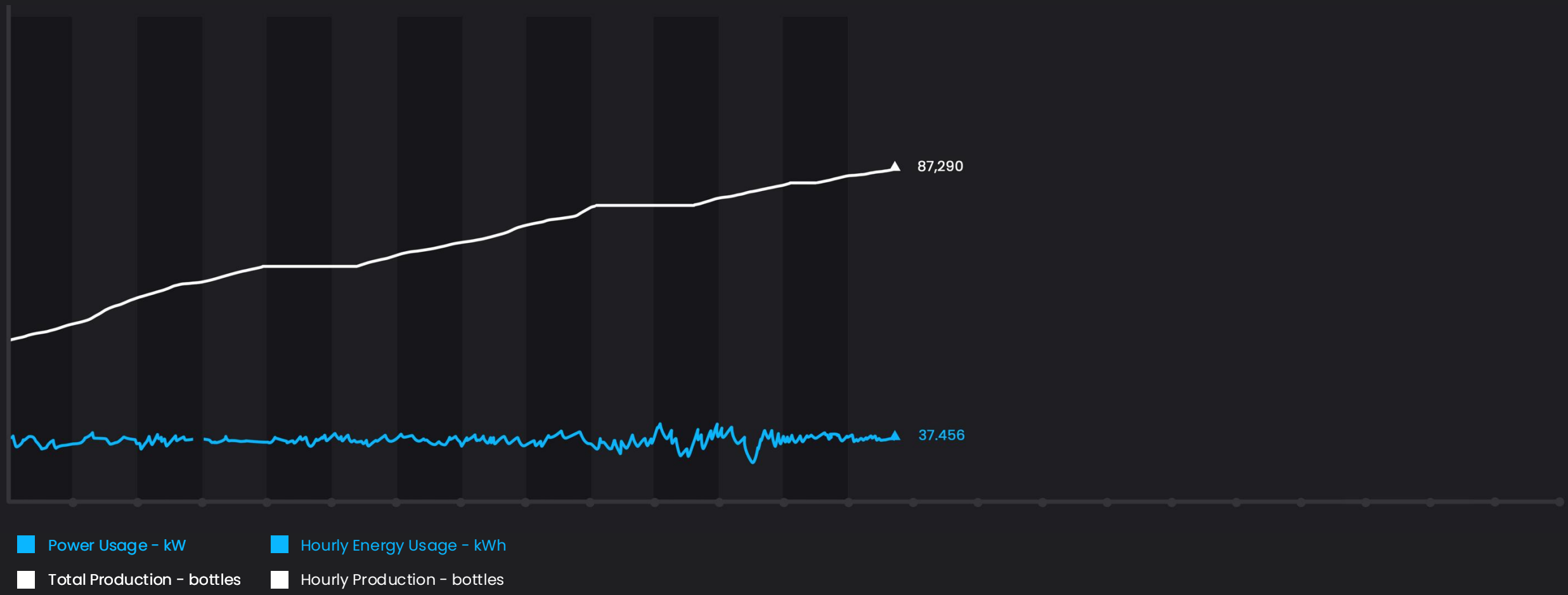
Aggregate KPIs Based on Time Interval

Real Time Gateway

Process Historian

Flow Calc Engine



Power Usage - kW

Hourly Energy Usage - kWh

Total Production - bottles

Hourly Production - bottles

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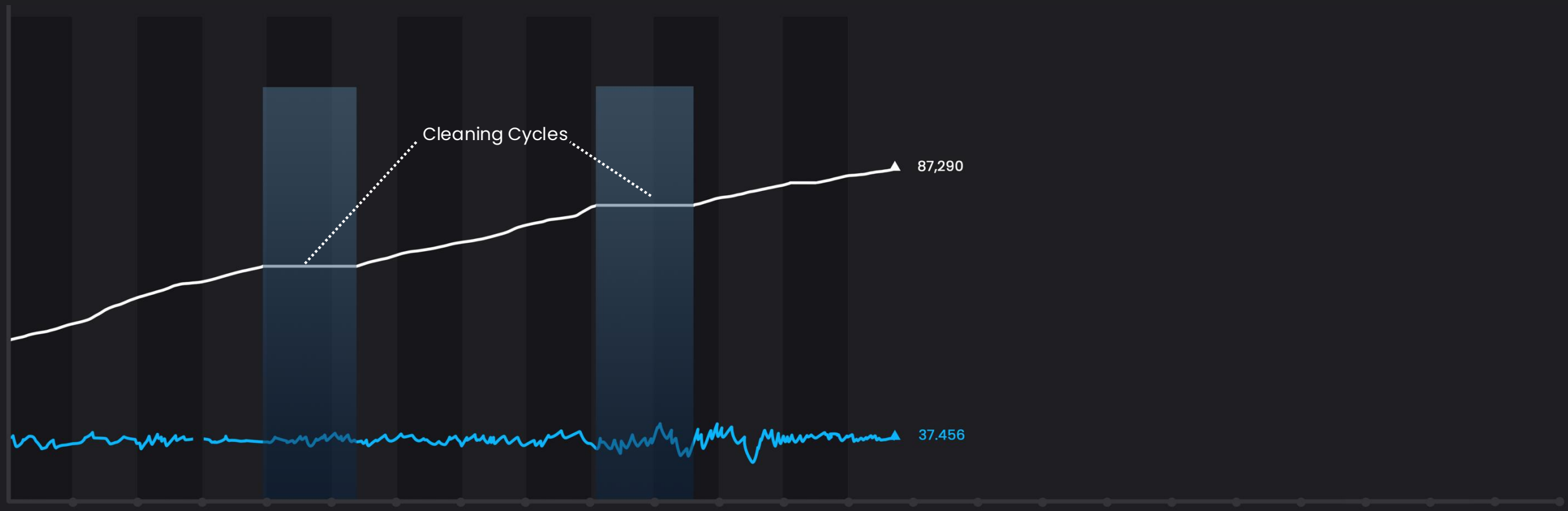
Define States & Monitor Events

Real Time Gateway

Process Historian

Flow Calc Engine



Power Usage - kW

Hourly Energy Usage - kWh

Energy Usage per Cleaning - kW

Total Production - bottles

Hourly Production - bottles

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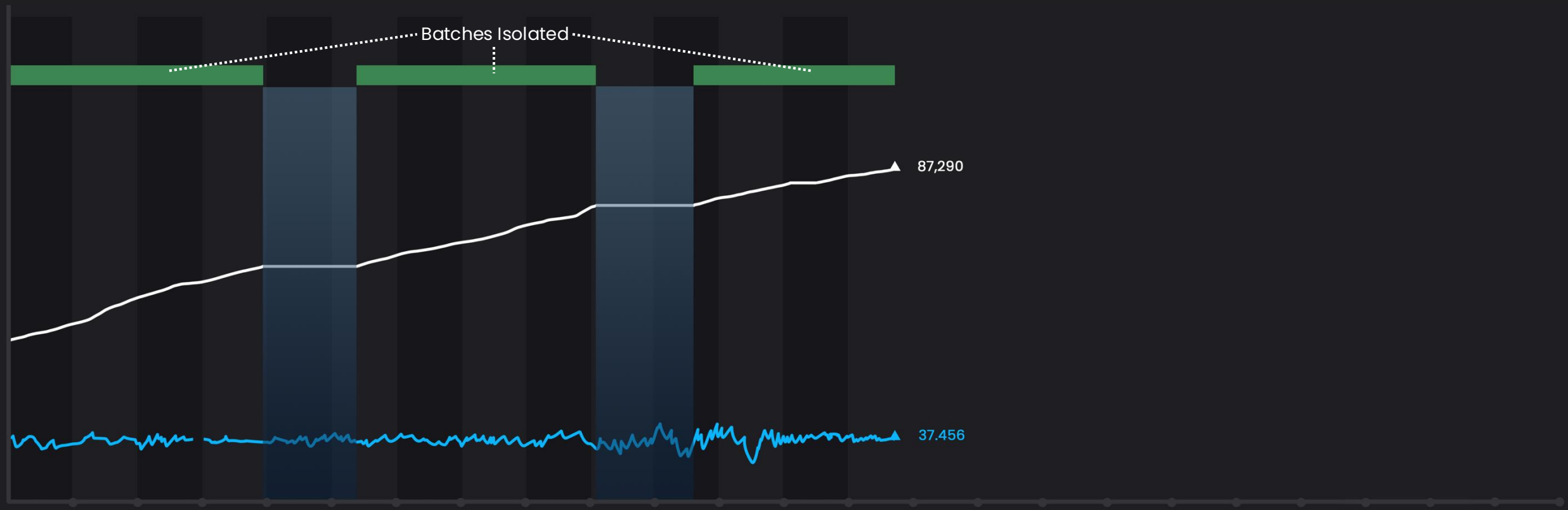
Add Batch & Product Context

Real Time Gateway

Process Historian

MES

Flow Calc Engine



- Power Usage - kW
- Hourly Energy Usage - kWh
- Energy Usage per Cleaning - kW
- Total Production - bottles
- Hourly Production - bottles
- Batch Production - bottles
- Batch Energy Usage - kWh

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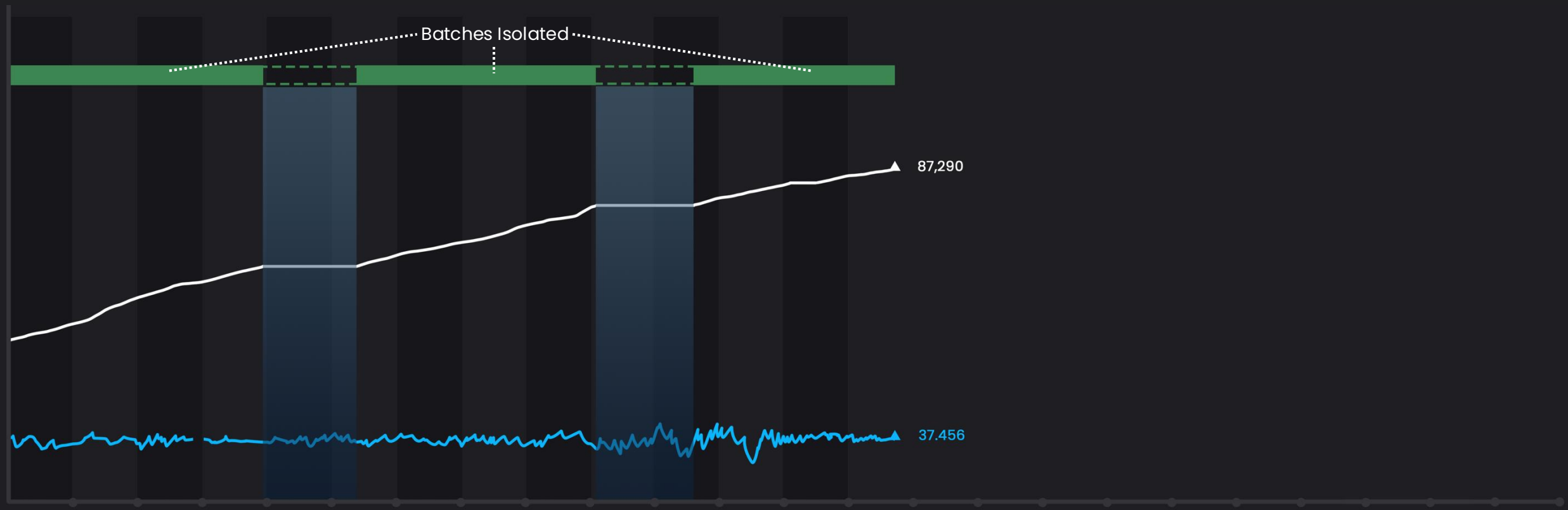
Add Batch & Product Context

Real Time Gateway

Process Historian

MES

Flow Calc Engine



- Power Usage - kW
- Hourly Energy Usage - kWh
- Energy Usage per Cleaning - kW
- Total Production - bottles
- Hourly Production - bottles
- Batch Production - bottles
- Batch Energy Usage - kWh
- Cleaning Duration - sec

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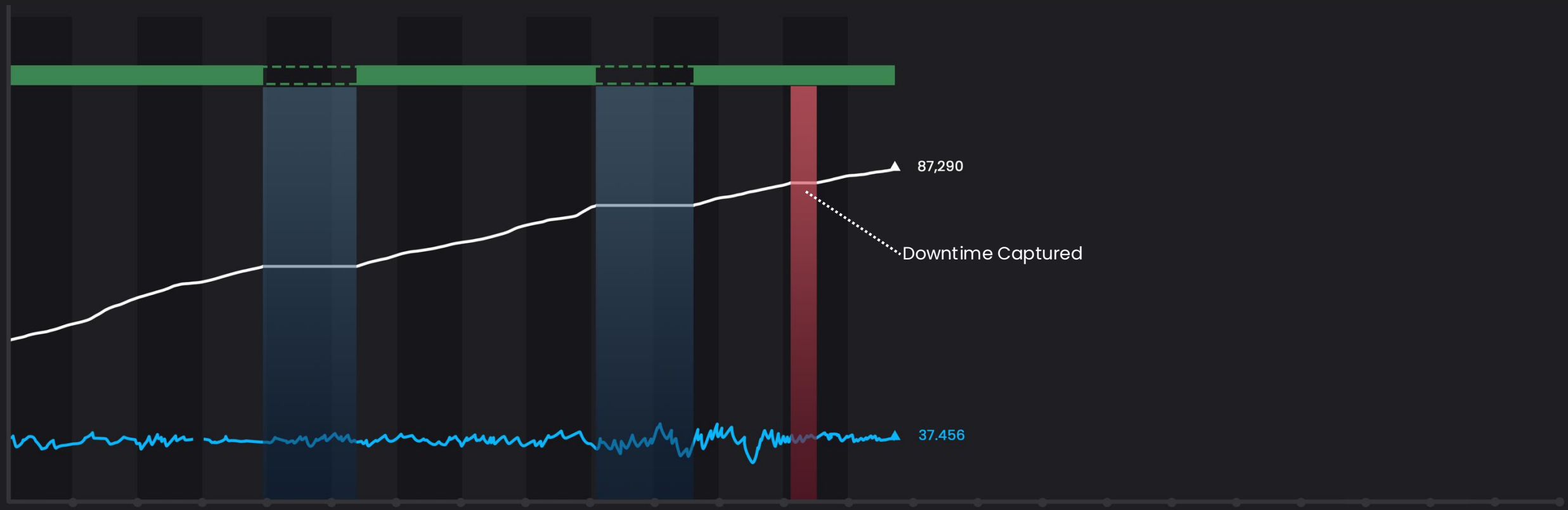
Manual Input & Classification

Real Time Gateway | Process Historian | MES | Manual Input

Flow Calc Engine



- Power Usage - kW
- Hourly Energy Usage - kWh
- Energy Usage per Cleaning - kW
- Total Production - bottles
- Hourly Production - bottles
- Batch Production - bottles
- Batch Energy Usage - kWh
- Cleaning Duration - seconds
- Downtime Cause
- Downtime Duration - min
- Downtime Frequency

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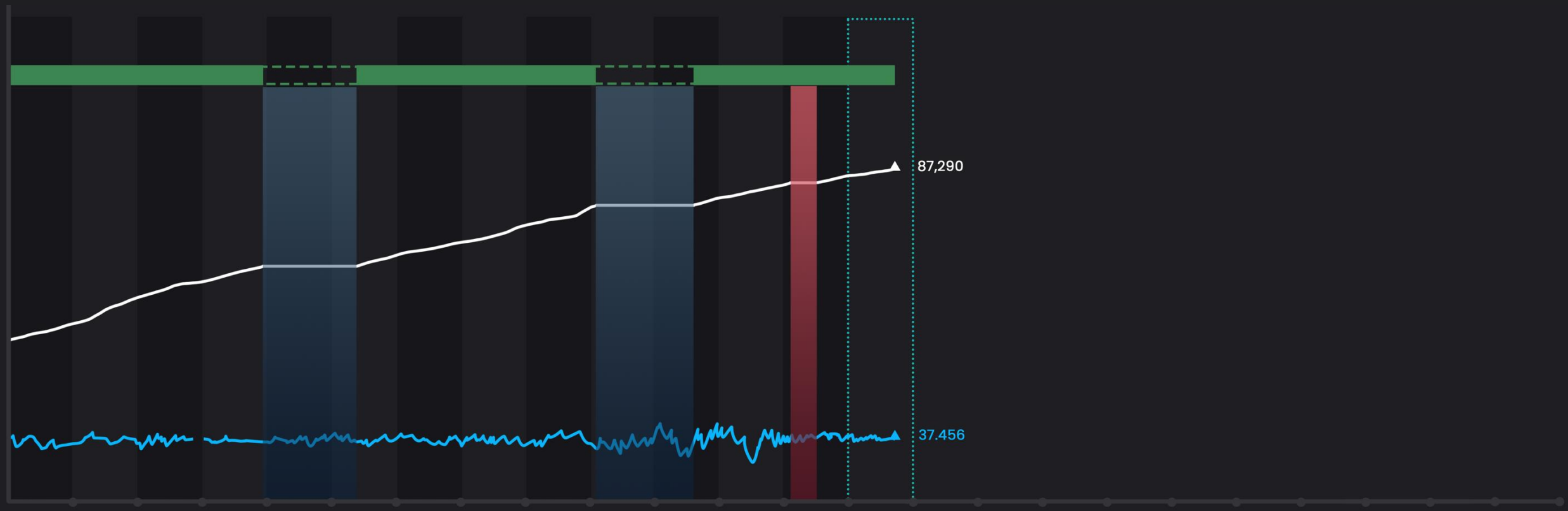
Running Totals & Time Latching

Real Time Gateway | Process Historian | MES | Manual Input

Flow Calc Engine



- Power Usage - kW
- Hourly Energy Usage - kWh
- Energy Usage per Cleaning - kW
- Total Production - bottles
- Hourly Production - bottles
- Current Hour Total - bottles
- Throughput Rate Change - %
- Batch Production - bottles
- Batch Energy Usage - kWh
- Cleaning Duration - seconds
- Downtime Cause
- Downtime Duration - min
- Downtime Frequency

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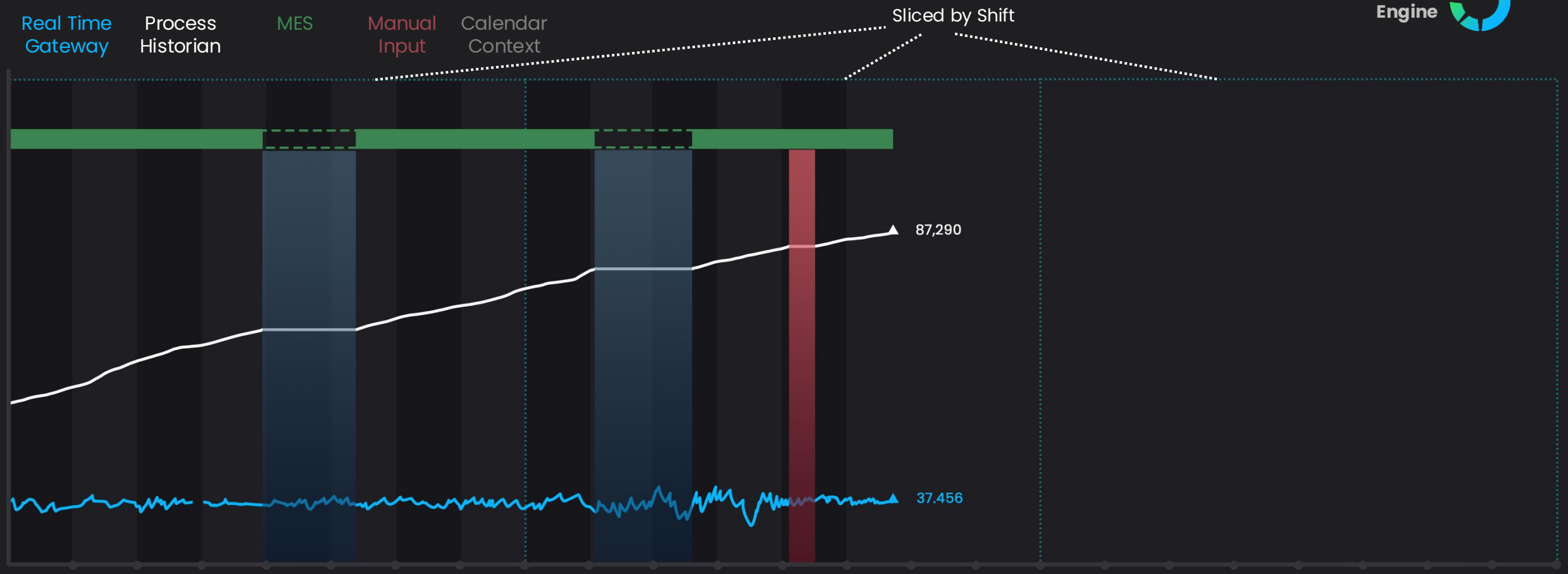
Shift Patterns & Other Localized Calendars

Real Time Gateway | Process Historian | MES | Manual Input | Calendar Context

Flow Calc Engine



- Power Usage - kW
- Hourly Energy Usage - kWh
- Energy Usage per Cleaning - kW
- Shiftly Energy Usage – kWh
- Total Production - bottles
- Hourly Production - bottles
- Current Hour Total - bottles
- Throughput Rate Change - %
- Shiftly Production – bottles
- Batch Production - bottles
- Batch Energy Usage - kWh
- Cleaning Duration - seconds
- Downtime Cause
- Downtime Duration - min
- Downtime Frequency

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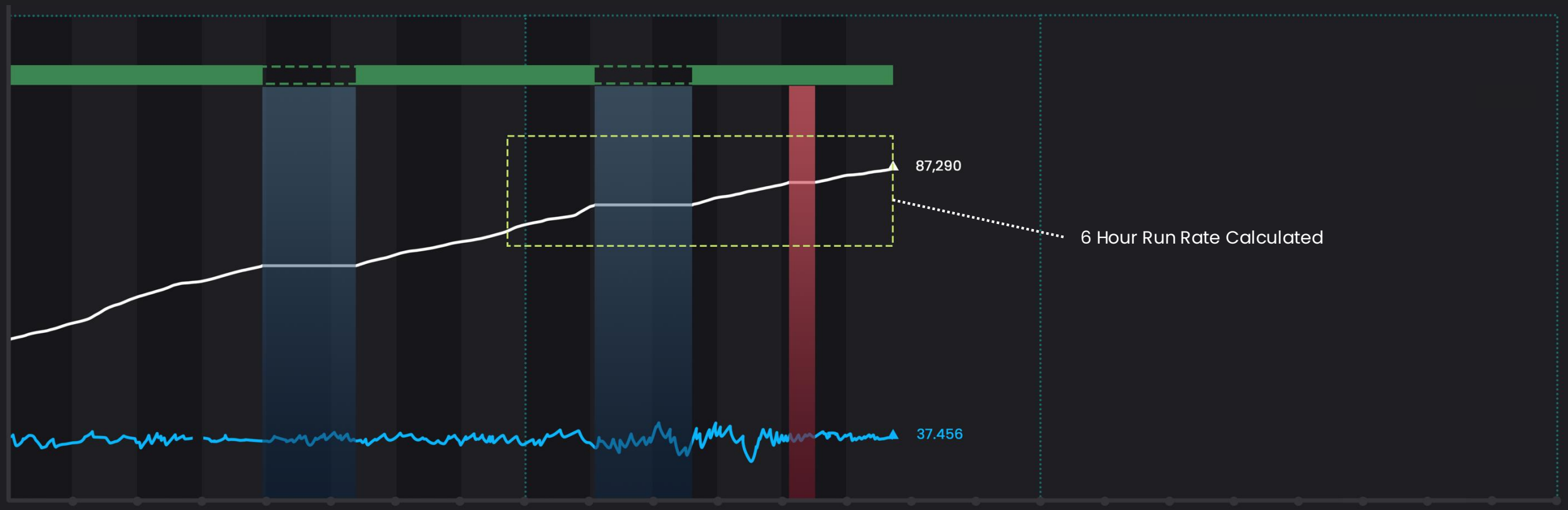
Establish Rate of Change from History

Real Time Gateway | Process Historian | MES | Manual Input | Calendar Context

Flow Calc Engine



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- Energy Usage per Cleaning - kW
- Shiftly Energy Usage – kWh
- Total Production - bottles
- Hourly Production - bottles
- Current Hour Total - bottles
- Throughput Rate Change - %
- Shiftly Production – bottles
- Batch Production - bottles
- Batch Energy Usage - kWh
- Cleaning Duration - seconds
- Downtime Cause
- Downtime Duration - min
- Downtime Frequency
- Run Rate - bottles

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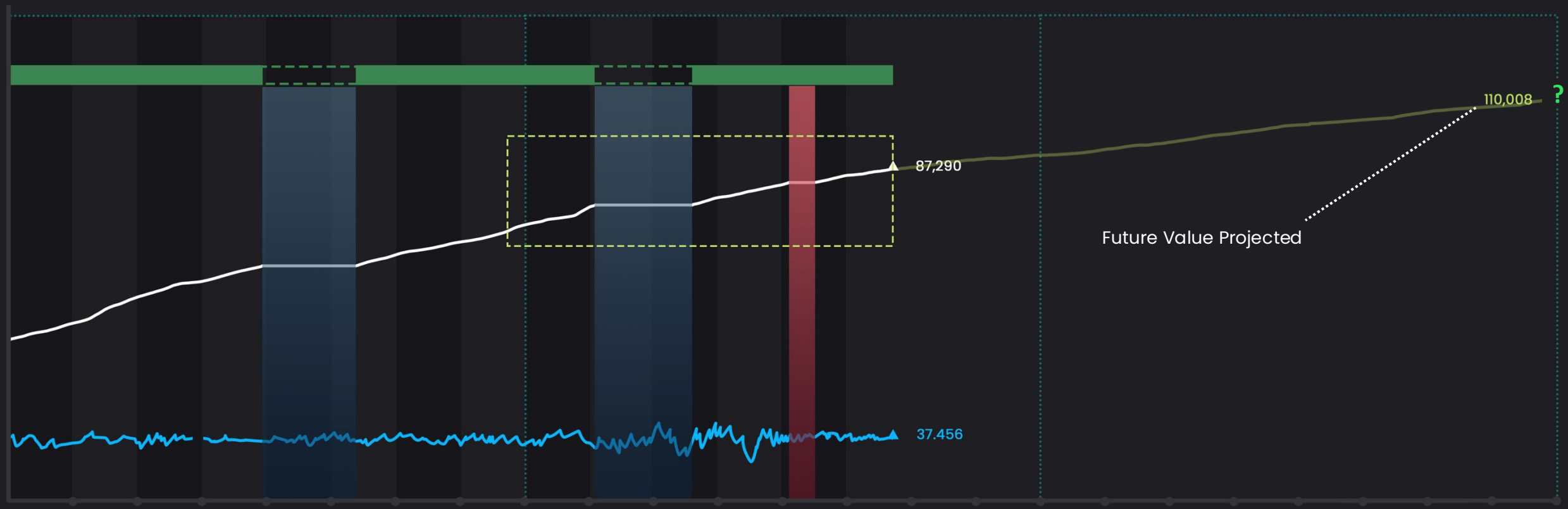
Project Future Values

Real Time Gateway | Process Historian | MES | Manual Input | Calendar Context

Flow Calc Engine



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- Hourly Energy Usage - kWh
- Energy Usage per Cleaning - kW
- Shiftly Energy Usage – kWh
- Total Production - bottles
- Hourly Production - bottles
- Current Hour Total - bottles
- Throughput Rate Change - %
- Shiftly Production – bottles
- Batch Production - bottles
- Batch Energy Usage - kWh
- Cleaning Duration - seconds
- Downtime Cause
- Downtime Duration - min
- Downtime Frequency
- Run Rate - bottles
- End of Day Total - bottles

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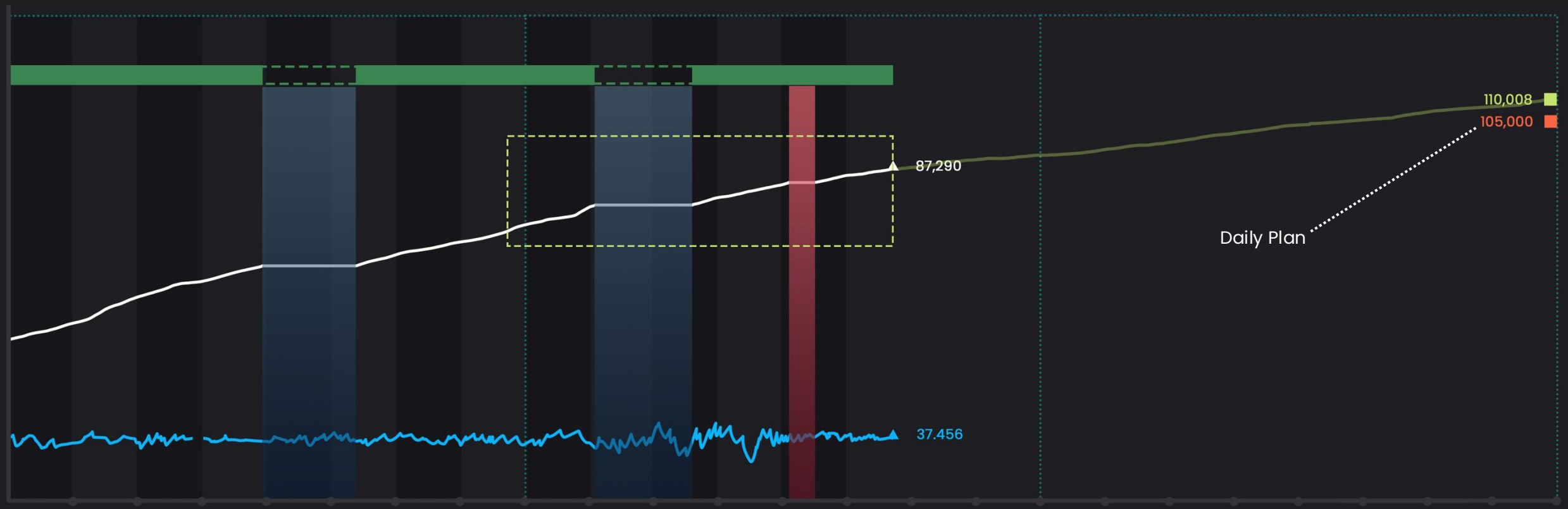
Compare to Plan & Adjust Accordingly

Real Time Gateway | Process Historian | MES | Manual Input | Calendar Context | ERP Solution

Flow Calc Engine



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- Shiftly Energy Usage – kWh
- Total Production - bottles
- Hourly Production - bottles
- Current Hour Total - bottles
- Throughput Rate Change - %
- Shiftly Production – bottles
- Batch Production - bottles
- Batch Energy Usage - kWh
- Cleaning Duration - seconds
- Downtime Cause
- Downtime Duration - min
- Downtime Frequency
- Downtime Opportunity Loss - $
- Run Rate - bottles
- End of Day Total - bottles
- Plan Reliability - %

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What Data Source Is KEY for Analytics?

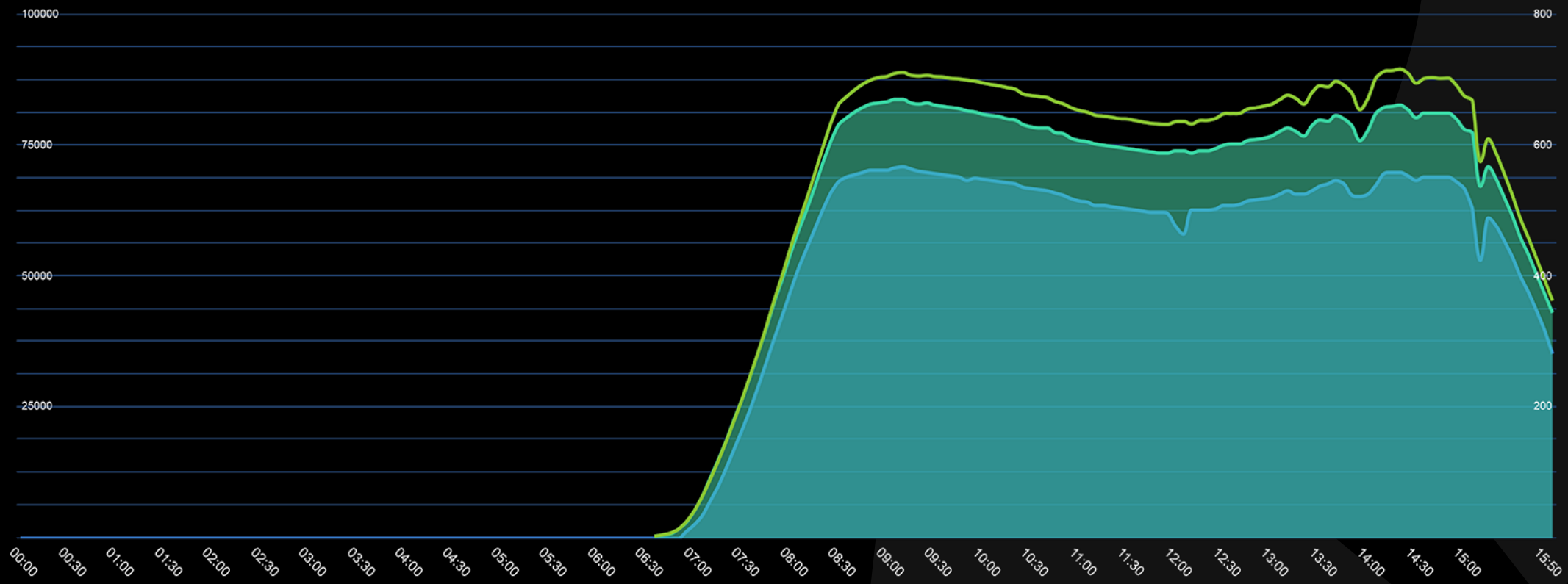
The past 40 years have focused on two types of analytics:

Descriptive

What happened?

Diagnostic

Why did it happen?



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How Will You Scale?

Next generation of analytics

Predictive
what will happen?

Prescriptive
what action should I take to ensure the best outcome?

Both require massive amounts of data from many sources

Data must be cleansed, normalized, and contextualized prior to using

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Thank you

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