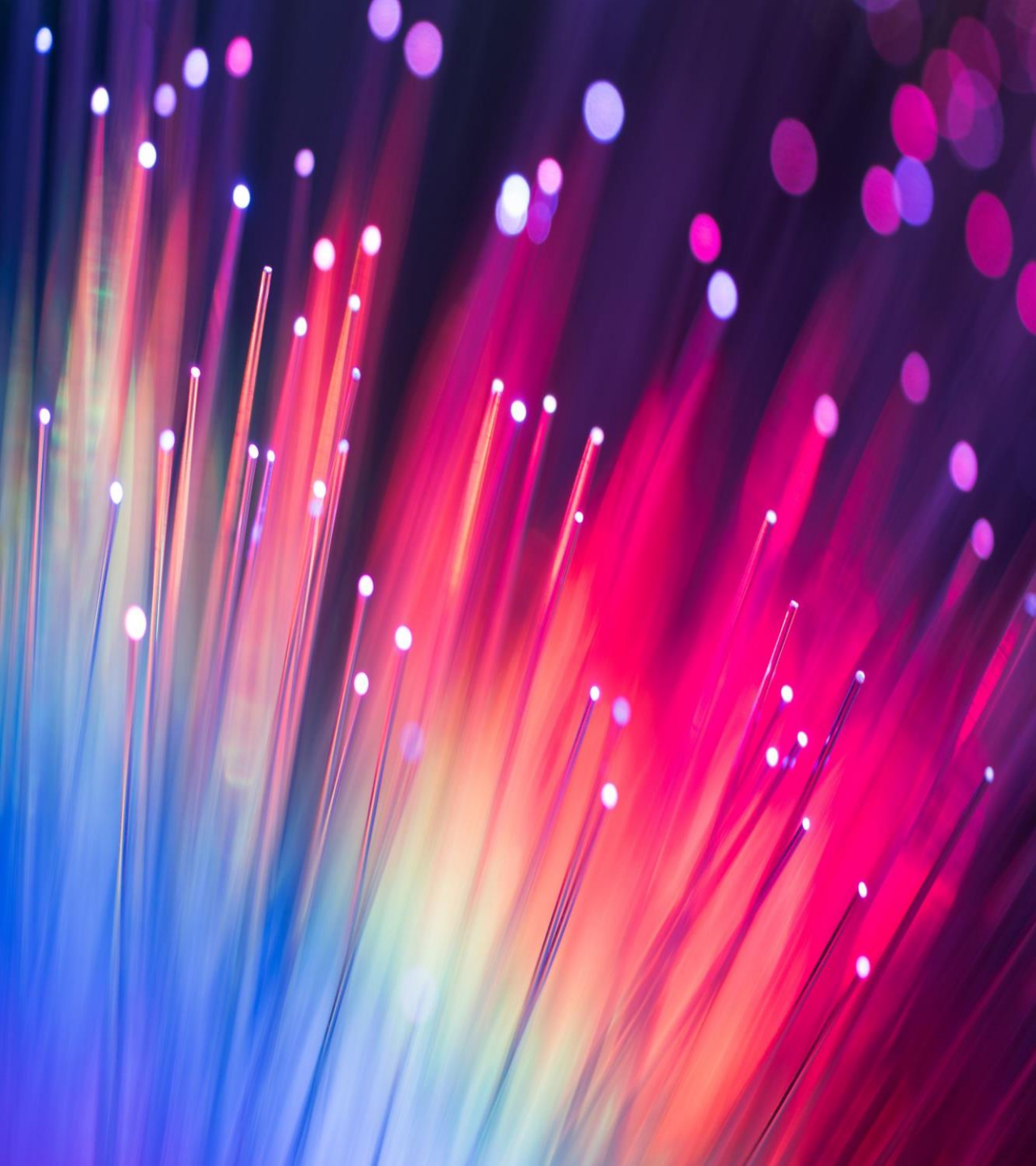




TrendLab

Matt Brantl



Presenter Bio



Matt Brantl | Specialist Electrical Engineering

Chemical Engineering (Stevens Institute of Technology)

Joined Nestle Health Science, Bridgewater, NJ in 2023

Deployment of digital technologies to factories

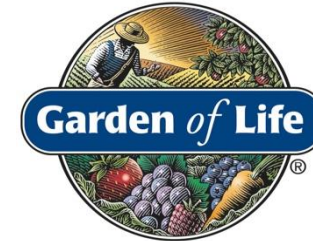
Simulations for factory upgrades

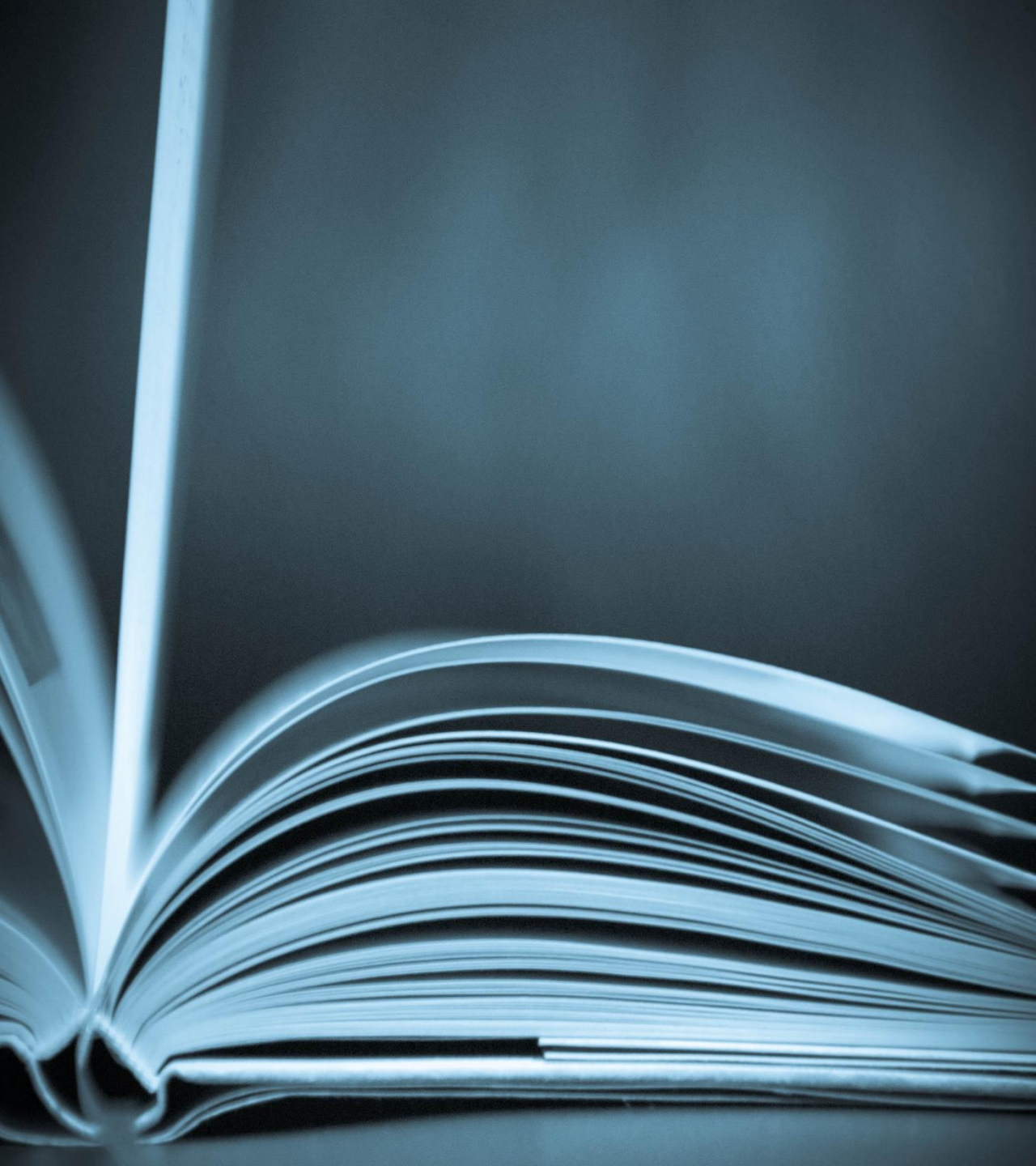
Pilot plant automation & CAPEX support

About Us

Nestle Health Science

- Global leader in the science of nutrition
- Active lifestyle nutrition
- Medical nutrition
- Vitamins, Minerals, & Supplements

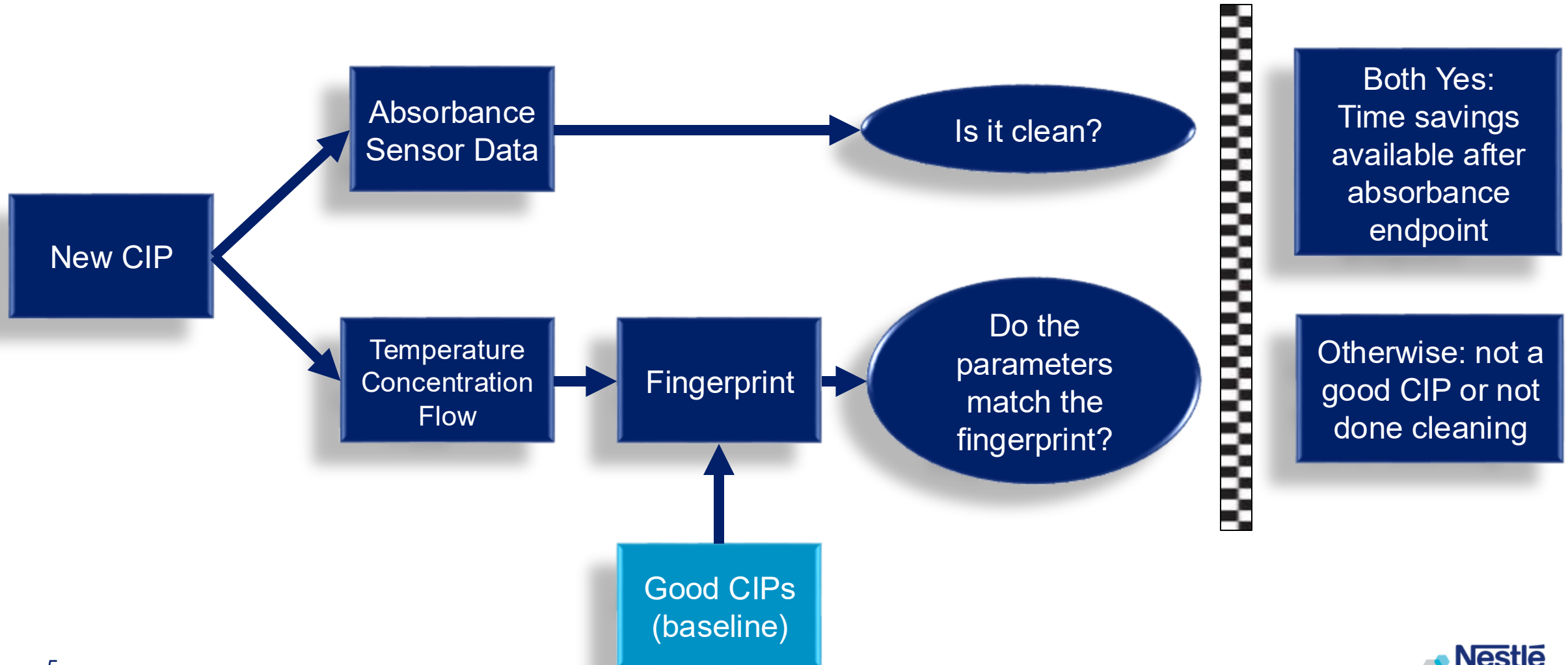




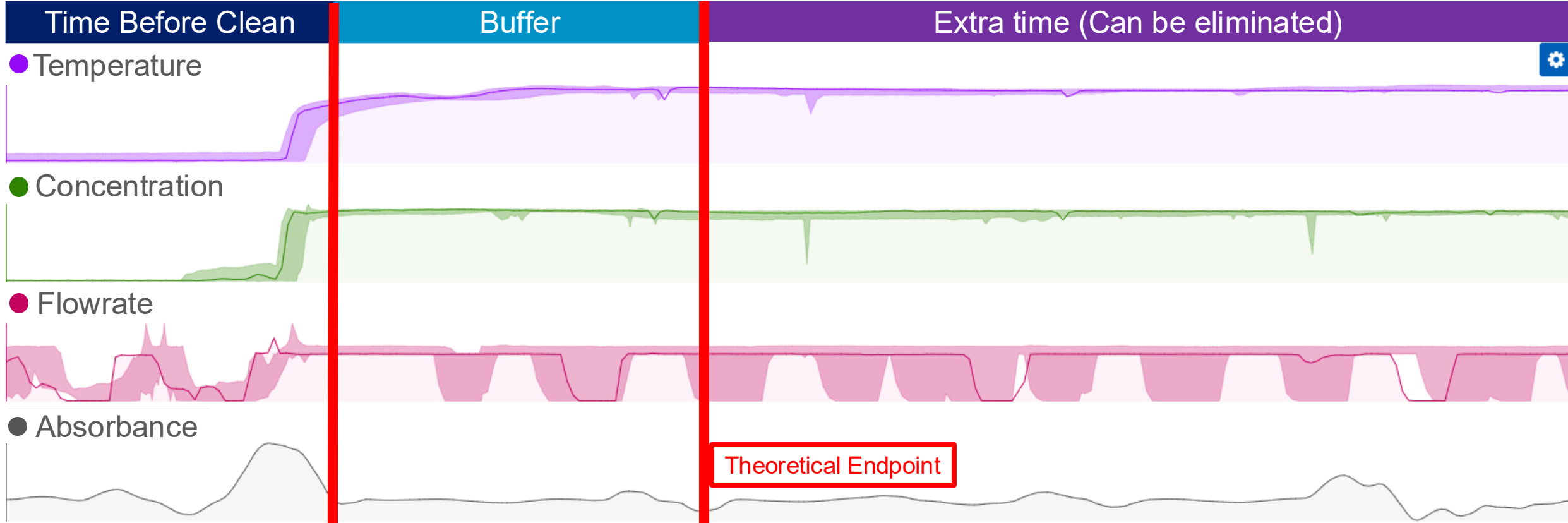
Use Cases

CIP Optimization

Identify time & chemical savings in cleaning sequence



Identifying Savings



Heat Exchanger Fouling Monitor by LMTD

Detect fouling in critical heat exchangers

$$Q = U \times A \times \text{LMTD}$$

where (in SI units):

- Q is the exchanged heat duty (watts),
- U is the heat transfer coefficient (watts per kelvin per square meter),
- A is the exchange area.

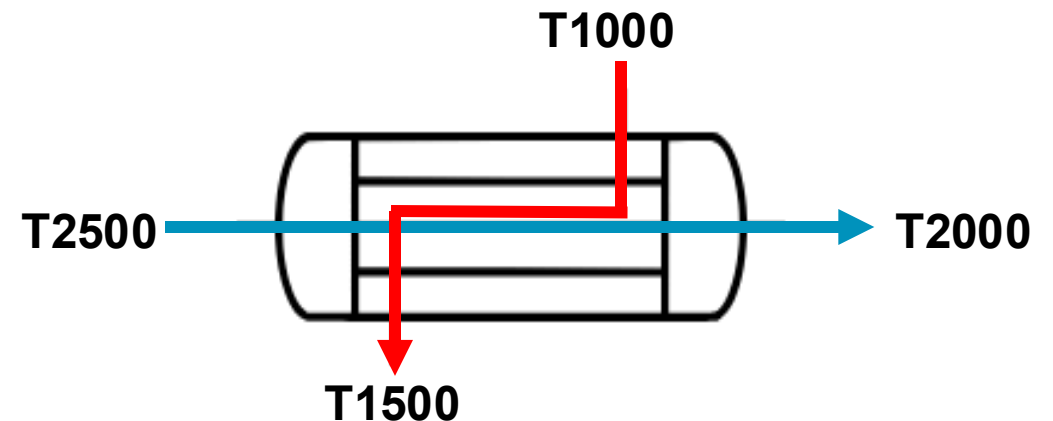
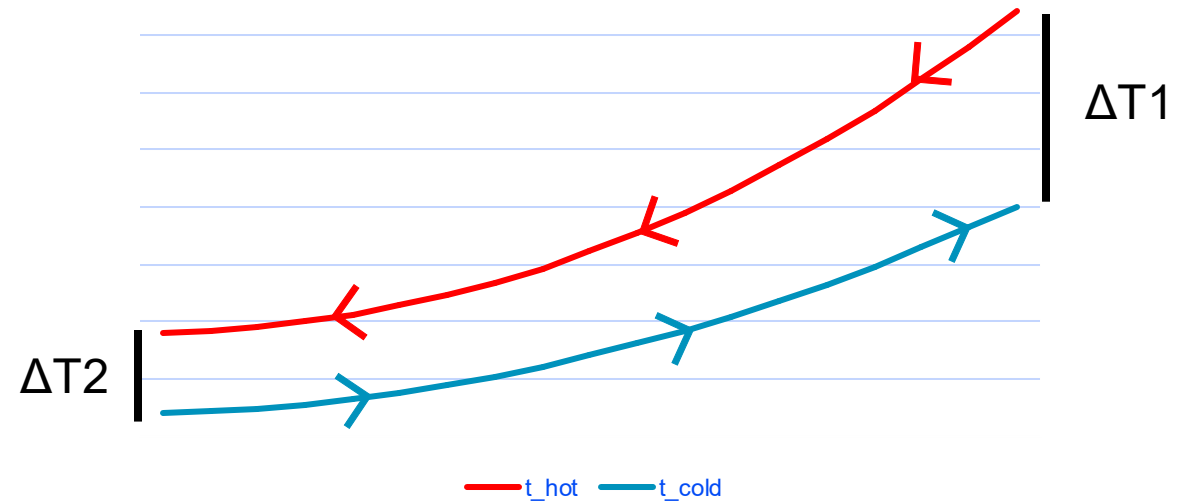
$$\text{LMTD} = \frac{\Delta T_1 - \Delta T_2}{\ln \left(\frac{\Delta T_1}{\Delta T_2} \right)}$$

Name

TM_UHT_HX3000_LMTD

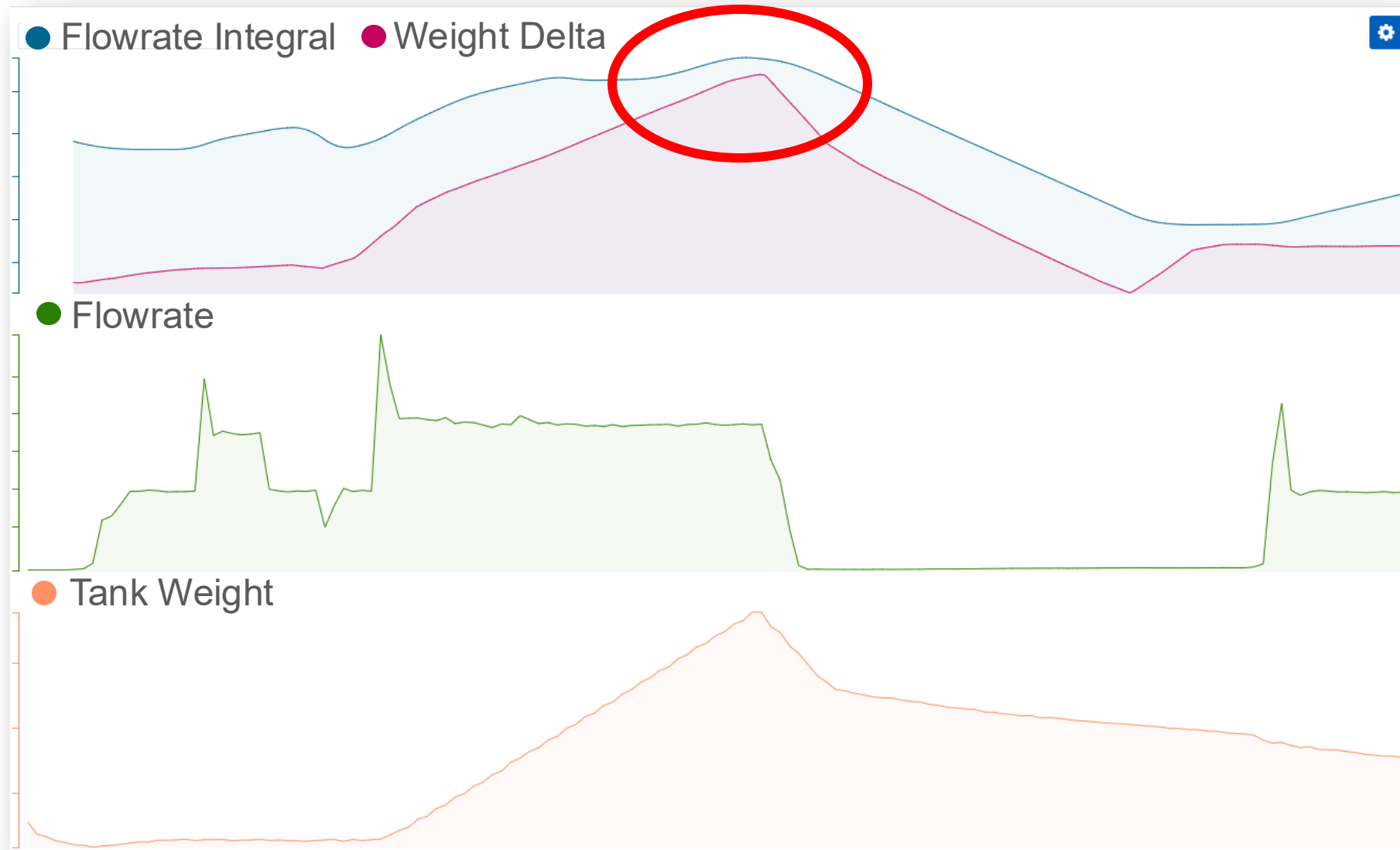
Formula

```
1 lmtd(T1000,T2000,T1500,T2500)
```



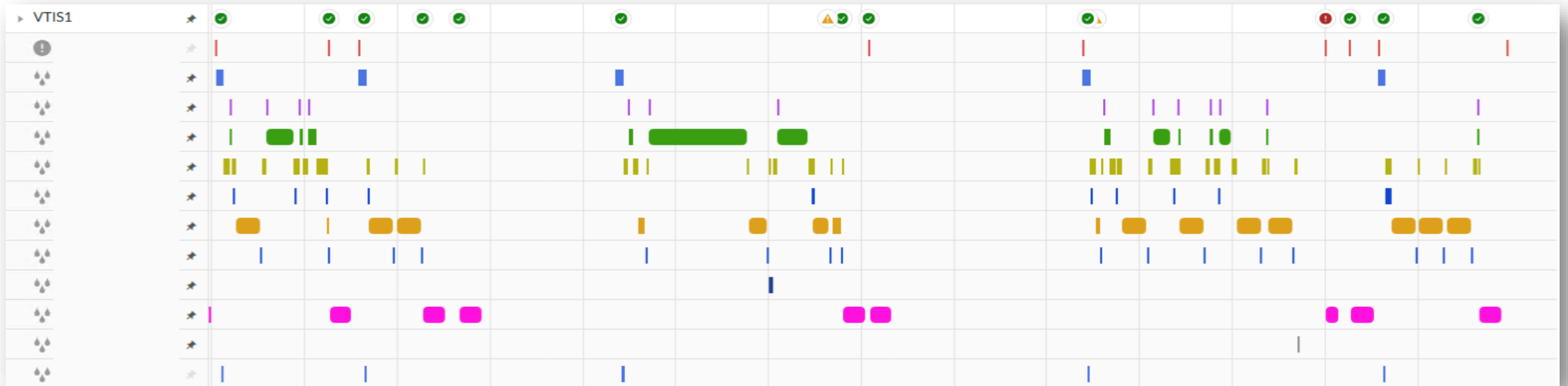
Tank Load Cell Accuracy Verification

Verify tank load cells and protect against inaccuracies



System Monitoring

Spot long term process changes & speed up administrative reviews



System Monitoring

Investigation

1E2-98 - Acid Phase Warning

Details

Attachments

CONTEXT ITEM DETAILS

Options

Component

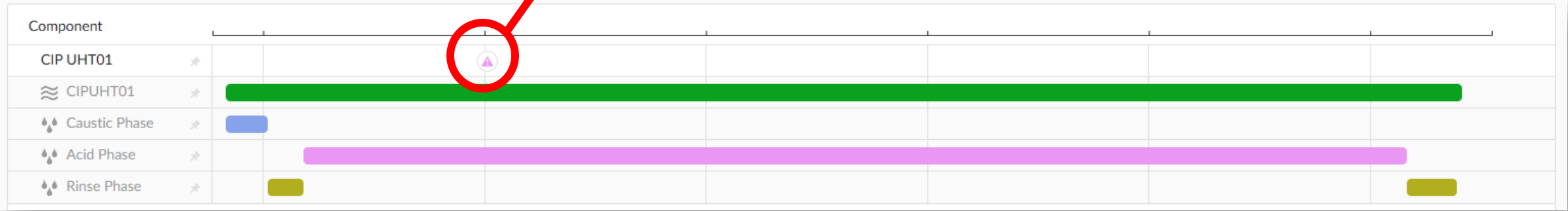
CIP UHT01

Type

 Acid Phase Warning - TrendMiner

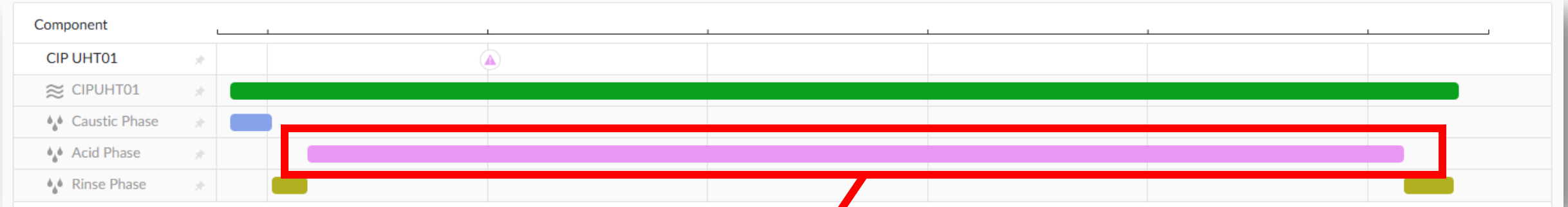
Description

CIP Acid Phase too long



System Monitoring

Investigation



1E2-54 - Acid Phase

Details

Attachments

CONTEXT ITEM DETAILS

Component

CIP UHT01

Type

Acid Phase - TrendMiner

Description

Keywords

Process Phase

Options

Visualize

Edit

Delete

System Monitoring

Investigation

1E2-54 - Acid Phase

Details

Attachments

CONTEXT ITEM DETAILS

Options

Visualize

Edit

Delete

Component	CIP UHT01
Type	 Acid Phase - TrendMiner
Description	
Keywords	
Process Phase	

Make a selection

Tags

Assets

Search

< > UHT > CIP UHT01

Detail Parameter Tags

✓ Concentration SP

✓ Temperature SP

~ Concentration SP 2

~ Temperature SP 2

~ Phase Name

✓ Concentration

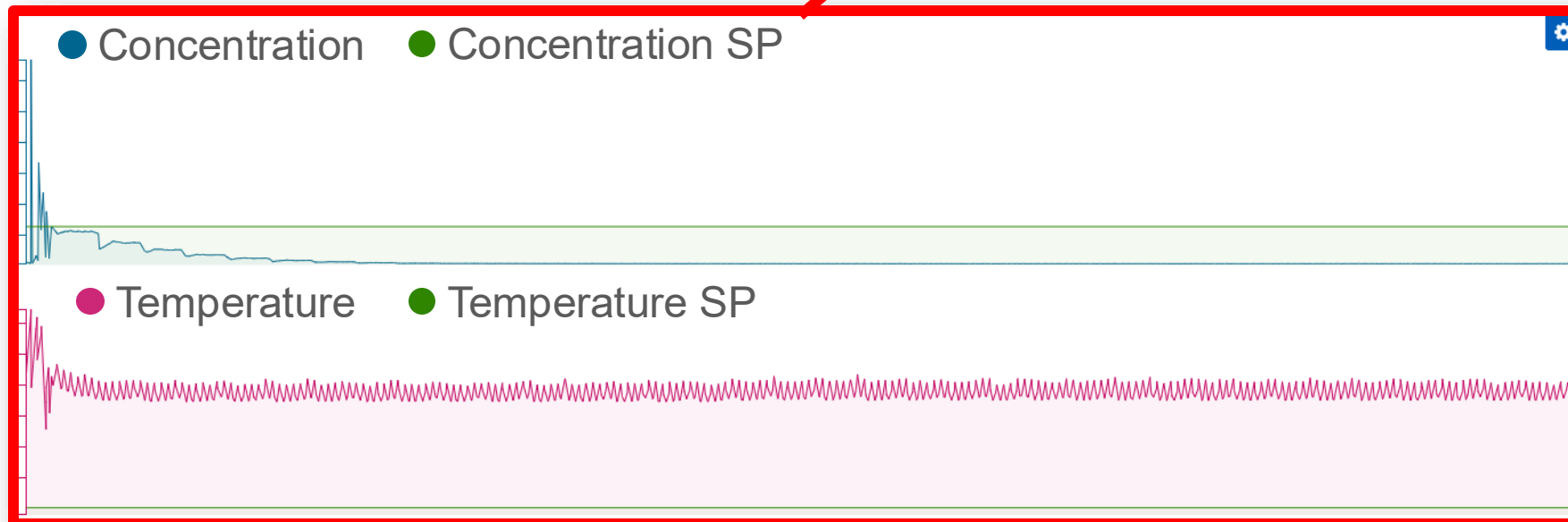
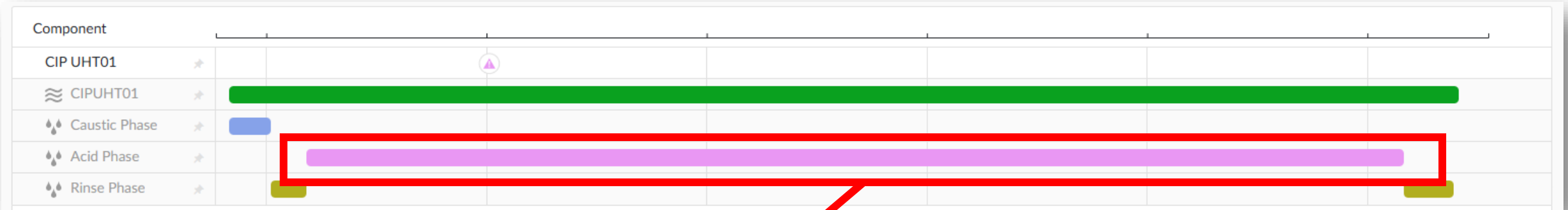
~ Flowrate

✓ Temperature SP

~ Step Number

System Monitoring

Investigation



Needed to refill
chemical tank

Steam Pressure Stability

Ensuring reliable process control with context item calculations



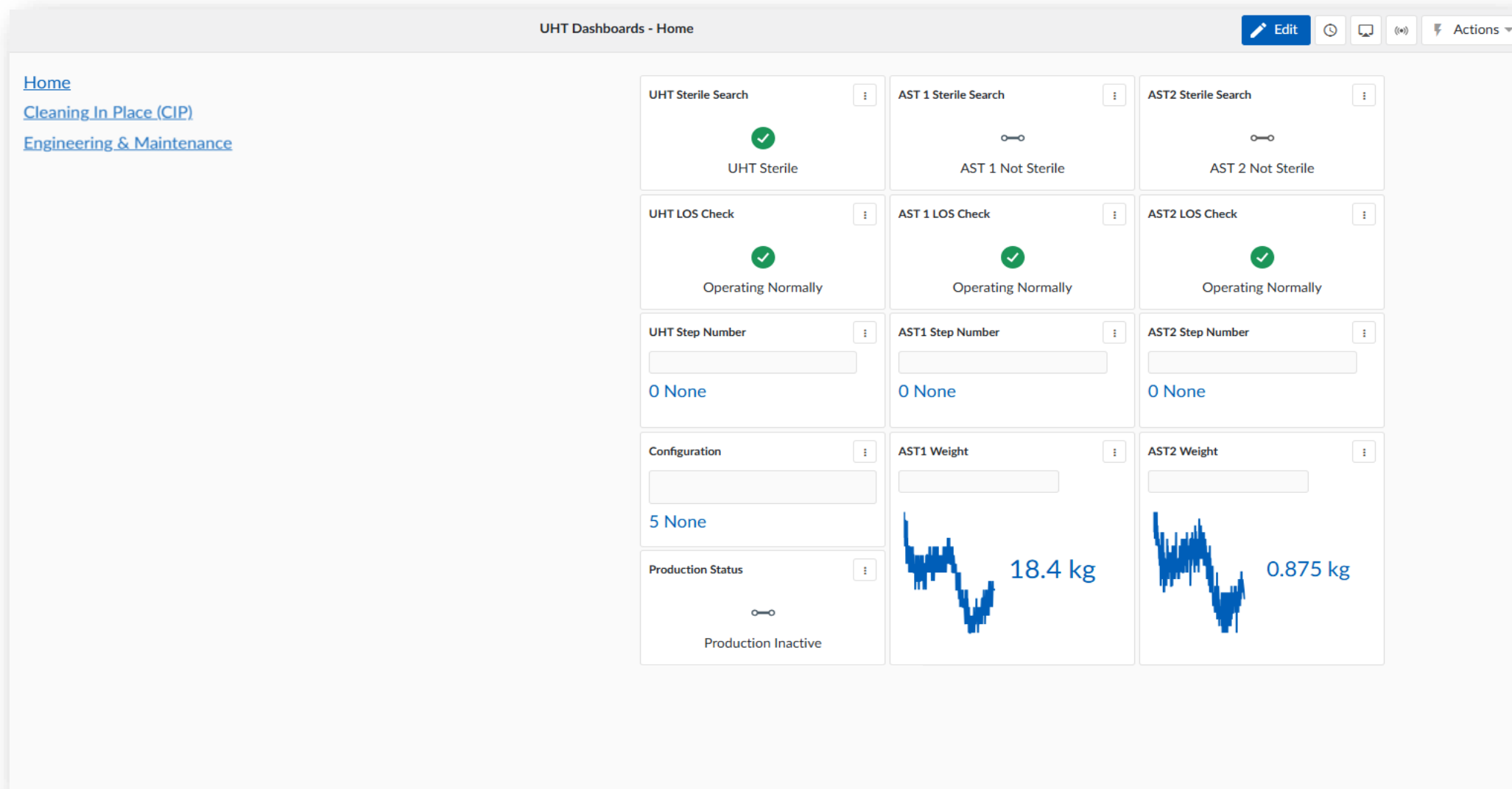
Table Gantt Scatter Standard Deviation Live Actions

Event open: Last ± 183 days Type (1) × Component (1) × Power Factor × Power Factor Target × Add filter

	Start date	Power Factor Target	Power Factor	Duration	Description
☐		0.14752246	0.1474152	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.12837599	0.12936112	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.1236826	0.124421984	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.11248883	0.112931736	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.072987686	0.07318399	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.057682167	0.057685682	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.052169375	0.052182844	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.051428273	0.05147867	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.049977385	0.04996835	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.048668228	0.048618536	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.048394784	0.048481386	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.048335688	0.048343148	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.045846224	0.045558884	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003
☐		0.045596687	0.045598745	ⓘ	Power Factor: PT20_002 Power Factor Target: PTP20_003

Dashboards - Operations

At-a-glance process monitoring for quick responses



Thank you

