



ZSCHIMMER & SCHWARZ

TRENDMINER FOR BATCH MANUFACTURING

ZSUS, Middle Georgia

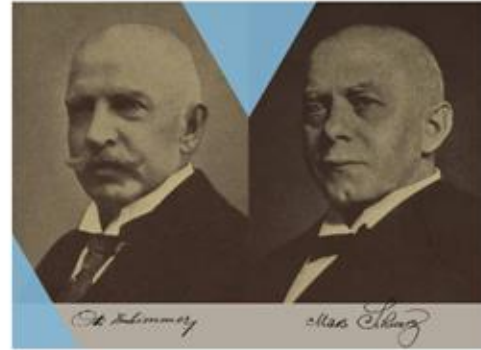
October 2026

Corporate History



PROGRESS SINCE 1894.

When Otto Zschimmer and Max Schwarz founded a chemical wholesaler in 1894 and began producing their own chemical products in 1909, the world was a completely different place. After all, who at the time could have foreseen the events that would shape the 20th century? The history of Zschimmer & Schwarz is therefore also a history of Germany, and a history of constant change.



Z&S US Inc. History

In 1998, Z&S purchased ChemTex, a local Textile Auxiliaries' manufacturer. The goal was to penetrate markets including Fibre, Ceramics, Phosphonates and Care Specialties.



ZSUS Operations



Ivey Facility



Milledgeville Facility



~150 Employees

Chemistries

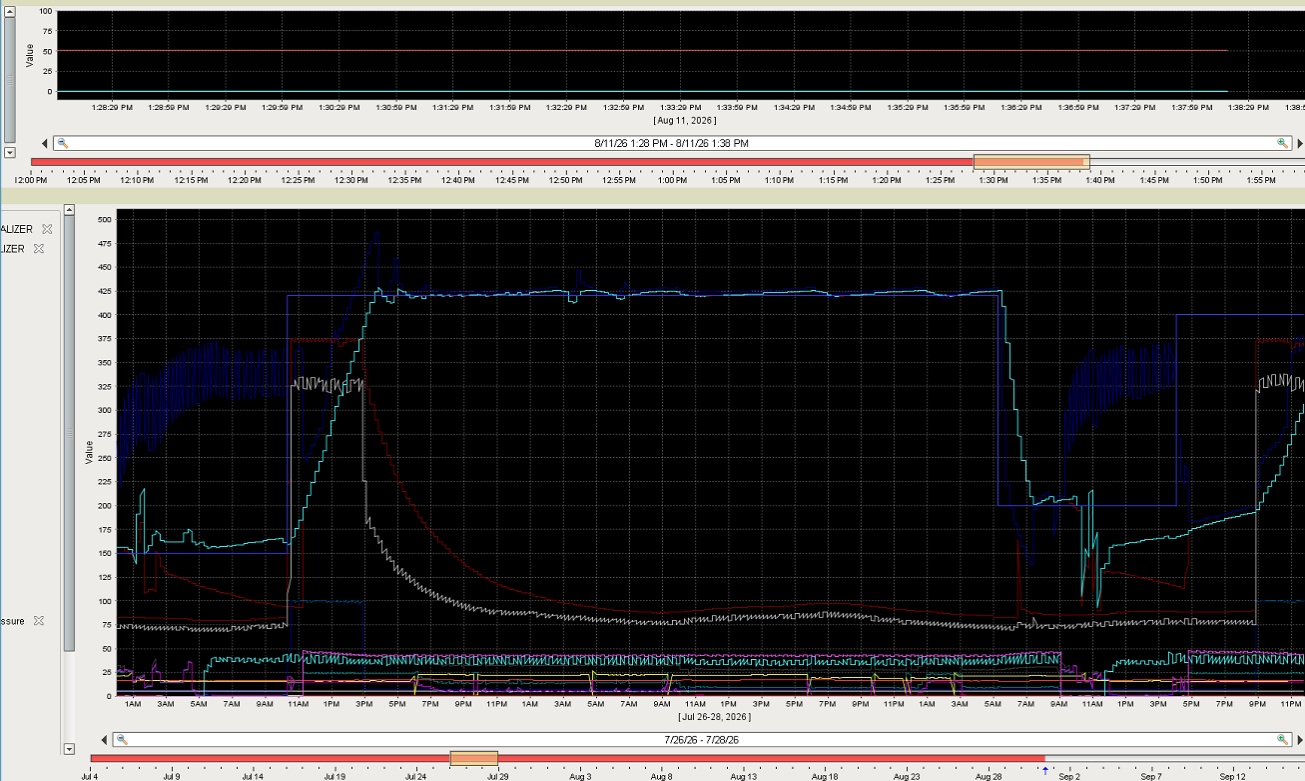
- Synthetic Esters
- Phosphate Esters
- Amides
- Sarcosinates
- Sulfosuccinates
- Blends

Markets

- Lubricants
- Textiles
- Ceramics
- Personal Care
- Leather
- Industrial Specialities

Existing Data Analysis Tool

REACTOR #1 TANK



- Trends only
- One license
- Can't stack trends
- Difficulty with large amounts of data to Excel

Success Criteria

Keys to Success

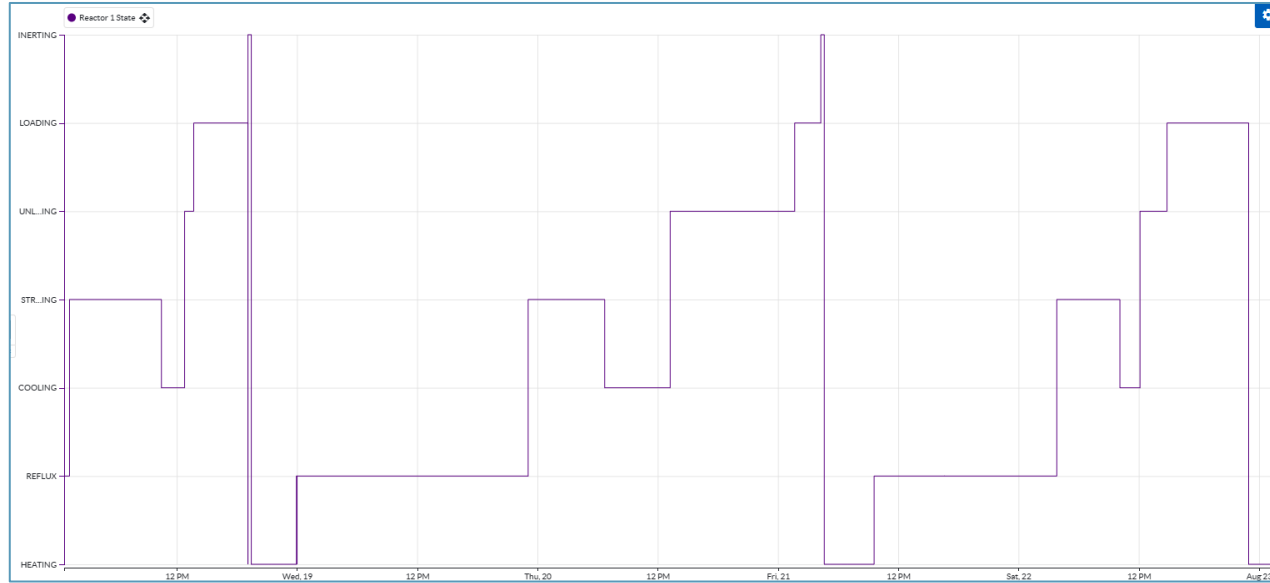
- Critical Notifications
- Reactor Dashboards
- Calculate unavaible data
- Investigation/Root Cause
- Monitor Golden Batches

Project Charter Project: TrendMiner Ivey

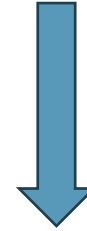


Current Situation		Project Champion:	
Currently, there is limited access to process data in the Ivey data historian. The trend program is very rudimentary and does not allow for effective analysis of the data. Overall for the site, process optimization is limited due to the current setup and tools available.		S. Kumar	
Problems		Project Lead:	
- Data is not accessible on the business network. - Data is not easily exportable to Excel. - Trends cannot be overlaid to compare different scenarios. - The scales are not variable in the current trend program which makes visualizing parameters of different magnitudes impossible on the same graph.		D. Archer	
Goals		Project Team:	
- Implement a 1 year trial of TrendMiner for the Ivey data historian. - Analyze batches by developing standard trends for each reactor. - Process improvement through data regression, monitoring and text/email notifications. - Develop dashboards for units that show the current status in a concise way. - Develop 4 case studies that demonstrate the usefulness of the system.		C. Micheal S. Schmidt J. Schmidt D. Archer M. Adams A. Martin	
In scope		Benefit / Potential:	
- Ivey data historian - Reactors 1, 2, 4, and 5		Cycle time, yield, and efficiency gains through process optimization.	
Project Proposal		Timeline (ending dates):	
1 year TrendMiner trial		- Implement: 11.05.2026 - Start: 11.06.2026 - Improve: 11.12.2026 - Evaluate: 11.03.2027	

Batch Cycle Time

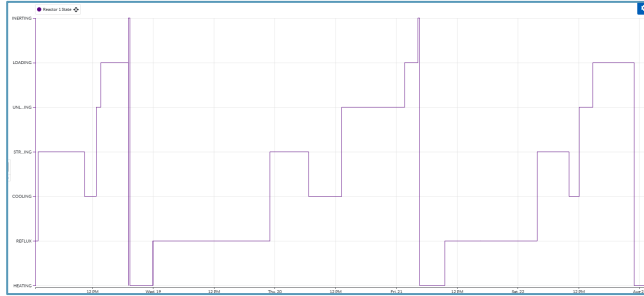


Key Driver is Cycle Time

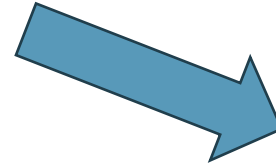


- **Loading**
- **Heating**
- **Refluxing**
- **Stripping**
- **Cooling**
- **Unloading**

Batch Cycle Time



Custom timers for each step that reset each batch.



CUSTOM CALCULATION

LAB

Tag type

☒ Analog
 ☐ Discrete

Tag dependencies

Define dependencies to ensure indexes are up to date

Search tags

[Test]reactor 1/reactor 1 ta... cstr state X

[Test]reactor 1/reactor 1 t... tator amps X

Reactor 1 Phase X

Save

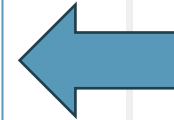
Custom calculation

Code Preview

Preview settings

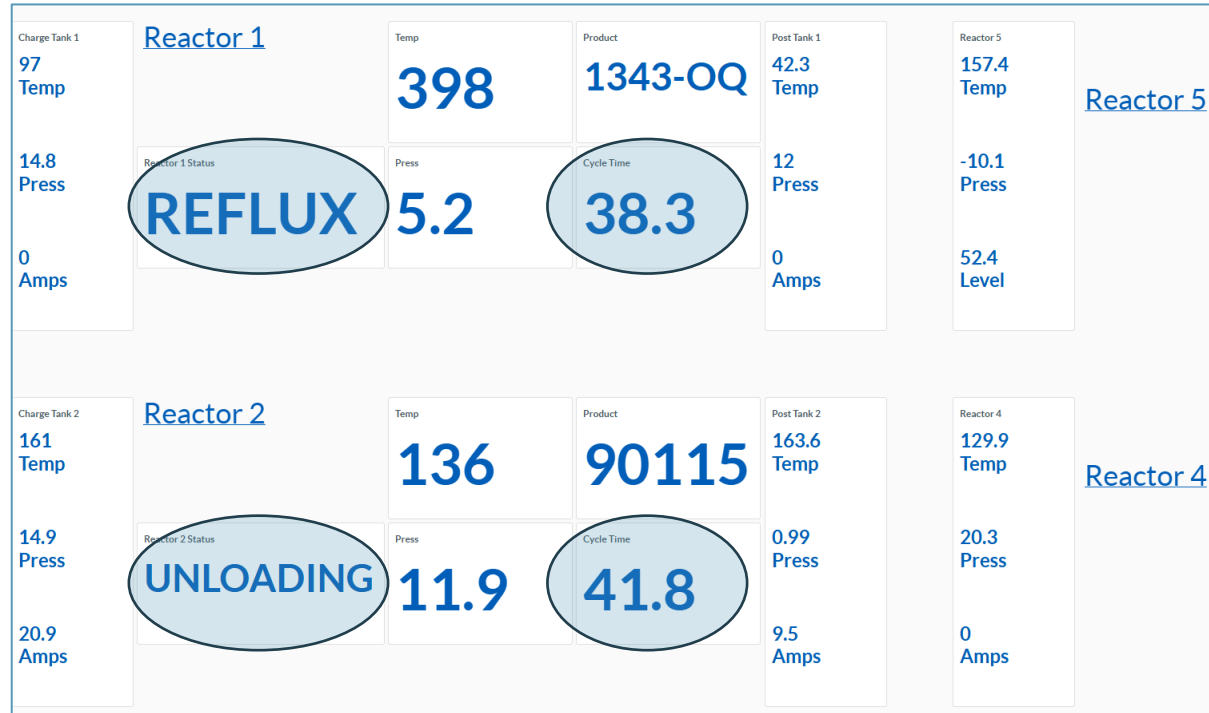
```

1 import os
2 import sys
3
4 import numpy as np
5 import pandas as pd
6 from trendminer import TrendMinerClient
7
8 # --- PARAMETERS ---
9
10 client = TrendMinerClient.from_token(
11     token=os.environ["ACCESS_TOKEN"],
12     tx="America/New_York",
13 )
14
15 phase_tag_name = (
16     "[Test]reactor 1/reactor 1 tank/ri trend miner reactor state"
17 )
18 amps_tag_name = (
19     "[Test]reactor 1/reactor 1 tank/le_sl_0502 ri agitator amps"
20 )
21
22 cooling_state = "LOADING"
23 resolution = client.time.timeDelta("1s")
24 max_lookback = client.time.timeDelta("10m")
25 maximum_contiguous_gap_seconds = 60.0
26
27 # --- CODE EXECUTION ---
28
          
```





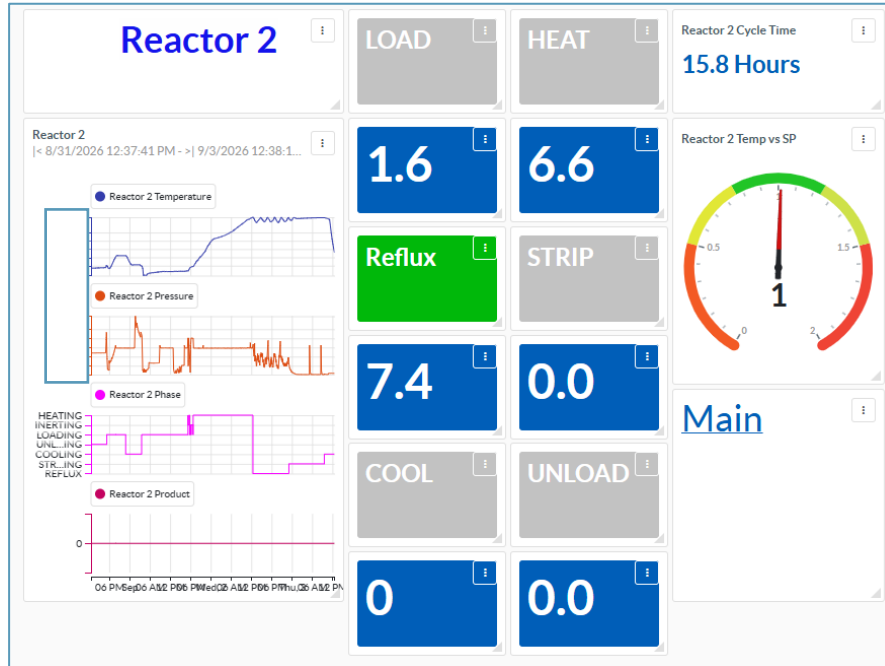
Overall Plant Dashboard



Overall Plant Dashboard gives current general data including:

- Current Batch Cycle Time
- Current Batch Step

Individual Reactor Dashboard



Individual Reactor Dashboard gives more specific data:

- Current Overall Batch Cycle Time
- Current Batch Step
- Times in Batch Steps
- Reactor Trends
- Reactor Deviation from Temp Setpoint

Batch Step Times

Current batch step times are kept by hand, entered into Excel, and visualized in Power BI.

ContextHub allows automatic calculation of the data. For now, we plan to export this data to Excel/Power BI.

☐	Reactor Pro...	Reactor Nu...	Start date ▼	Cycle Time	Loading	Heating	Reflux	Stripping	Cooling	Unloading
☐	0	Reactor 2	8/22/2026 3:00:0...	68.8	12.4	17.9	10.6	14.7	7.8	0.0
☐	1	Reactor 2	8/20/2026 1:00:0...	47.5	3.4	5.3	12.9	0.0	20.8	0.6
☐	0	Reactor 2	8/20/2026 3:00:0...	0.4	0.4	0.0	0.0	0.0	0.0	0.0
☐	1	Reactor 2	8/18/2026 12:00:...	50.4	1.8	7.8	15.7	19.8	4.5	0.1
☐	0	Reactor 2	8/17/2026 10:00:...	0.8	0.0	0.0	0.0	0.0	0.0	0.0
☐	9	Reactor 2	8/15/2026 12:00:...	58.0	3.0	12.7	18.0	16.5	7.3	0.1
☐	0	Reactor 2	8/15/2026 7:00:0...	0.4	0.4	0.0	0.0	0.0	0.0	0.0
☐	1	Reactor 2	8/14/2026 10:00:...	20.8	2.2	5.4	0.0	9.3	2.8	0.1
☐	0	Reactor 2	8/12/2026 6:00:0...	53.3	6.5	0.0	0.0	0.0	1.1	0.2
☐	9	Reactor 2	8/10/2026 1:00:0...	53.1	2.4	12.0	19.9	11.8	6.2	0.1
☐	0	Reactor 2	8/10/2026 12:00:...	0.2	0.2	0.0	0.0	0.0	0.0	0.0
☐	9	Reactor 2	8/7/2026 12:00:0...	60.0	3.9	10.6	19.9	15.6	8.6	0.0
☐	0	Reactor 2	8/7/2026 10:00:0...	0.3	0.3	0.0	0.0	0.0	0.0	0.0
☐	Re	Reactor 2	8/6/2026 11:00:0...	21.3	0.5	3.0	0.0	8.4	8.4	0.0
☐	0	Reactor 2	8/6/2026 10:00:0...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
☐	9	Reactor 2	8/4/2026 7:00:00...	39.3	3.7	10.1	12.7	8.4	3.5	0.1
☐	0	Reactor 2	8/4/2026 3:00:00...	57.2	0.5	0.0	0.0	0.0	0.0	0.0

Fingerprint Preparation

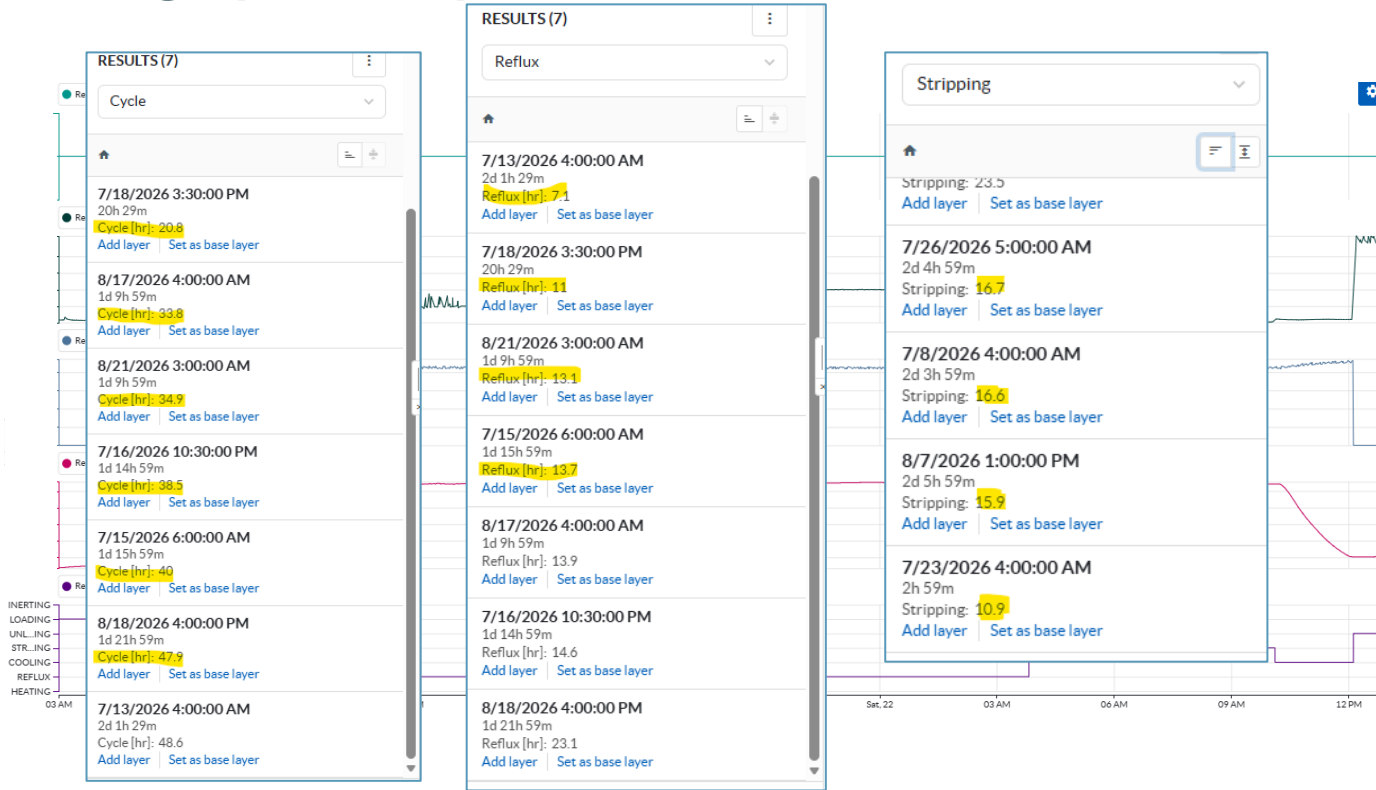


Batch trend
searched on product.

Added calculations
for max:

- Cycle Time
- Relax Time
- Stripping Time

Fingerprint Preparation



Fingerprint Analysis



Fingerprint indicates cycle time was high due to extended reflux.



ZSCHIMMER & SCHWARZ

THANK YOU VERY
MUCH FOR YOUR
ATTENTION.

[zschimmer-schwarz.com](https://www.zschimmer-schwarz.com)