TrendMiner
A SOFTWARE AG COMPANY

INDUSTRY
Specialty Chemicals

PROCESS TYPE
Batch Processing

ANALYTICS TYPE
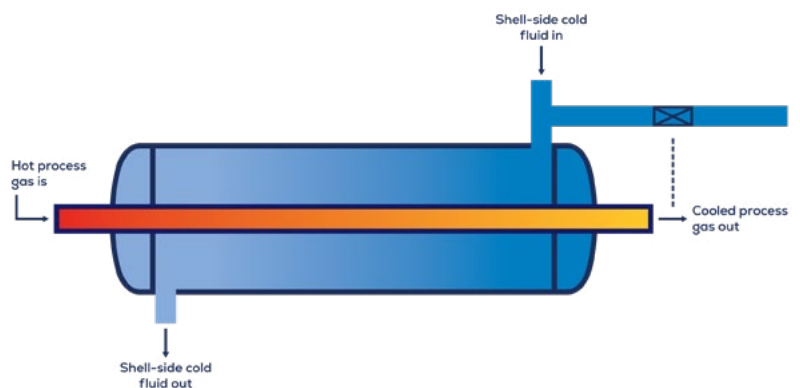Root cause analysis

KEY OBJECTIVE
Cost Reduction Operations

Optimize Operating Conditions for Heat Exchanger

BACKGROUND

At this specialty and commodity chemicals plant, production is a continuous process. Among the critical equipment on site is a shell and tube heat exchanger. At the plant, process gas from that heat exchanger goes to a baghouse that has a maximum upper-temperature limit. Based on process variables, the cooled process gas entering the baghouse has an arbitrary set upper limit of a temperature ~10° lower than the actual maximum upper-temperature limit. The plant wanted to raise the upper limit of the temperature after the turn-around.

CHALLENGE

In the past, the plant operated above the arbitrary set upper limit and wanted to compare the conditions of those time intervals to the current operation. One obstacle was that the shell-side inlet flow was not controlled. Instead, a bypass was used to gauge flow based on the outlet tube-side fluid temperature going to the baghouse."

SOLUTION

The engineers wanted to find time periods and process parameters when the tube-side outlet temperature operated above the current arbitrary set upper limit. This was to be used as a reference when trying to increase the temperature limit of the tube-side outlet to the baghouse.

Challenges

- Searching through years of data to find condition(s) when the tube-side outlet temperature operated above the arbitrary set upper limit (descriptive statistics)
- Comparing all the process parameters with the current conditions.
- Validating if raising the arbitrary set upper limit temperature was feasible.

Approach

- TrendMiner was used to perform a value based search (VBS) on the baghouse inlet temperature between two higher temperatures.
- The engineers were able to layer the search results and perform another VBS with the baghouse inlet temperature between two lower temperatures.
- The engineers could then layer these results on top of the first search results and compare the two sets of operating conditions.

RESULT

The process engineer was able to validate all the calculations. The historical process parameters validated the engineer's calculations and provided proof to the safety & environmental team. The use case led to an operational optimization, resulting in:

- Cost reduction
- Time savings
- Higher energy efficiency of the heat exchanger.

TRENDMINER FEATURES USED

VALUE BASED SEARCH

TrendMiner allows for an easy click and search for tags, just like using Google. While typing, our software auto fills best matching terms to speed up the analysis search. Value Based Search is used to quickly find anomalies in the time series data by analyzing criteria, numerical values, and limits.

LAYER COMPARE

Using pattern recognition technology, TrendMiner uses a similarity search feature to find similar past patterns. The most important part of the pattern can be emphasized with a graphical weighing factor to improve accuracy of the search results.

DATA VISUALIZATION

TrendMiner offers various visualization modes for analyzing time series data. Besides the common time trend, time series data of multiple tags can be shown in a stacked mode for specific time sequences or can be grouped together in a "swim lane". For multivariate analysis, our software offers a multi scatter plot that shows tag histograms and multiple histograms of each pair of the selected tags.

COMPARE TABLE

TrendMiner helps to discover tags with significantly different values by comparing layers or time periods. Comparing statistical data distributions and evolutions is beneficial in finding performance anomalies. The value of each tag per layer is shown as columns in a resulting table, and the value of each tag in comparison to the reference layer is shown as rows in the same table.

Join our webinars to enroll in the $15K free POC Award

JOIN & WIN
$15K
FREE POC
NEXT GEN PRODUCTION CLIENT

Click below to learn more

REQUEST LIVE DEMO

WATCH VIDEO DEMO

REQUEST PRICING

REQUEST FREE TRIAL

MORE USE CASES YOU MAY LIKE

CUSTOMER SUCCESS STORIES

KEY CAPABILITIES WHITEPAPER

TRENDMINER VIDEO TIMELINE

INDUSTRIES SERVED

RESOURCES

STAY UP TO DATE: SUBSCRIBE TO OUR NEWSLETTER

At Trendminer, we are dedicated to helping companies leverage the power of data to drive transformation and growth. We hope this document has given you new insights and ideas for how you can achieve your goals. If you have any questions or would like to learn more about our solutions, please don't hesitate to reach out. We look forward to working with you on your journey to success.