



**INDUSTRY**  
Specialty  
Chemicals



**PROCESS TYPE**  
Continuous  
Processing



**ANALYTICS TYPE**  
Process  
Analytics

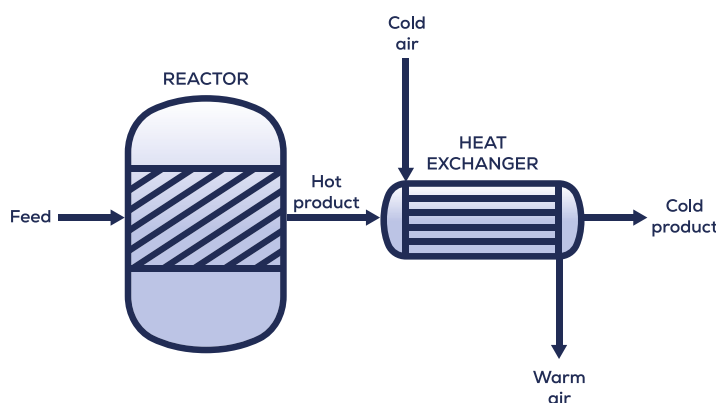


**KEY OBJECTIVE**  
Increase  
runtime

# Reduced Shutdowns Due To Coking In Vaporation Unit

## BACKGROUND

In the chemical production process, a solvent is reacted in an evaporation and reaction unit. It was desired to increase the runtime of the plant and hence to analyze if the process parameters could be altered to increase the production from the plant.



## CHALLENGE

The plant struggled with coking while the product was cooled down. This issue was accompanied with an increase in the pressure loss of the process which eventually led to plant shutdown.

## SOLUTION

- Identify possible influence factors causing the coking and pressure loss in the plant
- Mitigate or even eliminate the coking and pressure losses by improving process operation
- Increase the runtime by reducing the amount of shutdowns

## Challenges

No tool was available to simply and easily investigate process problems.

## Approach

- Add the decisive tags and search for all possible runs of the plant during the last 6 months
- Sort the search results, checking for a set maximum running time of the plant
- Use layer comparison functionality to compare a normal run with the best case run
- Export the data to excel to plot the duration versus average pressure in order to check the dependence of the runtime on the pressure

## RESULT

- A fast and easy analysis was performed showing the possibility of running the plant for a longer period if the temperature and pressure profiles were better controlled.
- The feed in the best process operation was seen to be higher than in the normal operation which gave valuable insights into production.
- Less noise was noticed during the best operation, but this was due to some improvement activities carried out specifically for this.

## TRENDMINER FEATURES USED



### TAG BUILDER

TrendMiner's tag builder allows the creation of time series data through the use of formulas on and aggregations of the tags. The results of these tags can be visualized just like any other tag. The tag builder can also be used for importing time series data via a CSV file.



### 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.



### DATA IMPORT

TrendMiner is not an endpoint but a building block in any analytics landscape and provides data import and export facilities, APIs, and OPC tools that allow integration with various business applications. Our software allows filtered time series data to be imported and exported to other tools.

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