

Sitech's Process Data Analytics Journey

How TrendMiner's self-service industrial analytics software helps Sitech's customers and stakeholders at Chemelot achieve maximum plant performance and cost-effectiveness



CUSTOMER
SUCCESS
STORY

Sitech, technology partner for Chemelot-based companies, a prestigious chemical industry campus in the South of the Netherlands, aims to achieve maximum plant performance and cost-effectiveness for its customers. Services include maintenance, technological improvements and (advanced) process control, thus ensuring that Chemelot plants maintain their competitive edge. In this success story, Marc Pijpers, Principal Process Control Engineer at Sitech tells how TrendMiner's self-service industrial analytics software helped Sitech optimize processes and asset performances with process data. He shares their approaches, failures, lessons learned and successes, some of which being how they **saved \$2.4 million/year in less than a day** of data analytics work with TrendMiner and how they were able to gain 5 years of valuable data insights within minutes rather than weeks.

JOURNEY & BUSINESS CHALLENGES

EXPLOIT THE POSSIBILITIES OF SELF-SERVICE INDUSTRIAL ANALYTICS

Sitech provides maintenance, technological improvements and (advanced) process control to help industrial companies at Chemelot maintain their competitive edge. DSM, Borealis, Arlanxeo, Sobic and many others can count on Sitech's latest technological applications, the right expertise, the best innovations and far-reaching digitalization.

To take a step towards optimizing process and asset performance, Sitech already performed data analytics to some extent. The need for proper data analytics was stressed even more when the Sitech Asset Health Center was founded, adding new services to the portfolio. Their objective? Zero surprises and no unplanned downtime of assets, which meant Sitech needed to be able to predict the performance and conditions of assets at all times.

In order to create a digital and innovative culture, Sitech realized that analytics of data had to be in their employees' genes which shouldn't be such a problem as the manufacturing industry is the proud owner of most of the data points in the world, even surpassing Amazon and Google. However, the same industry is at the bottom end of translating these



Marc Pijpers

Principal Process
Control Engineer
Sitech

Marc Pijpers has a Master's degree in applied physics from the Technical University Eindhoven. He has over 15 years of experience in the field of process control as well as in designing and implementing basic and advanced process control solutions. Over the last two years, Marc's activities have extended to analytics, by re-supporting predictive maintenance and operations improvement projects. Marc is an evangelist for using data analytics in the process industry and likes to help manufacturers get more from their data.

data points into actual information. The industry is experiencing a number of crucial data analytics challenges:

- Improper tools
- Insufficient analytics knowledge
- Insufficient embedding of analytics in work processes
- Unclear economical benefits
- Insufficient management support



As a result, engineers spend the majority of their time stretching the limits of Excel trying to acquire and prepare data to visualize the problem, instead of actually analyzing the problem and gaining crucial insights from it. Additionally, the “language” barrier between subject matter experts and data scientists was too big when it came to problem solving. Training Sitech’s process engineers to become data scientists was too time-consuming and inefficient, while hiring additional data scientists was too costly and risky.

This is when Marc Pijpers, Principal Process Control Engineer at Sitech, asked the question: *how can we overcome these challenges by exploiting the possibilities of self-service analytics?* His aim was to put critical analytical skills and capabilities into the hands of the process and control engineers, enabling them to solve problems on their own and passing the more complicated issues on to the data scientists.

A SELF-SERVICE ANALYTICS BUSINESS CASE

Pijpers was very aware of the fact that translating big data analytics challenges into a proper business case was crucial in order for his organization to allocate sufficient time and money.

He also realized that big data analytics is a journey. It wasn’t just about buying new software: process engineers needed to learn and adapt to using the software and rethink how they handled data. That is why Pijpers decided to launch a pilot. He focused on finding a supplier that was capable of providing the right software, as well as help adapt an analytics mindset and bring added value.

With that in mind, Pijpers selected TrendMiner’s self-service industrial analytics software, because it is:

- **Easy to use:** plug-and-play software is more likely to succeed in the organization when the users are able to easily use it, without a steep learning curve.
- **A time-saver:** the people handling the software should feel like it saves them time.
- **Connecting seamlessly within the existing IT landscape:** let subject matter experts allocate their time to solve issues, instead of acquiring and preparing large datasets.
- **Creating value:** helps solve ‘unsolvable’ problems.
- **Providing effective and efficient support:** real-time support, not only with bug-fixing but also helping process engineers to find the functionality they need.

OPTIMIZING PROCESS AND ASSET PERFORMANCE

TrendMiner's self-service industrial analytics software, which Pijpers describes as "a trending client on steroids", enables Sitech to perform descriptive, diagnostic and predictive analytics. Which means it helps process engineers in certain situations to gain insight into what happened (descriptive), why and how it happened (diagnostic) and how the situation can be prevented or ensured to happen again in the future (predictive). TrendMiner's advanced pattern search capabilities use data from various historians such as Osisoft PI and Aspentech IP.21.

Sitech uses TrendMiner to:

- Compare (similar) situations to find out which events result in (un)desired situations
- Perform root cause analysis sessions, which immediately answers questions that traditionally were put on an action list
- APC and 6sigma data cleaning, to create subsets of relevant data
- Automate notifications, eliminating repetitive tasks by automatically monitoring important processes.

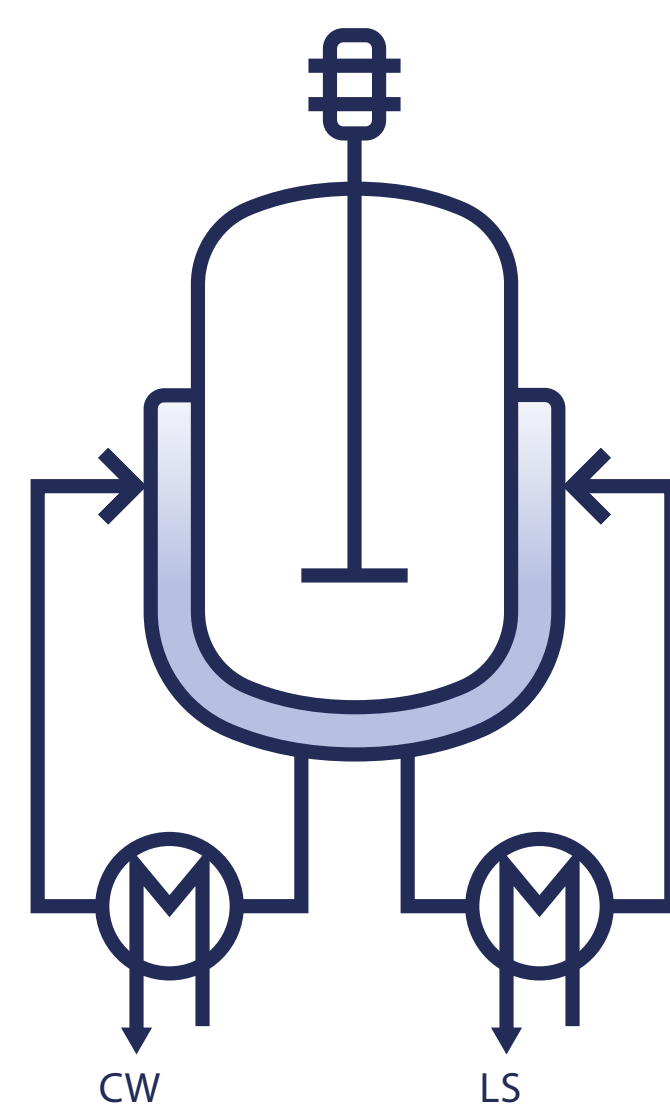
The 4 use cases below show how TrendMiner software enabled process engineers to:

- Solve previously unsolved issues
- Verify hypothesis and prove them to be either true or false, so they can be addressed or ruled out for the future
- Find new ways to improve performance, because data provides new insights.
- Contextualize asset performance with process data with (predictive) industrial analytics.

1. Contextualize asset performance with process data: 1%+ overall revenue increase of the entire production line

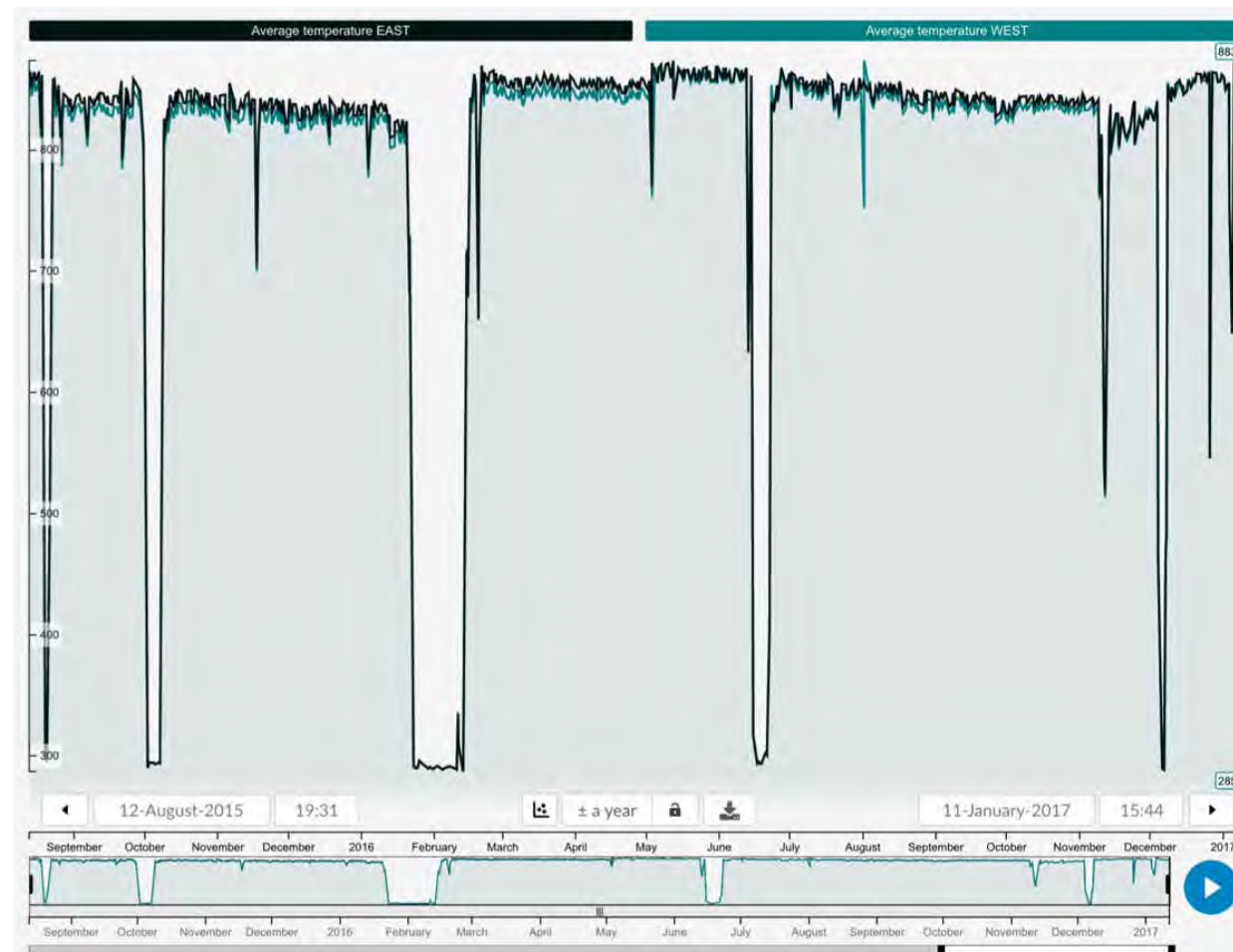
One example where asset performance is directly related to process behavior is the fouling of heat exchangers. In a reactor with subsequent heating and cooling phases, the controlled cooling phase is the most time-consuming, and it is almost impossible to monitor fouling when the reactor is used for different product grades and a different recipe is required for each grade. Fouling of heat exchangers increases the cooling time, but scheduling maintenance too early leads to unwarranted downtime and scheduling too late leads to degraded performance, increased energy consumption and potential risks.

In the instance of the production of a polymer, a monitor was set up to look at cooling the times of their most highly produced products. If the duration of the cooling phase starts to increase, a warning is sent to the engineers who can then schedule timely maintenance. The gained benefits are extended asset availability, predictive maintenance leading to operational and maintenance cost reduction and reduction of safety risk. The overall impact was 1%+ overall revenue increase of the entire production line.



2. Descriptive analytics: gaining 5 years of valuable data insight in minutes rather than weeks

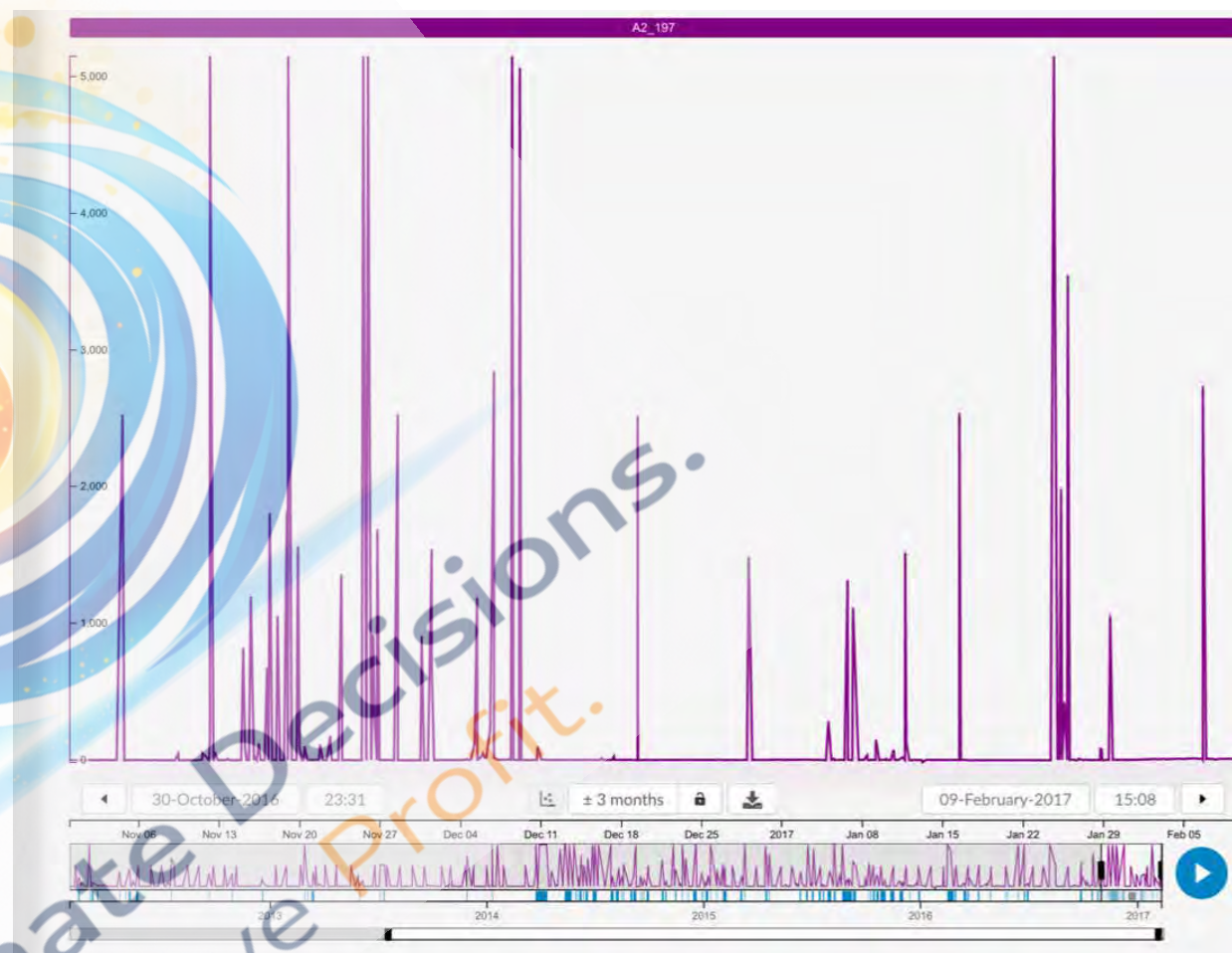
In another case, process engineers of Sitech experienced that thermal stress of a reactor was too high due to repetitive fast cooling and heating. With TrendMiner, the team set up a way to monitor the amount of times the problem occurred in order to gain insight into how many thermal cycles result in a failure. Also, the software notified the team when the reactor had been thermally stressed. In a matter of minutes, Sitech's team was able to look back 5 years in time and export valuable search results to perform lifespan residue analysis.



Temperature profiles of the reactor of interest

3. Diagnostic analytics: 5%+ revenue increase, representing \$2.4m/year

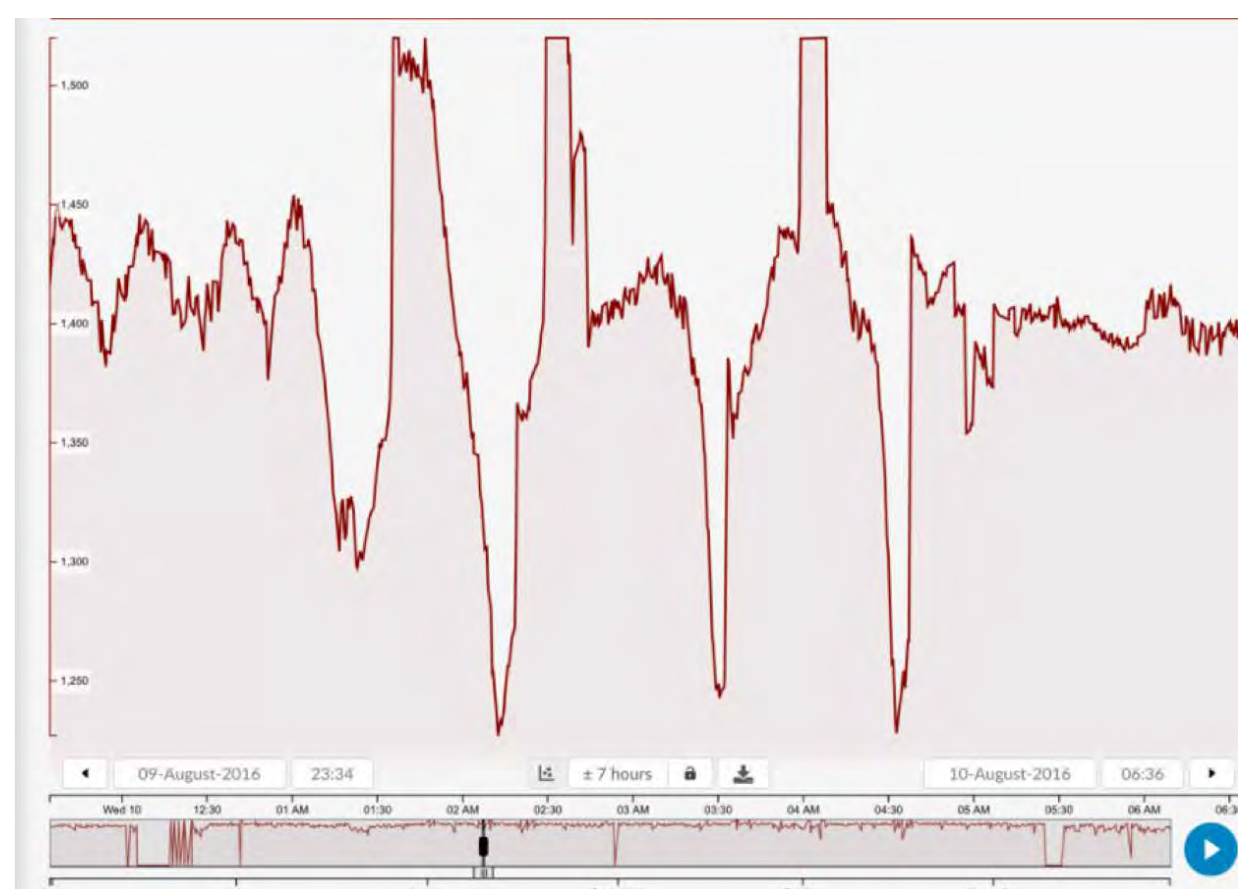
The Haber-Bosch nitrogen-fixation reaction is used for over 100 years to make ammonia and other nitrogen-containing compounds from nitrogen and hydrogen. Although perceived as a fully optimized production process, carbon dioxide peaks were found in the washing column. Previous data analysis projects failed to find the root cause, but TrendMiner's self-service industrial analytics software helped Sitech to search and compare peak periods with normal operation periods. Also, the team performed layer comparison which helped identify which processes influenced variables. With help of these findings, Sitech was able to realize a stable operation, which resulted in increased production, with a 5% revenue increase - representing 2.4 million dollar per year - as a result.



Carbon dioxide peaks in the washing column for the Haber-Bosch process

4. Diagnostic analytics: improving process insight and reducing manual labor costs

In this particular case, the Sitech team was discovering certain peaks in product flows, causing unwanted saturation of sensors. Manual correction was inevitable for KPI reporting. Influence factor analysis was performed on peaks, identifying the root cause and insight into how highly correlated events are, as well as showing the significance of the event occurring. This helped the Sitech team to improve process insight, reduce manual labor costs and improve process stability.



Product flow peaks showing missing data due to saturated sensors

“I believe in working with data scientists, but the belief that Sitech achieves enormous results with self-service industrial analytics software is even stronger. Our pilot was a great success thanks to TrendMiner”

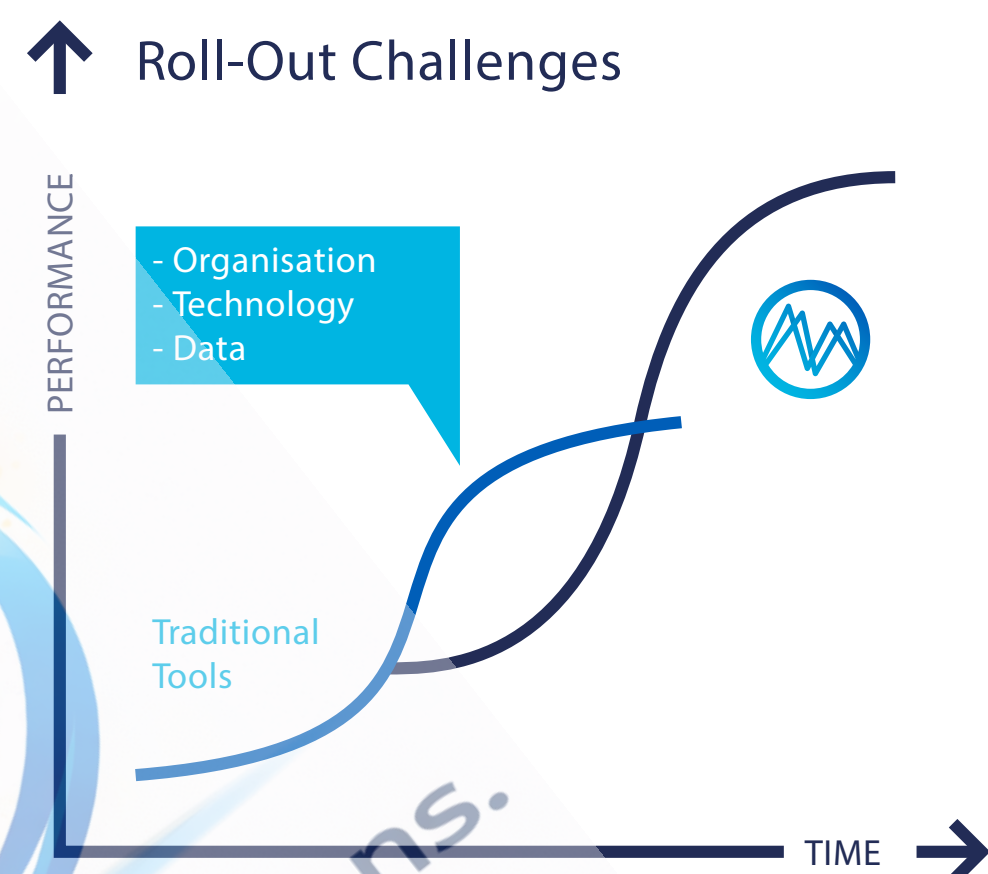
Marc Pijpers

Principal Process Control Engineer at Sitech

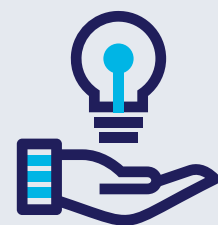
BENEFITS

A NEW WAY OF LOOKING AT TECHNOLOGY AND DATA

Adapting to new software like TrendMiner often asks for an organizational shift: a new way of looking at technology and data. To prevent process engineers from falling back on traditional ways of working – the well-known Double S curve of innovation – TrendMiner was able to provide Sitech a process engineers on demand: a process engineer by nature, and experienced TrendMiner user, helping Sitech’s process engineer to solve cases. It helped Sitech to solve issues faster and shorten the learning curve.



The gains of self-service industrial analytics are very clear for Sitech. It enables the team to analyze issues that are too complex using conventional tools, and helps them gain faster insight into issues. It enforces alternative thinking and a new way of looking at their operational performance by using data.



WHAT DOES A SELF-SERVICE ANALYTICS PROJECT WITH TRENDMINER LOOK LIKE?

Implementing a self-service industrial analytics project in your organization, like Sitech successfully did, could help your process engineers and operators to easily search for trends and question their process data directly – without help from a data scientist. However, structuring your self-service industrial analytics project well is essential for a successful outcome and gaining business value.

Curious what self-service industrial analytics with TrendMiner looks like?

[DOWNLOAD E-BOOK](#)

Want to see TrendMiner in practice? Then it's time to request a demo:

[REQUEST A DEMO](#)