

# visplore

## User Success Story:

How performance engineers at a utility company efficiently optimized start-up and ramp-up operations.



### **Problem:** Tedious analysis of increasingly performance-critical start-up operations

Substantially increased volatility in the power grid requires utility companies to cycle their thermal power plants output more frequently and more rapidly. Optimizing these start-up, ramp-up and down operations therefore plays an increasingly important role in the utility's performance optimization, to save fuel while remaining within the plant's technological capabilities.

Optimizing start-up procedures is a complex task. In the past the effectiveness depended heavily on experience and intuition of the individual operators. Steps such as extracting data and comparing periods of load changes are very tedious, when using tools as for example Excel. Further, as start-up optimization requires in-depth knowledge of critical parameters, the analysis process could neither be fully automated nor outsourced to data scientists.

### **Need:** More efficient optimization by performance engineers

A utility company was looking for a solution enabling its performance engineers to conveniently optimize start-up and ramp-up operations. Consequently, it was important providing an effective data processing tool to easily identify periods of load changes and extract respective data sets for comparison and further analysis.

The engineers needed to compare and interpret important KPI's such as fuel consumption, the duration for load changes, and the corresponding ramp rates. Other safety relevant parameters had to be put in relation to the load change process so that maximum permissible ramp rates and permissible peak values of critical parameters could be properly observed.

## Highlights



Extracted operations via pattern search efficiently



Intuitively compared and calculated KPIs for the operations



Standardization through templates

## Benefits



Reduced the analysis effort by a factor of 10



Accelerated turbine start-up by 30 minutes with 20% less fuel consumption



## **Solution:** Intuitive extraction, analysis and standardization

Visplore enabled the performance engineers to analyze start-up processes with unprecedented quality and speed. Efficient pattern search and interactive data selection allowed engineers to independently extract start-up and ramp-up operations from the utility's process information system data very quickly and reliably.

The operations could be displayed for multiple sensors side-by-side as well as on top of each other and thus, be efficiently compared in detail. Interactive tools made it possible to intuitively calculate and analyze suitable KPIs. Similarly, with just a few clicks, the optimal start-up procedures could be selected to analyze the respective conditions across a multitude of sensors. The analysis was saved as a standard template and is now regularly applied to new data.

## **Result:** Better plant performance and massively reduced analysis effort

The comprehensive analysis of start-up, ramp-up and down operations in Visplore enabled the performance engineers to optimize the instructions that can be provided for the operators. Without jeopardizing equipment integrity, start-up operations could be accelerated this way by about 30 minutes and fuel consumption for start-ups and ramp-ups could be reduced by 20% on average.

Compared to their previous workflows using Excel, the effort for data analysis was reduced by a factor of 10. In addition, this interactive visual approach to data analysis significantly expanded the understanding of the process.

*“Visplore’s intuitive capabilities for extracting and analyzing start-up and ramp-up operations were a key factor in our engineers’ ability to improve the performance of our plants.”*

**Performance Engineering Expert,  
Utility Company**



## **visplore – Fast visual analytics for energy experts**

- ✔ Monitoring Plant Operation
- ✔ **Start-up and Ramp-up Optimization**
- ✔ Building Physically Plausible Digital Twins
- ✔ Modelling for Condition-Based Monitoring
- ✔ Troubleshooting of Complex Energy Systems

