Air Liquide has been relying on the PI System since 2001. Every day it uses over one billion data streams and 500,000 tags from 170 production sites in 40 countries. In addition to the local PI System servers in their plants, they also have two regional PI collectives: one in France, aggregating data across Europe, the Middle East and India, and the other in Singapore for Asia Pacific. Air Liquide has been using PI System tools for data visualization, sharing information, automated reports and billing. But when Air Liquide launched the SIO initiative in 2015, Rioux and his team began to ask themselves if there were more they could do to leverage their data.

They had tons of new real-time operational data coming in every day, along with the historical data they had stored in the PI System. There had to be a way to use this valuable data to improve the efficiency and reliability of their plants.

A NEW ALGORITHM AND NEW INSIGHTS

To find a new approach, the Large Industries group formed a partnership with Alizent, an Air Liquide subsidiary focused on IIOT asset management. Rioux and his team then began visiting different plants to ask operations and facilities managers what they thought could be done better. Through their research, the team isolated a few key challenges. First, the variety of PI System data streams and tags across different plants made it difficult to find meaningful patterns. Second, the historical data was limited in scope and depth.

To address these challenges, they developed a new data mining algorithm that compares real-time PI System data with historical operational data. This algorithm helps identify anomalies and trends that can reveal areas for improvement.

THE CHALLENGE

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BENEFIT:

The project paid for itself in three months and delivered tenfold operational savings in eight months.
of different algorithms they had been using for the past 17 years for analyzing and conducting operations always seemed to lead to a “black box” effect. Engineers didn’t know how the algorithm worked and didn’t trust it to deliver insights. Secondly, these murky algorithms were failing to deliver actionable results. Rioux and the other members of the SIO initiative realized they needed a new algorithm, one that would interact with the wealth of PI System data to deliver prescriptive and actionable insights into the operations of their plants. The team developed an algorithm that used their PI System data to bring benefits far beyond their expectations.

The new algorithm uses real-time data to compare the current performance of gas production equipment with previous operational data. The algorithm does this by drawing on the nearly 17 years of historical PI System data that Air Liquide has accumulated from its plants. The algorithm compares data related to profit and loss, production cost, and KPIs and then provides prescriptive insights related to adjustable parameters of Air Liquid’s assets. This prescriptive information is sent to SIO analysts who then recommend corrective measures to improve efficiency.

**UNEXPECTED RETURNS**

The returns Air Liquide realized by using their new algorithm allowed them to meet their targets before the initiative’s 2020 deadline. Engineers have already started using the SIO algorithm in all hydrogen production plants and can do real-time adjustments to the units to ensure they are operating at maximum efficiency. The company obtained such dramatic efficiency savings that the project paid for itself within three months. Within eight months, Air Liquide obtained operational savings that were ten times greater than the cost of the project.

“It was a really profitable project,” Rioux explained during his presentation. “All the power of Asset Framework and what we can do is really huge,” he said. The results — and the numbers — speak for themselves. In the future, Air Liquide is planning to use AI technology to make its algorithms even smarter, as the company continues to build on the success of its SIO program.

**For more information Air Liquide and the PI System, watch the full presentation here.**

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Chiba, Yukito; Rioux, Olivier; Roy, Andrea. “SIO Perform Stream@Air Liquide: How OSIsoft PI System with Analytics Improve ROI.” <https://www.osisoft.com/Presentations/SIO-Perform-Stream@Air-Liquide--How-OSIsoft-PI-System-with-Analytics-Improve-ROI>