



IPLOM

Overview

Country or Region: Italy

Industry: Fuel Manufacturing

Customer Profile

IPLOM, a privately held company, manufactures environmentally compatible fuel products including diesel and fuel oil, liquid CO₂ for soft drinks, and boasts 40 percent of the northern Italian bitumen market.

Business Situation

As a small player in a competitive market, IPLOM needed to manage and optimize production in a real-time environment. IPLOM also needed to demonstrate the consistency of the products in real-time in an easily accessible web site to its customers.

Solution

IPLOM first selected OSIsoft Sigmafine to provide mass balance yields. After one year, the company purchased the PI System, and is now planning an RtWebParts implementation.

Benefits

- Ability to communicate quantity and quality statistics to interested customers in real time
- Create readily available KPIs and yield to all refinery employees resulting in better decision making
- Reduced deviation between planned and actual yield to help reach refinery targets
- Significant ROI based on lowering transaction time between batches of crude oil
- Increased diesel yield resulted in \$1m jump in profitability

Using Analysis Framework to Improve Decision Making and Optimize Production

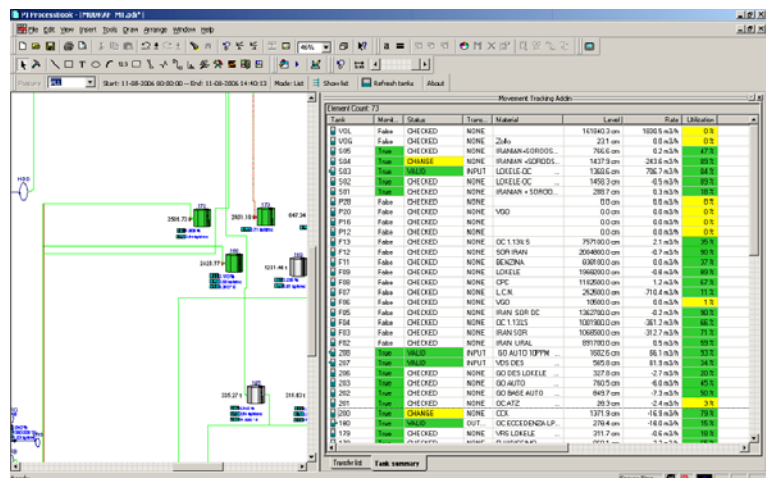
"With the OSIsoft solution, we can track quantity, quality, and consistency for each batch of crude. We can then repeat the same finished product as often as needed. If the batch deviates from the target, we can make an immediate adjustment."

Nicoletta Aloï, Senior Chemical Engineer, IPLOM

IPLOM S.p.A., is a small, privately-held refinery located in the beautiful northwestern countryside of Italy near Genoa Harbor. The company manufactures environmentally compatible fuel products including diesel and fuel oil, liquid CO₂ for soft drinks, and boasts 40 percent of the northern Italian bitumen market.

IPLOM initially purchased OSIsoft Sigmafine in 1999 for mass balance reconciliation. Next, they wanted to reconcile plant production data, and became one of the early adopters of OSIsoft Sigmafine. The company purchased the PI System, Sigmafine3, PI-ProcessBook, and PI DataLink to reconcile refinery yields. By 2005, it had upgraded to Sigmafine4 with Analysis Framework (AF), PI ACE, and PI ICE.

Figure 1. Movement Tracking: presenting tank indicators calculated by AF analysis rules



A Brief Introduction to Sigmafine4 and AF

Sigmafine4, the reconciliation engine for Analysis Framework (AF), reconciles and validates raw plant measurements that can be compared to baseline parameters and predetermined business models. It collects information collected from the PI System and the context database. When IPLOM upgraded to Sigmafine4, it began to use the AF Modeler to configure tanks. The company also added new plug-ins for tank monitoring and transfer calculations.

AF is a managed environment for building contextual models, accessing and integrating data, and performing analyses. At the heart of AF are fundamental components: a metadata warehouse, templates, and advanced analytics. It includes a library of templates, data references, and reporting templates to support yield accounting and data reconciliation.

A powerful benefit of AF is the reusable Analysis Rule, which was a key factor in IPLOM's real-time analysis implementation. IPLOM chose to use Analysis Rules rather than external applications because they defined algorithms that can be applied and reused in AF models. For example, you can easily reapply an Analysis Rule to multiple models or element groups of the same type.

According to Massimo Galli, Operations and Delivery Manager of Pimsoft, the Italian OSIsoft partner that supported IPLOM in its growing path, "With AF Analysis Rules, we can split complex problems and concentrate on AF model and attribute configuration, encapsulate the intelligence in the plug-ins, and effectively use the information with other PI System tools."

Maintaining a Competitive Edge with AF

IPLOM uses its OSIsoft arsenal of products to maintain a competitive edge in the areas of movement tracking, performance management, and yields reconciliation. Sigmafine, AF.

Movement Tracking

Movement Tracking (MT) leverages AF and Sigmafine to

provide a dynamic graphic overview within ProcessBook of all material movement in the IPLOM facility (see Figure 1). A facilities manager can view and edit transfers and associated attributes in AFExplorer, in ProcessBook and in DataLink, the OSIsoft Excel add-in.

The company uses AF module plug-ins and analysis rules to improve efficiency in movement operations and to consolidate accuracy of movement data in its refinery daily balance procedure.

The following AF Analysis Rules run automatically:

Tank Monitoring - To cross-check tank and movement data and detect inconsistencies

Transfer Calculation - To provide online transfer calculation services based on mass balance data to track concurrent movements

Tank Qualities - To provide an online estimate of content (quality) based on actual tank and movement data

The Movement Tracking addin to ProcessBook enables online graphical visualization and management of all movements in the refinery.

Performance Management

As the IPLOM suite of OSIsoft products has grown, so has its performance management expertise. The company has developed a performance management plan, called the Running Plan, to ensure consistency for its products and to optimize production. This plan and its results are communicated to the refinery managers through a portal website.

The Running Plan

As a niche provider of fuel products, the company is often requested to produce small batches of a product, called campaigns. To manage each campaign, the company uses a Running Plan, which defines all the information needed at execution time to process a specific crude or crude mix and to obtain the precise quantity and quality for each batch.

The Running Plan (refer to Figure 2) performs the following processes:

Defines product targets

Assigns the plan to operations

Reconciles measures and calculates KPIs
 Reports and distribute performances
 Evaluates to act and correct deviations from the target
 Each Running Plan measures the theoretical target against the actual target data stored in the PI server.
 The Running Plan therefore continually refines itself, as it runs actual performance data against historical data.



Figure 2. IPLOM Campaign Running Plan

A Running Plan that Runs Itself

Prior to implementing the OSIsoft solution, users had to compare Excel spreadsheets to reconcile yields in a process that took a full day. Today, calculations still use Excel (using DataLink) as the front end, but they run automatically (hourly, daily, and weekly depending on the audience) and provide online performance indications to the entire refinery from the control room to the Operations Manager. The company uses ACE to set up automatic procedures for systems. The IPLOM Running Plan uses the following OSIsoft products:

OSIsoft Product: IPLOM Running Plan Activity

PI Module Database: Stores the target data for the Running Plan and supports multiple calculation templates

PI-ProcessBook: Running Plan assigned to operations. Shift Chief declares crude switch from control room

PI ACE: Sets up automatic reconciliation procedures for Sigmafine4 model and external systems

Sigmafine4/AF: Yield reconciliation model composed of 50 layers that can be combined to represent different plan configurations. Reconciliation is performed each hour to produce hourly KPIs

RtPortal / PI ICE: Presents yield reconciliation data in a Web interface to employees and select customers. PI-ICE is being migrated to RtWebParts

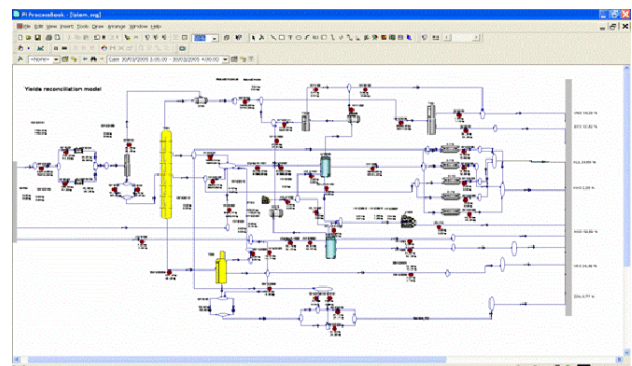
It is particularly impressive that the Running Plan can be executed by one engineer. According to Nicoletta Alois, Sr. Chemical Engineer, "The Running Plan and Yield Reconciliation work even if I go on vacation. I set up the Running Plan for a batch with reusable models from AF and schedule the plan to run with PI ACE."

Refinery Yields Management

The Refinery Yields Management environment expedites refinery yields reconciliation, aggregation, analysis, and presentation. Originally, IPLOM used Sigmafine3 to run mass balances and reconciliation. When the company upgraded to Sigmafine4, it used both Sigmafine and AF for refinery yields.

An AF analysis data reconciliation module calculates yields and yield calculations. With AF, users can aggregate the calculations to show shift and types of processed crude and to provide valuable history for future analysis. A custom Analysis Rule calculates the deviation between actual and theoretical yields.

Figure 3. IPLOM Yield Reconciliation



IPLOM implemented the complete yield scenario from planning to reconciling and aggregation. The company boasts impressive economic savings from increased yield profitability and reduced crude switching time. The Operations Manager runs plant yields and utilities reconciliation automatically on an hourly basis for a daily accounting balance. Online performance monitoring allows users to rapidly identify yield degradation due to incorrect operating parameters.

Historical analysis allows the Production Manager to redefine better targets starting from the improved performance of the refinery. The Facilities Manager now enjoys a high degree of control over crude switching operations. The increased diesel yield earned IPLOM a \$1 million jump in profitability.

Moving from PI ICE to RtWebParts

IPLOM also makes extensive use of the OSIsoft RtPortal web-based visualization components as a communications vehicle. The company recently began to produce CO2 for a customer who makes soft drinks. The customer was impressed by the ability to access and view all the CO2 quantity and quality data on a web portal in real time.

In the coming months, IPLOM plans to implement RtWebParts, a visualization dashboard component for Microsoft SharePoint Services. They are also planning to combine data from the OSIsoft PI System with other data sources, including control-based emissions data and relational data. RtWebParts will be deployed throughout the company to bolster an already successful communications and collaboration strategy.

IPLOM has been able to continually grow their business effectively by integrating and updating its operation processes with OSIsoft products. Through the effective use of Sigmafine4, AF, ProcessBook, and DataLink, the company has optimized operations, received significant return on investment, and grown their business through attracting new customers.

IPLOM Looks to the Future with OSIsoft

IPLOM plans to use new OSIsoft products that fit into its business and operations plans. For example, the

company plans to use:

AF to provide preventative maintenance for tanks and pumps

Composition Tracking between the coastal tanks and refinery to improve the quality of the crude mix feed

The Data Directory (code-named Foundation), which will unify the capabilities of OSIsoft's two main context databases, the Module Database and Analysis Framework. It will also provide access to data outside the PI System in a way that allows it to be intuitively combined, used, and linked to all OSIsoft products.

RtWebParts through-out the company to distribute KPIs and to improve communication and collaboration
Nicoletta Aloï, arguably the most proactive OSIsoft user at IPLOM, is well qualified to sum up the benefits, "The smart integration reached using the OSIsoft infrastructure allowed engineers to focus on real business objectives. The Performance Management approach allowed us to create a lean, very effective production and plant management organization."