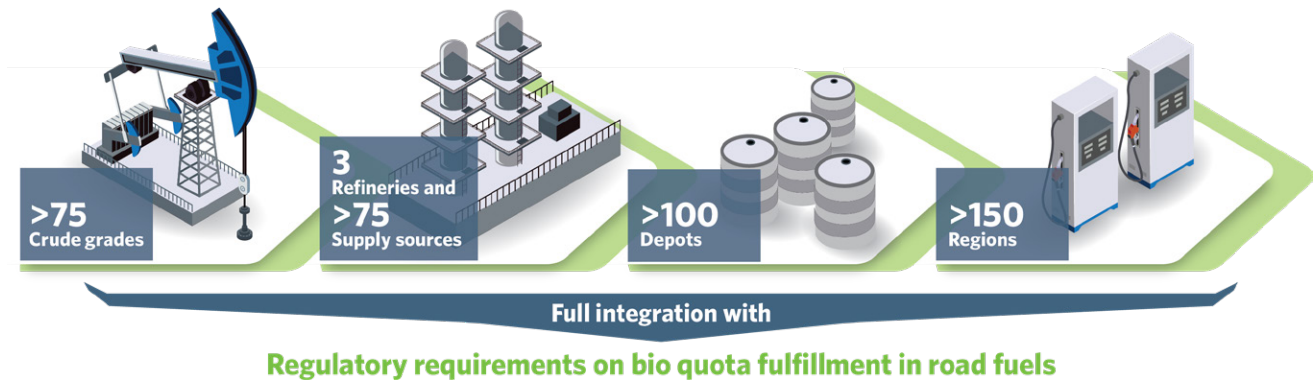
OMV Optimizes Biofuels Business With Migration to Aspen Unified PIMS™

aspentech | Case Study

Introduction

OMV, a leading energy and chemicals company, operates three refineries and over 1,700 filling stations across eight European countries. With a strong emphasis on sustainability, OMV aims to pioneer low-carbon solutions by reducing fossil fuel throughput and enhancing biofuels integration by 2030. To support this vision, OMV partnered with AspenTech to migrate its legacy Aspen PIMS application to Aspen Unified PIMS (AUP) and optimize its biofuels business.



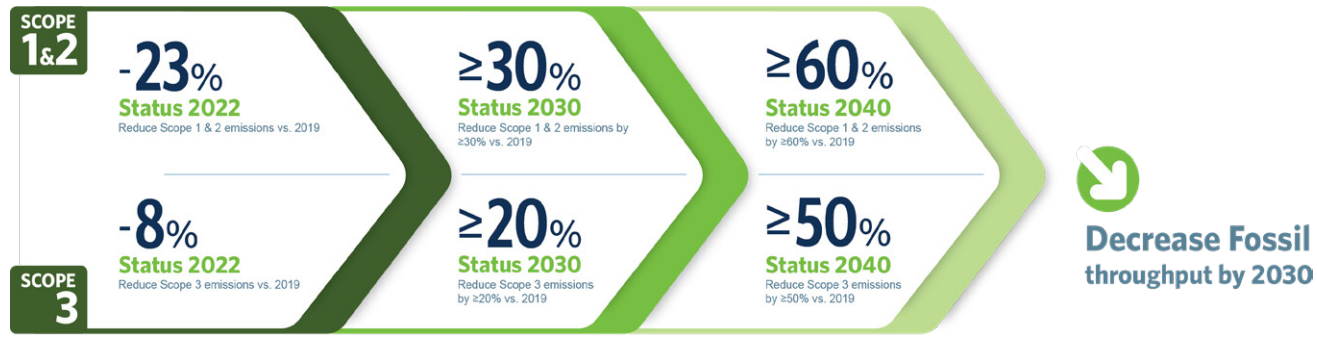


Figure 1. OMV has made significant commitements aimed at reducing emissions in the coming years.

Challenges

OMV's initial optimization framework, built on the Aspen PIMS distributive recursion (DR) methodology, had been in place for many years. As conditions changed, the system presented several challenges, notably the complexity of its existing models. OMV's DR-based models, developed over decades, handled a global environment comprising 30,000 rows and 35,000 columns and a local model with 12,000 rows and 15,000 columns.

This intricate system was resource-intensive and complex to manage. In addition, DR was approaching the end of its lifecycle, so OMV needed a future-ready solution that could support ongoing and new developments.

As the company began transitioning to AUP, they also encountered several additional challenges:

1. **Resistance to change.** Experienced users accustomed to DR workflows were initially resistant to adopting the new system, perceiving it as disruptive.
2. **Infrastructure issues.** Initial performance issues with AUP arose due to inadequate hardware, slowing execution times and reducing efficiency.
3. **Data integration limitations.** OMV's extensive supply and distribution network required innovative solutions to integrate legacy data formats into the new system.

The Migration Journey

OMV's transition to Aspen Unified PIMS followed a structured, multi-phase approach to address these challenges effectively. OMV began by evaluating the feasibility of transitioning from DR to Aspen PIMS-AO™ (Advanced Optimization), the precursor to Aspen Unified PIMS. This preparation phase included simplifying recursion structures in existing models to ensure compatibility with AUP's mathematical frameworks.

Next was model conversion and testing. Conversion of models from DR to AO highlighted several advantages, including improved mathematical stability and higher objective functions. OMV ensured alignment between legacy and AUP models through rigorous validation. Along the same lines, for data management, OMV retained its Excel-based input system and integrated it with AUP via an Excel add-in, streamlining data uploads and structural updates.

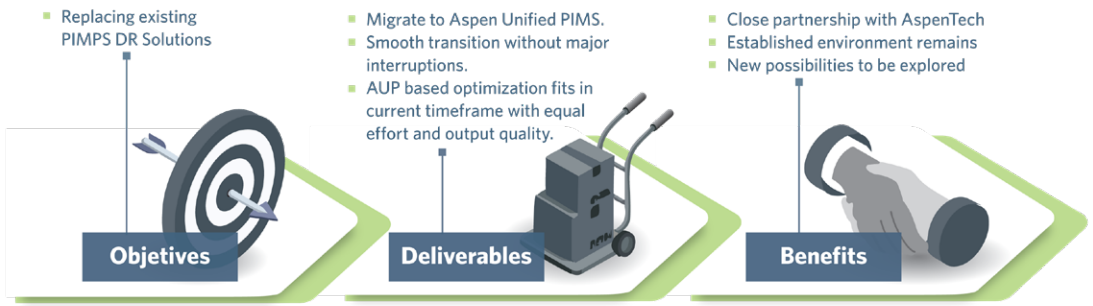


Figure 2. Structure of the OMV AUP implementation project.

OMV required technical adjustments, including that AspenTech addressed identifier constraints by expanding character tags for depots and markets, enabling smooth data migration. Additionally, server performance was enhanced by upgrading hardware specifications to optimize AUP's web-based infrastructure.

Finally, OMV ensured stakeholder engagement by developing detailed training programs for planners, economists and investment teams. Workshops and Q&A sessions with AspenTech facilitated user adoption. Defining clear roles within the system also limited structural changes to expert users, thereby enhancing collaboration and minimizing errors.

Results and Outcomes

The most important result was enhanced operational efficiency and performance gains, as the improved solver efficiency in AUP reduced execution times, particularly for large-scale models. In addition, AUP's advanced optimization engine eliminated local optima DR models, resulting in higher stability and more accurate outcomes.

AUP supported OMV's strategic goals, namely expanding their biofuels business into multiple countries, by ensuring compliance with varying regulatory requirements in those markets. The AUP model enabled precise blending processes, considering availability, demand and pricing for feedstocks.

> **"We are always striving to be on the leading edge of technology, so there was no other way than converting to Aspen Unified PIMS. The software supports an easy and smooth setup of what-if scenarios, enabling us to explore a wider solution space."**
>
> **—Dietmar Steinschorn, Advisor LP Tools, OMV**

Moreover, AUP ensured OMV's systems would be modern for many years to come—future-proof—with multi-user capabilities, audit features and advanced case management tools that have positioned OMV for sustained innovation.

There were also several improvements to the user experience:

- Intuitive interfaces and integrated reporting tools reduced the learning curve and fostered greater adoption among users.
- User roles, another valuable security feature, were clearly defined, limiting structural changes to expert users and enhancing collaboration through shared workspaces.
- AUP results could be integrated into the existing custom reporting systems OMV had developed and used successfully for years. This expedited the project and enabled flexibility.

For ad-hoc reports, AUP offered several options, including:

- The ability to quickly make graphs by selecting data and right-clicking
- The planner's work area for pivot-table-like work
- Traditional PIMS HTML and Excel reports
- Full integration with Microsoft Power BI

Figure 3. Enhancements to OMV's business enabled by AUP.

Biofuels Business Optimization

One of OMV's most significant achievements with AUP was the successful modeling of its biofuels business. AUP enabled compliance and flexibility by allowing OMV to meet varying biofuel regulatory requirements across its core markets. Blending constraints, greenhouse gas (GHG) reduction targets and feedstock availability were all integrated into the optimization process.

Furthermore, the biofuels model was seamlessly integrated with the broader refinery planning framework, leveraging AUP's capabilities for data consistency and cross-functional collaboration. Multi-period modeling and scalability supported dynamic planning, enabling OMV to adapt to market fluctuations and regulatory changes.

Bio compliance per country

Regulatory lanscape varies within OMV core markets

Country specific targets and requeriments regarding:

- GHG
- Advanced e%
- DK/OK v%
- UERs
- Overall e%
- OK e% (RON 95)
- Food cap e%
- Waste cap e%
- High-ILUC

Examplified by

GERMANY	
GHG	8%
Advanced e%	0,3%
UER cap	1,2%
Food cap e%	4,4%
Waste e%	1,9%
High-ILUC	no

SLOVAKIA	
GHG	6%
Advanced e%	0,5%
DK/OK v%	6,9%/9% quarterly
Min FAME v%	6,9%
UERs	accepted
Overall e%	8,6%
Food cap e%	6%
Waste cap e%	1,76%
High-ILUC	no

HUNGARY	
GHG	6%
Advanced e%	0,2%
DK/OK v%	6,9%/9% quarterly
Min FAME v%	6,9%
UERs	accepted
Overall e%	6%
Food cap e%	1,76%
Waste cap e%	1,76%
High-ILUC	Yes, <2019 level
Overall e%	8,4%
OK e% (RON 95)	6,1%
HVO e%	0,2%

Figure 4. Regulatory landscapes vary within OMV core markets.

Lessons Learned for Successful Implementation

1. **Effective Change Management:** Engaging all stakeholders early and providing comprehensive training ensured a smooth transition and widespread acceptance of the new system.
2. **Technical Preparedness:** Upfront investments in hardware and detailed feasibility studies minimized disruptions during migration.
3. **Testing and Validation:** Extensive testing and phased implementation minimized risks and ensured alignment with business objectives.

Conclusion

OMV's migration to Aspen Unified PIMS represents a milestone in its journey toward sustainability and operational excellence. By partnering with AspenTech, OMV successfully modernized its planning infrastructure and optimized its biofuels business to meet future challenges.

The migration to Aspen Unified PIMS not only addressed immediate operational challenges but also positioned OMV to lead in biofuels innovation and sustainability. By leveraging AUP's advanced capabilities, OMV is well equipped to achieve its 2030 goals and drive long-term value for its stakeholders.

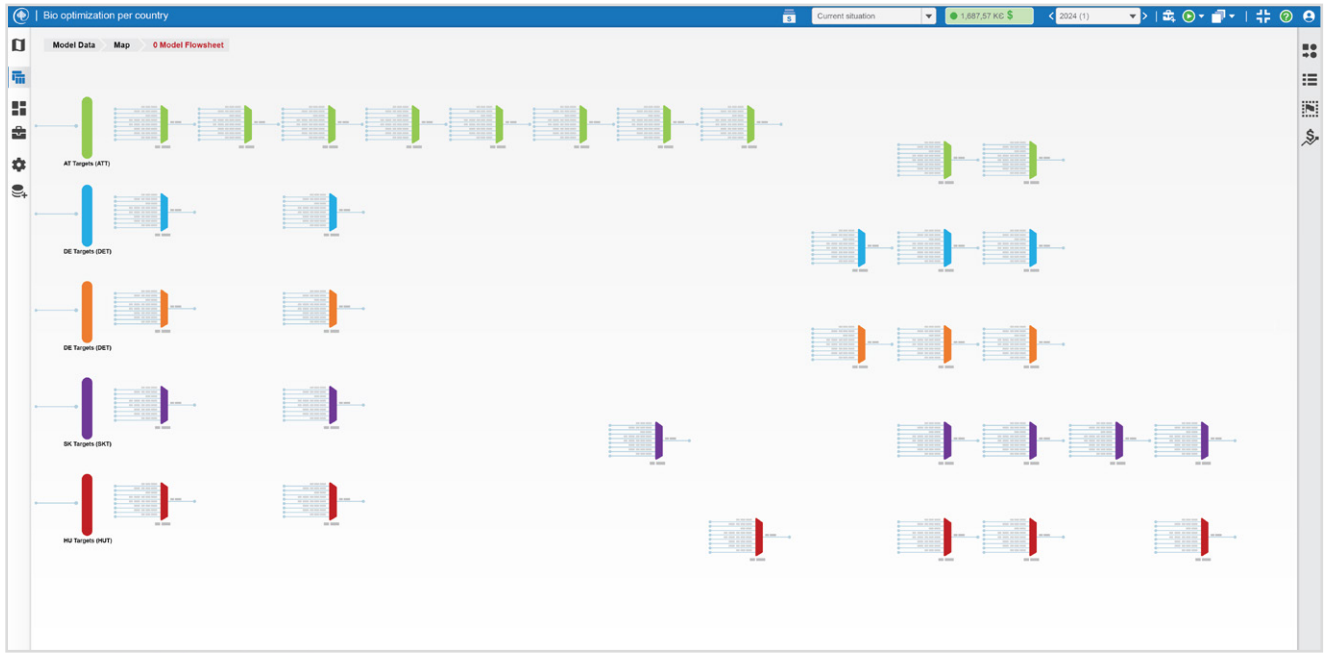


Figure 5. OMV's AUP flowsheet for their bio-optimization model.

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About Aspen Technology

Aspen Technology, now part of Emerson, is a global software leader helping industries at the forefront of the world's dual challenge meet the increasing demand for resources from a rapidly growing population in a profitable and sustainable manner. AspenTech solutions address complex environments where it is critical to optimize the asset design, operation and maintenance lifecycle Through our unique combination of deep domain expertise and innovation, customers in asset-intensive industries can run their assets safer, greener, longer and faster to improve their operational excellence.

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