From Data Silos to a Digital Future

How Kuraray in Europe Is Advancing the Digitalization of Operations, Maintenance, and Engineering

Chemical producers in Germany are grappling with rising costs, high energy prices, global competition, and an impending knowledge gap due to demographic shifts. Kuraray, a global leader in specialty chemicals, is addressing these challenges with a comprehensive digitalization strategy.

When it comes to high-performance materials, Kuraray is a key player in the automotive and construction industries, as well as in medical and packaging technology. With Japanese roots and its European headquarters in Hattersheim near Frankfurt am Main, Germany, the company markets these products under brands such as Kuraray POVAL, MOWITAL, SENTRY-GLAS, and CLEARFIL. At its Frankfurt site, a key production center for polyvinyl alcohol (PVA), Kuraray is also driving a forward-thinking digitalization strategy. This project exemplifies the transformation of a traditional manufacturing operation into a data-driven, agile, and efficient company prepared to meet the demands of the future.

Since the 1970s, the site in Frankfurt, Germany, has been home to production facilities for polyvinyl alcohol (PVA), which Kuraray acquired from Clariant in 2001. These plants are regularly modernized and adapted to new requirements by the engineering and maintenance teams. In the historically entrenched structures of the chemical industry, information and data are often scattered across different areas and tools, with some data not even being digitized. Finding this data requires a considerable amount of time for technicians and engineers, and in many cases, the same data must be entered into multiple systems.

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Inconsistent Data Frustrates Users

When different departments rely on different versions of the same data, delays and errors are inevitable. Engineers and operations staff spend an excessive amount of time gathering necessary information from various systems—an inefficient and frustrating task. "From the very beginning, it was clear to us that this was not just about technology but about the right workflow. Database-driven work requires a shift in mindset and standardization of processes," says Andre Ziese, Project Manager for CAD Digitalization at Kuraray Europe, Business Unit Poval.

Despite using modern IT systems such as the EMR (Electrical, Measurement, and Regulation) planning system Prodok, the asset management system Maximo, and SharePoint, digital tools alone are not enough to meet increasing demands.

"Engineering has always been structured like isolated islands in the Pacific, and the various tools were like coral reefs surrounding them," explains Ziese. "A central data pool as a 'Single Source of Truth' should connect all these islands."

To tackle these challenges, Kuraray engineers in Germany tested the integrated plant design solution CADISON by ITandFactory, which impressed them with its multidisciplinary approach and ability to integrate engineering data, graphics, and document management into a single solution. CADISON was also chosen because it allows seamless integration with existing systems like Prodok. A key factor in this decision was the bidirectional interface for exchanging EMR data.

> *"If the performance is not right, the system won't be used."*
>
> Ayhan Sidal, Kuraray Europe

Data-Driven Workflows for Long-Term Efficiency Gains

By implementing Cadison, Kuraray aims to achieve clear objectives. Data-driven engineering is expected

to increase efficiency, automate data maintenance, and standardize workflows. As a byproduct, manually created "dumb" graphics are transformed into object-oriented, intelligent documents. Additionally, optimized processes will contribute to more sustainable operations and lay the groundwork for innovations such as AI-driven analysis and predictive maintenance. "For us in operations, digitalization is not just about technical changes but also about a new way of collaboration between engineering, maintenance, and production," explains Michael Giebisch, Production Manager at the Poval plant in Frankfurt.

The central database will enable faster and more efficient exchange of information, such as piping and instrumentation diagrams (P&IDs), piping documentation, and maintenance plans. "Keeping our flow diagrams up to date is essential. We can no longer work with multiple versions; we need a single, reliable data source," says Yannick Gahler, Operations Engineer at the Poval plant. "My daily goal is to spend less time searching for information and more time on productive work. Cadison is an important step in this direction."

This is achieved through intelligent cross-references in P&IDs. Notably, the flexibility of CADISON allows flow diagrams to be created with different tools based on specific needs. Process engineers in operations use the simpler CADISON PID Designer based on Microsoft Visio to update process changes or altered data in flow diagrams. This includes media, piping classes, title blocks, or equipment list data entered into forms.

For more extensive work on flow diagrams, maintenance and engineering teams can utilize the more powerful CADISON P&ID Designer (using the AutoCAD graphics engine). The key advantage is that P&IDs created based on Microsoft Visio can be converted into the DWG format without any data loss.

patience and perseverance. The initial process of cleaning up and structuring databases and workflows turned out to be significantly more complex than anticipated. Additionally, employees need to be trained. Digitalization requires investments of time and money, which only pay off in the long run. "But the old workflows also cost money—without the added value of a consistent and centralized data source," emphasizes Ziese.

One often overlooked yet crucial aspect was the need to "clean out the basement:" outdated, redundant data structures and obsolete processes had to be purged and reorganized. However, this streamlining process was essential to unlocking the full potential of CADISON.

Creating User Acceptance

A key factor in the successful implementation was integrating the system into the existing IT landscape. The

Andre Ziese, Kuraray Europe, in front of the Poval plant

speed and stability of the technical environment play a vital role in user acceptance. To ensure this, the specialist departments, the internal IT team,

be used," states Ayhan Sidal, director DX-IT, Kuraray Europe.

Another crucial factor for project success is support from management. Users not only need training but also time and flexibility to familiarize themselves with the new system. "Resources must be made available. If employees feel that other priorities always take precedence, the project will fail," says Ziese.

Additionally, user-friendly input forms proved to be essential for adoption. CADISON offers extensive possibilities, but its complexity can be daunting unless it is tailored to the needs of different user groups. "The system needs a custom-fit suit that perfectly matches the various user groups," says Ziese. Developing user-friendly interfaces and specific workflows is therefore a critical step in fully leveraging the platform's potential.

Preparing for the Future

Despite the challenges, the integration of Cadison has yielded clear advantages. The centralized data foundation has reduced sources of errors, minimized search times, and accelerated processes. The ability to access up-to-date flow diagrams and maintenance

plans has significantly improved collaboration between engineering, maintenance, and operations. In particular, the automatic updating of data across different modules has streamlined daily work and led to noticeable efficiency gains.

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However, the success of the project is not solely dependent on technology. Experience has shown that patience, a clean data foundation, robust IT structures, and clear change management are crucial factors. "We've learned a lot—mostly through trial and error. But that's exactly what is pushing us forward today," summarizes Andre Ziese.

Looking Ahead: The Path to the Summit

With the experience gained, Kuraray's teams look to the future with confidence. The next steps include optimizing the IT landscape, expanding the project into day-to-day operations and additional sites, and gradually working towards a long-term goal: developing a digital twin that maps the entire lifecycle of the plants. A digital twin is a virtual replica of physical systems that continuously updates with real-world data, allowing for simulations, predictive maintenance, and performance optimization.

"This engineering project is an important building block in our overarching digitalization strategy, which is globally driven by IT," says Sidal. Thus, Kuraray Europe is making steady progress from unstructured data and fragmented processes toward a connected, efficient, and data-driven work environment. "Digitalization is a change process," summarizes Andre Ziese. While the summit has not yet been fully reached, engineers, plant managers, and IT experts are now standing on a solid plateau—ready for the next stages of this digital expedition.

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It quickly became evident that integrating such a system requires not only technological resources but also

and system provider ITandFactory worked closely together. "If the performance is not right, the system won't

For more information visit:
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