DELMIA | Quintiq

3DEXPERIENCE®

IMPROVING PORT EFFICIENCY

Streamlined workforce and barge planning solutions for the container port industry

DASSAULT SYSTEMES

PSA ANTWERP

For more than 10 years, PSA Antwerp's workforce and barges were planned manually. Information on dock workers were taken from a centralized dispatch system and barges were planned using separate spreadsheets for each terminal. However, as the company continued to expand, these methods soon reached their limits. PSA Antwerp needed a solid yet flexible solution that could solve their workforce and barge planning puzzles now and in the future.

The customer

PSA Antwerp is a subsidiary of Singapore-based PSA International, one of the world's leading global port operators. With a worldwide presence across Asia, Europe and the Americas, PSA delivers best-in-class services to its customers with a focus on reliability while developing win-win relationships with its partners. As the port operator of choice in many of the world's major gateway hubs, PSA is a world leader in container terminal operations. It has a strong track record of service quality and operational flexibility across its European terminals.

PSA Antwerp is the group's second largest venture, operating four container terminals and one multipurpose terminal with a workforce of approximately 2,500 employees. Over 80% of containers arriving in the port of Antwerp pass through a PSA terminal. 9.5 million TEU were processed in 2015. In addition to the container terminals, PSA Antwerp also handles general cargo, including the processing of commodities such as iron, steel, and wood products.

The challenges

Despite the sheer volume of containers and cargo processed at PSA Antwerp terminals, workforce planning, including planning for training and education, was still performed manually. While the company's central automatic dispatch system (CADS) existed for the terminals to check on the availability of specific dock workers, rosters were scheduled on large pieces of paper before being fed back into the system. Dock workers who were scheduled to work were then informed of their work hours via telephone.

The CADS system worked for PSA Antwerp for 10 years, but during this period of growth, the port operator found that the system was reaching its limits and becoming unwieldy and inefficient. When unexpected events occurred – for example, the delay of a vessel – the plan would have to be updated, resulting in additional work and increased costs. The system used to contact workers was also time- and labor-intensive, with planners having to manually call up to 400 dock workers every day.

PSA Antwerp faced similar issues with its barge planning process. Much like its workforce planning, it was fragmented and time-intensive. Each terminal's plan utilized a separate spreadsheet, and each plan required planners to manually review barge schedules to determine feasibility. Often, due to the planners not having full visibility over operations at all terminals, the plans would have to be reworked. Given that PSA Antwerp loads and unloads 35,000 barges per year – with the number on the rise – it was no longer viable to coordinate all barge schedules manually.

PSA Antwerp needed a solution that was flexible enough to cater for the Codex rules (which contain consolidated Belgian/Flemish labor laws), union regulations, and last-minute changes inherent to the shipping industry while giving them visibility and control over their operations. Such a solution would enable the company to maximize productivity and provide customers with more accurate and relevant information regarding their shipments, thus increasing satisfaction levels.

PSA ANTWERP

"We selected DELMIA Quintiq because of its flexibility to deliver all required functionality, including specific Codex rules and union regulations."

– Yannick Betrains
Technical Director,
PSA Antwerp

Choosing DELMIA Quintiq

After an extensive survey of possible solutions, which included a proof-of-concept as well as reference visits to existing clients, PSA Antwerp selected DELMIA Quintiq to replace its existing CADS. The DELMIA Quintiq platform's features that made it the port operator's choice include:

- The ability to take into account a wide variety of specific rules, including Codex rules and union regulations
- User-friendliness and flexibility
- Visibility over operations across the board, giving planners ready information on anticipated worker shortage or surplus
- Real-time visualization of KPIs

As well as planning the dock workers, the DELMIA Quintiq platform will be used to improve communications with employees. As a centralized system, it sends information directly to the dock worker's device, thus replacing the need to contact each worker individually.

Dock workers are able to apply for leave and plan for carpooling via their devices. This lessens the burden of logging and disseminating information on the dispatchers and saves them a significant amount of time.

For barge planning, the DELMIA Quintiq platform was a clear winner for PSA Antwerp as it provided:

- Ease of planning with predefined algorithms
- Ability to evaluate planning options and determine the effect of changes on KPIs in real time
- Visibility over resources such as equipment and tools, as well as the capability to plan them
- Graphical representations of terminal calendars and sailing schedules, with information on handling periods and shipping times

With the DELMIA Quintiq platform, barge handling requests are processed via an automated interface by the central controlling system of the Port of Antwerp. Planners then run an automatic planning component, where 80% of planning is done automatically via predefined algorithms – dramatically reducing the time taken to create the plan while improving the quality of the results.

PSA Antwerp were also drawn to the capabilities of the DELMIA Quintiq platform in managing resource availability and planning equipment and tools. This enabled visibility over vessel activities such as container and cargo loading and unloading as well as equipment to move cargo around in the terminal. The platform's graphical representations of terminal calendars and sailing schedules and the inclusion of handling periods and shipping times, give planners better visibility and control. This resulted in optimized barge operations at all terminals.

Overall, DELMIA Quintiq optimized and streamlined PSA Antwerp's planning processes as well as resource utilization – both human and material. With improved schedules, the port operator is now able to save time and money while meeting customer expectations.

Implementation

The task at hand was complex, with labor laws, union rules, and workers' personal preferences having to be modelled into the DELMIA Quintiq platform. However, the implementation of the workforce planning solution for PSA Antwerp went smoothly. Many parties were involved in the project, including a separate team dedicated to testing.

The barge planning solution – implemented by Ordina, a DELMIA Quintiq partner – was a relatively smooth addition, with DELMIA Quintiq offering PSA Antwerp more options than had been originally anticipated. Only a few adaptations were required before the solution was ready for implementation.

The results

"An optimized plan means reduced idle times and staying periods in the port. This means our dock workers and the barges are better able to stick to their schedule, enabling us to meet the high demand of our customers."

– Yannick Betrains
Technical Director,
PSA Antwerp

The DELMIA Quintiq platform provided PSA Antwerp's workforce planners with visibility and flexibility to create and assign dock working rosters, thus increasing resource utilization while reducing time spent on planning and communicating plan changes. A more efficient system meant that planning was now less time- and labor-intensive, so while the number of employees continued to increase, the number of planners remained the same.

Improved information management enabled planners to anticipate employee deficits or overcapacity. This, in turn, provided better visibility and control over costs.

DELMIA Quintiq provided flexibility that allowed the chief foremen to apply their soft knowledge to the plan – for example, scheduling workers who work well together into the same crews and shifts. This small, personal touch went a long way in improving customer satisfaction as it created an environment that actively promotes co-operation, productivity, and efficiency.

As for the dock workers, a streamlined and easily accessible channel of communication keeps them better informed on their scheduled hours. They also have a better sense of ownership as they are able to plan their holidays and communicate preferences via their personal devices. They no longer need to manually call a CADS dispatcher.

With better overall visibility, flexibility, and efficiency over workforce planning, PSA Antwerp is better equipped to respond to disruptions such as delayed vessels and last-minute worker shortages. Improved communication between chief foremen, planners, and dock workers makes rostering a less fraught affair. Employee satisfaction, productivity, and resource utilization are increased.

The barge planning solution returned positive results after implementation. There was a significant reduction in the number of manual actions and interventions in the planning of barge handling. This reduced planner fatigue and the possibility of human error. Barge capacity and demand could be easily monitored, and when combined with a clear, live overview of both planned and unplanned barges, resulted in a more balanced flow in and out of the terminal.

Since choosing the DELMIA Quintiq platform in 2009, PSA Antwerp has enjoyed more streamlined operations, reduced costs, increased revenue, and improved customer relationships. DELMIA Quintiq continues to support the port operator's growth, thus ensuring that the positive results from this partnership are sustained for years to come.

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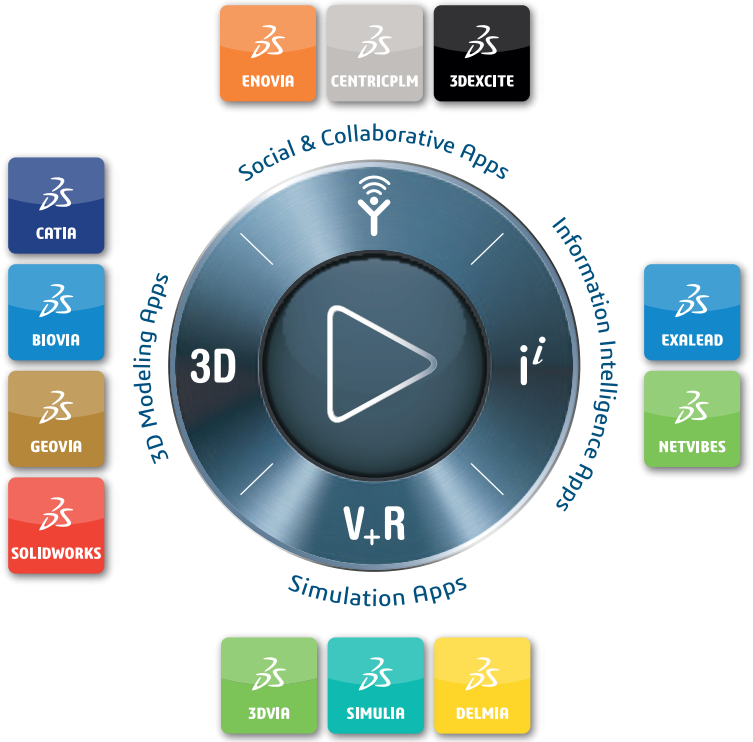

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