

Quintiq was acquired by
Dassault Systemes in 2014 and is now
DELMIA Quintiq

Case study

Port Kembla Coal Terminal improves performance in six months with Quintiq

PORT KEMBLA COAL TERMINAL (PKCT)



Port Kembla Coal Terminal (PKCT) is a coal-exporting facility that services two of Australia's richest coal reserves, the southern and western coalfields of New South Wales

PKCT fast facts

Location

Australia's east coast, 45 miles south of Sydney

Exports

Over 14 million metric tons of coal annually

Top markets

China, India and other countries in Asia

Coal delivery to PKCT

Seven trains per day at 3,300 metric tons per train

Approximately 420 truck deliveries per day at 40 metric tons per trip

Stockyard capacity

850,000 metric tons

The customer

PKCT exports high-quality coking and steaming coal to customers around the world, primarily to China, India and other Asian countries.

The challenges of handling receipt, storage and dispatch of such large volumes of coal, including coordinating train and truck unloading, devising optimal ship loading and managing onsite storage, created a complex planning challenge. Adding to the complexity are fluctuations in demand and resource capacity limitations.

“We are currently running at a throughput rate of about 14 million metric tons per year,” said Mark Beale, planning manager at PKCT. With customer orders projected to increase in volume, PKCT forecasts a significant increase in throughput.

The challenge

“The planning solutions we had in place before Quintiq were predominantly paper-based – individual spreadsheet models that were not integrated,” Beale said.

Often, Beale added, when there was no vessel at port, loading facilities were idle. The existing planning solution did not provide visibility into the future effects of planning decisions over any significant period.

Additionally, planning was heavily reliant on a small pool of experts with the most senior and most experienced planner nearing retirement.

With plans for expansion that could eventually double throughput at PKCT, it was clear that a better planning system was needed.

The requirements

The solution had to be capable of handling the multi-layered planning tasks associated with train and truck unloading, ship loading and managing onsite storage.

“We were looking for an advanced planning system that could handle our complex work environment while also being extremely flexible,” said Peter Green, general manager at PKCT. The solution had to take into consideration the numerous business rules associated with stockyard usage, machinery and other critical port assets.

Of equal importance in the selection process, was “the transparency and visibility of decisions on either inbound constraints or outbound constraints,” Beale said.

“The Quintiq solution allows us to provide feedback to customers on a real-time basis as well as optimize throughput throughout PKCT.”

– Mark Beale,
Planning Manager, PKCT

The choice

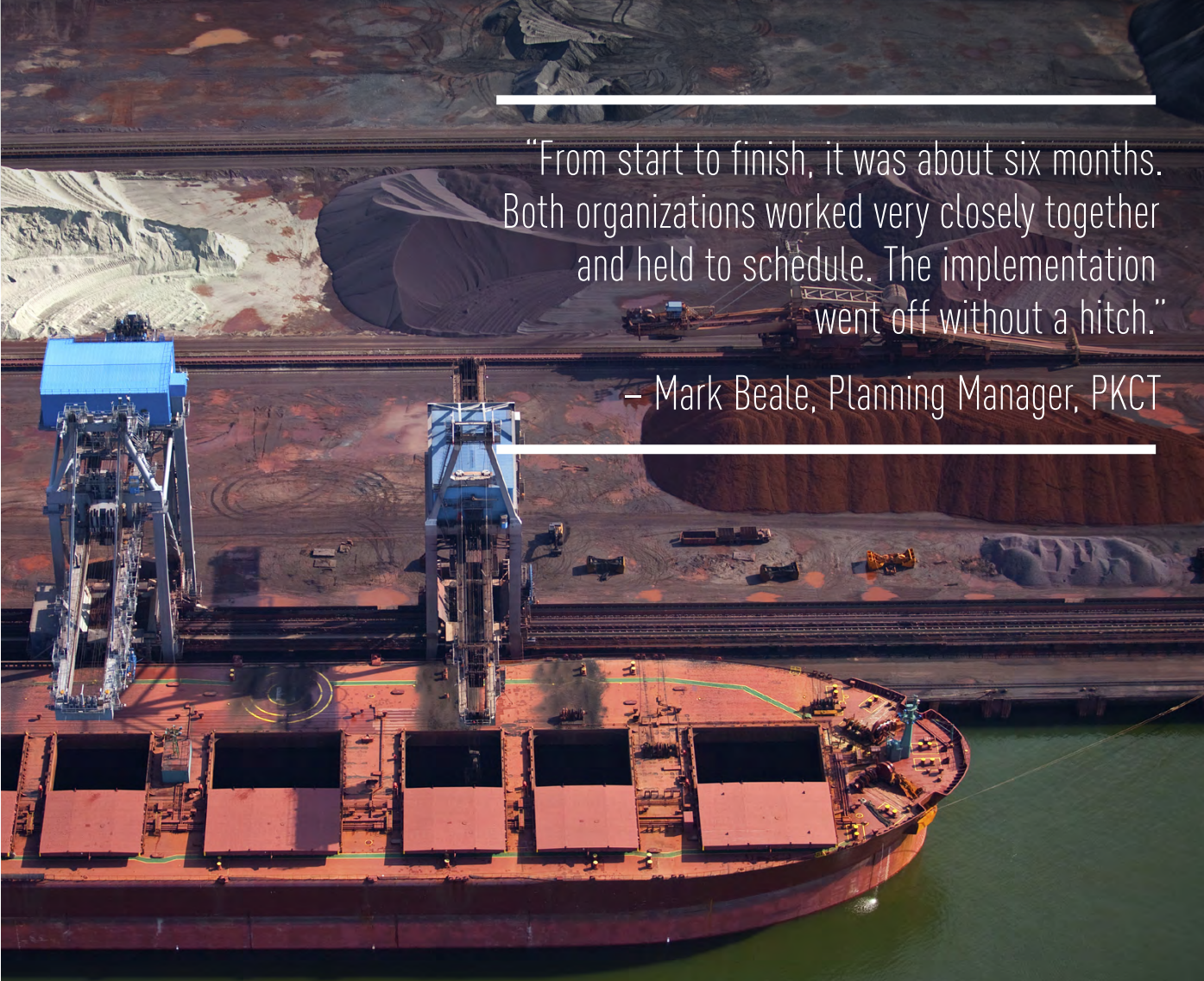
PKCT chose Quintiq because of its proven track record in the industry. “Quintiq is recognized as highly successful in the field,” said Green. “We could get exactly what we needed: a solid solution with flexibility.”

One of the key features of the integrated operations planning system is that it enables real-time feedback on inbound and outbound logistics constraints as well as on their stockyards. “The model allows us to provide feedback to customers on a real-time basis as well as optimize throughput throughout PKCT,” Beale said.

This real-time visibility across PKCT’s operations covers ship loading resources and stockpile planning. It is possible to optimize stockpile planning based on scheduled incoming stock and scheduled vessel arrivals. Loading resources are planned with respect to hatch plans, tidal conditions and scheduled equipment maintenance. The Quintiq platform covers operational planning to

maximize throughput on a daily basis, tactical planning to resolve port scheduling and stock pile issues on a rolling weekly basis. What-if scenario capabilities enable full understanding of the consequences of planning decisions on port operations.

The integrated solution enables stakeholders to make informed decisions on the parts of the supply chain they control. In addition, the software supports PKCT in increasing efficiencies and visibility across the supply chain.



"From start to finish, it was about six months. Both organizations worked very closely together and held to schedule. The implementation went off without a hitch."

– Mark Beale, Planning Manager, PKCT

Implementation

"The challenges for the implementation were predominantly cost and schedule," said Beale. "There was a tight time frame and a tight budget; both were met without issue. The data system integration was the third element or challenge, and that required both companies to come together to use their intellectual horsepower to deliver the outcome – it was a very successful marriage of both companies."

The contract was signed in July 2009. In February 2010, the project went live. "From start to finish it was about six months. Both organizations worked very closely together and held to schedule," noted Beale. "The implementation went off without a hitch."

"We believe we've got about 10% percent greater usage of the stockyard, reducing bottlenecks on the inbound and outbound constraints, and increasing throughput as a result."

– Mark Beale,
Planning Manager, PKCT



The results

Within six months of going live, the company reported improved port terminal throughput, maximized use of the stockyard, and enhanced visibility of scheduled maintenance and its impact on capacity, resulting in shorter coal ship queues.

According to Beale, the benefits that the Quintiq solution brought to PKCT could be seen primarily in areas which had constraints, such as the stockyard.

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Automating the planning functions, incorporating the embedded shared knowledge and providing expert decision support have all helped to optimize the

planning process. Having visibility and foresight means that planners are better equipped to handle outages and deal with large forecast demands. All in all, planners are now more independent and they work under less stress, lowering fatigue. In addition, the Quintiq solution enables PKCT to do performance-based planning. Managers can develop data-driven targets and goals and make informed decisions on the parts of the supply chain that they control and influence.

“The most interesting thing that we found was the visual capability of depicting constraints. That was really important because there were several ‘Aha!’ moments when we went: ‘Okay, we’ve got a constraint. How do we fix that?’ The answer is: we address these issues through the scenario planning – the ‘what-if’ planning – which is a very powerful tool.”



The future

PKCT is aiming for a throughput in the range of 23-28 million metric tons annually. With the current solution, Quintiq has already helped to advance this goal.

The next challenge is to optimize the plan for tipping trucks and trains at the port. It has become evident that this is the next bottleneck in operations.

PKCT also has a bulk products berth that is currently planned manually.

"PKCT and Quintiq are working together to evaluate the use of the existing model and the expansion of that model to incorporate a second berth and a second stockyard," Beale concluded.



Offices: www.quintiq.com/locations

Email: info@quintiq.com | **Web:** www.quintiq.com