

Mount Thorley Warkworth unlocks haulage productivity with HAULSIM

Yancoal Australia | Coal | HAULSIM | Mount Thorley Warkworth | New South Wales, Australia



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Overview

Yancoal is a leading low-cost Australian coal producer in the global seaborne market, producing a mix of premium thermal, semi-soft coking and PCI coals for export. Since 2004, Yancoal has built its business through strategic acquisitions; now owning, operating or participating in 11 coal mines across NSW, Queensland and Western Australia. In 2020, Yancoal anticipates producing around 38 million tonnes of saleable coal. In 2019, Yancoal's thermal coal exports would have powered around 30 million households in the region (this equates to one year of electricity production in Australia).

The company's Mount Thorley Warkworth (MTW) complex in the Upper Hunter Valley region of NSW supplies international and domestic markets with semi-soft coking coal and thermal coal. With a strong commitment to continued strategic growth and maximising new opportunities, Yancoal has a strong focus on implementing operational efficiencies across all mine sites while reducing costs.

Challenge

Yancoal was seeking a simulation tool that could help drive a continuous improvement culture for its haulage decisions at MTW. Accurately identifying and quantifying the impact of alternative haulage route scenarios can be difficult without an accurate model. Without a model, the impact of alternative scenarios can only be assessed after the fact. Some examples of the kind of scenarios that need to be assessed include redefining intersections or re-working the road design. Yancoal required a powerful, industry-specific haulage simulation solution that would enable it to analyse various mine haulage scenarios and immediately quantify the outcomes. In selecting a suitable haulage simulation solution for MTW, Yancoal was looking to:

- Make better and informed decisions on a daily basis to improve profitability.
- Have increased confidence in operational improvements and haulage outcomes.
- Make decisions based on real-time data as opposed to hunches, giving the user the ability to test multiple 'why' and 'what-if' scenarios to reduce operating costs.
- Boost operational efficiency by making proactive and smart haulage decisions

Solutions

In order to drive improved haulage and network decisions on site, Yancoal needed a robust, cutting-edge tool to support its haul route economic and financial analysis efforts. The company identified HAULSIM as the most suitable and user-friendly haulage solution on the market.

HAULSIM is a 3-D Discrete Event Simulation (DES) engine which connects the fleet assets, mining operational plans and the people to build a digital twin of any mining operation to deliver an accurate representation of any mine site's haulage operations. HAULSIM is the only mining simulation software that can quantify the impact of changes, as the models reflect the complex and dynamic nature of a mine site in its entirety; including the variability, interactions and dependencies that occur in these systems.

When selecting HAULSIM, MTW said the tool's intuitive user interface made it quick and easy to implement. "You can build a model quickly so the speed and ease of use means there is not a requirement for a consultant to come in and spend a month building a model."

Impact

Using HAULSIM, Yancoal was able to gather critical insights from its operation that enabled it to unlock the potential of the site's load and haul productivity. By modelling, analysing and enhancing different 'what if' scenarios for different routes, the company is now able to quantify the cost benefit analysis of haulage decisions before they are undertaken. As a result, the operational staff no longer rely on estimates, but rather have proven, calculated insights to assist in understanding the optimal haul cycle routes that provide a clear view of predicted outcomes.

As an everyday improvement tool, HAULSIM has delivered significant value to MTW in the following ways:

- The operational staff have access to real, quantifiable numbers relating to potential changes in different haulage scenarios. With emotions taken out of the decision-making process, the site has real data that has driven smarter haulage decisions.
- Created a culture of continuous improvement. Mine operations now regularly run and test different models to assess opportunities for improvement across its load and haul network as end-users can accurately justify and support decisions.
- An improved understanding of the cycle times of the various haul routes. HAULSIM provides a theoretical calculation of what each route could be that can be compared to the actual data captured by the fleet management system.
- Because of the realistic 3D interface, the production team is able to get involved in haulage improvement, with communication of the suggestions and changes are easy to understand.

With HAULSIM, Yancoal is able to make better haulage decisions every day that contribute to bottom line improvements across key profitability and operational metric.

"The results of HAULSIM feed into our daily planning. It's not a tool that we pull off the shelf once a month or when we are doing a project, but rather the software is embedded into our daily plans."