Simulation Modelling

Ausenco is a global company providing consulting, engineering, project delivery, asset operations, management and optimisation solutions.

With over 35 years of experience on over 400 Simulation and Business Intelligence projects worldwide, we are experts in identifying the effects of interdependencies and variation in complex supply chains on Key Performance Indicators (KPI) like throughput, handling rates, storage requirements, and equipment redundancy. We provide critical recommendations to improve the performance of existing systems and optimize infrastructure investment.

Ausenco's simulation models are calibrated to years of detailed operating and financial data to ensure they reflect actual operations and forecast future performance accurately. Our models feature presentation-quality graphics that bring to life complex supply chain interactions, variability, and congestion.

Process Advantage

Ausenco engages your stakeholders early to gather data, understand perspectives, and align everyone's definition of success. We then work closely with you to select a decision-making framework, criteria, and their relative importance to you. Our recommendations follow simply and objectively from this process.

- Evaluation of past performance
- Improve real-time decision making
- Right size future investments

People Advantage

Our team includes engineering physics graduates, and others with advanced degrees in business, mathematics and computing. These business analysts are supported by our professional engineering consultants to ask the right questions and define the right problems before developing ingenious solutions that align your stakeholders.

Technology Advantage

Not satisfied with commercial software, Ausenco developed industry-leading software to realistically model complex, dynamic supply chains in detail, measure important KPIs that inform your business decisions, and objectively substantiate your most promising opportunities to stakeholders.

Our Transportation Logistics Simulator (TLS) discrete event simulation software has been developed and advanced in-house since 2002. TLS is scalable, which allows Ausenco to quickly model large and complex supply chains, far exceeding the capabilities of off-the-shelf software. TLS is licensed and trusted by many of our clients to support their continued planning and opertational support needs.

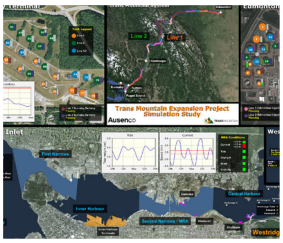
We have advised many global companies in the mining and petroleum resources sectors, in addition to supporting many emerging firms. Our experience at a diverse range of scales provides Ausenco with an invaluable perspective on industry best practices.

>90 year history of terminal development

over **500** facilities worldwide

Redefining what's possible through innovative solutions for the Minerals & Metals, Oil & Gas and Industrials sectors, globally.

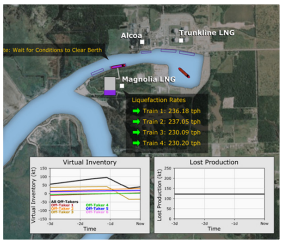
Key Projects



Trans Mountain Expansion Project Simulation Model

Western Canada - Trans Mountain

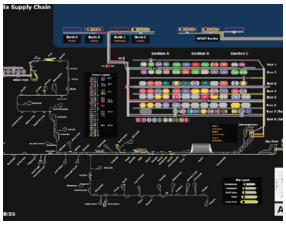
Trans Mountain engaged Ausenco to validate the operating capacity, storage requirements, and shipping constraints related to their pipeline expansion project. Ausenco developed a sophisticated discrete-event simulation model of the entire system from the originating tank farm in Edmonton to the receiving refineries and export terminal on Canada's west coast. The model also captured the interaction of tankers with other vessels along Vancouver's Burrard Inlet. The sophisticated model was built with Ausenco's industry-leading Transportation Logistics Simulation (TLS) software.



LNG Terminal and Ship Channel Simulation Modelling

Louisiana, USA - Magnolia LNG

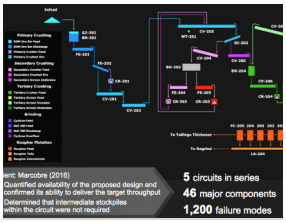
The Calacasieu ship channel in Louisiana, which connects the Gulf of Mexico into Lake Charles is a common corridor for vessel traffic to many existing and new LNG facilities in the region. Ausenco has modelled this area extensively for the Port of Lake Charles as well as many new LNG proponents, to validate its capacity to handle the increased traffic without congestion. We modelled the LNG terminal and channel operations, including LNG liquefaction, catch-up capability, detailed vessel operations at the terminal, and ship traffic throughout the channel.



Goonyella Coal Supply Chain Modelling

Queensland, Australia - DBCT Management

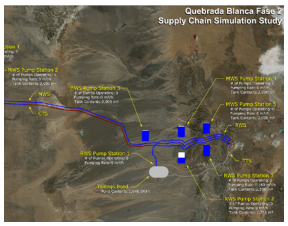
The Goonyella supply chain in Queensland, Australia is one of the largest and most complex mine-to-port supply chains in the world. In this system, thermal and metallurgical coal from 31 mines in the Bowen Basin is transported by train to three marine terminals. In total, this coal network delivers 150+ Mt/y. To help decision-making for the supply chain, Ausenco was contracted by the owner of DBCT to develop a sophisticated mine to vessel simulation model using our industry-leading Transportation Logistics Simulation (TLS) software, which they have licenced for operational planning.



Mina Justa – Process Optimization Modelling

Peru - Marcobre

The Mina Justa project is a new copper mine facility, which is being constructed with parallel process plants to allow mining of both sulphide and oxide ores. Ausenco has completed three separate simulation models to optimize the design to improve reliability and reduce the costs. The first model was for the sulphide ore circuit, which confirmed the plant capacity and allowed the deletion of intermediate stockpiles. Based on the client's appreciation of the value modelling can offer a project, this was followed by a model for the oxide ore process which included a unique "VAT Leaching" technique which required the full capacity of our TLS software to model in its full complexity.



Quebrada Blanca Fase 2 Project

Iquique, Chile - Compañía Minera Teck Ltda.

Ausenco has been involved in the design of pipeline and port infrastructure for this project (known as QB2) for many years, which started construction in 2019. As part of our design validation process, we completed a full dynamic simulation model for the entire project from the process plant to the port site. Not only did this model validate the throughput of the slurry transport and bulk terminal systems for copper concentrate export, it also included a full water balance for the project to validate the demand requirements on the new sea water intake and desalination plant at the port site. The model included movements of mine haul trucks to the plant, making it a true "pit to port" simulation.