Port Simulation Tools

Modelling for Ports, Terminals and Harbours – Capacity and Operational Efficiency

Simulation Modelling Approach

- Simulation is increasingly being used as a cost-effective way to make operational and investment decisions. With a well built and validated simulation, virtually any situation can be analysed for potential improvements.

- BMT Isis uses a range of simulation tools built on highly versatile, reliable and flexible proprietary software platforms. Our approach can model virtually any project, from small scale studies (such as individual port equipment usage) to the optimisation of entire transport systems.

- Our knowledge of maritime and land-side operations is used to develop realistic scenarios for analysis, ensuring that the simulation results are relevant and applicable to a real-world setting.

- The models may be used for a number of purposes, including evaluating and planning port capacity, resource management, traffic management, timetabling, maintenance scheduling and many more besides.

Cargo Handling Optimisation

The port facility is regarded as a collection of resources that are intended to function together cost-effectively, safely and efficiently. Each resource is related to every other component. Together, they define how the port facility works.
The BMT Isis Optimisation Suite uses discrete-event simulation technology to assist port operators make better decisions, faster. It is used to plan, design and improve new or existing port and terminal logistics and other tactical and operational systems.

It empowers the user to accurately replicate complex real-world processes (with their inherent variability and interdependencies) to conduct predictive performance analysis on potential changes, and then to optimise the system based on key performance indicators. A wide range of port infrastructure can be accurately modelled, including cranes, conveyors, vehicles, storage vessels and pipelines, as well as solid, liquid and containerised cargoes.

The model can easily be modified to assess numerous ‘what if?’ style scenarios to find ways to run the entire port system more efficiently. The resulting port operation model identifies which new process configurations work best to reduce risk, disruption and expense.

**Vessel Movement Modelling**

BMT Isis produces vessel traffic simulations which identify, assess and visualise:

- Scheduled and unscheduled vessel traffic;
- Options for efficient traffic routing and scheduling;
- Conflicts in harbour scheduling;
- Areas of high traffic density and congestion;
- Conflicts in harbour navigation rules and bylaws;
- The effects of scheduled and unscheduled berth closures or other access restrictions;
- Future changes in vessel traffic levels.

The results from the model may be used to identify where further safety or operational risk control measures are required so that changes to vessel traffic and/or port infrastructure can be managed with a high probability of meeting port efficiency, safety and business goals.