



Capital Expenditure Design Study



MANUFACTURING

BACKGROUND

Northern Transformer Corporation (NTC) is a premier North American manufacturer specializing in high-quality, liquid-filled power transformers. Headquartered in Ontario, Canada, NTC designs, manufactures, and tests its products at a state-of-the-art facility, serving a broad range of clients across North America.

In response to growing market demand, particularly for larger-sized transformers, NTC is in the process of designing a second manufacturing facility. This greenfield site will mirror many aspects of the current plant's production processes for small- and medium-sized transformers. It will also handle manufacturing for significantly larger products. As such, it must be designed to support the assembly, movement, and flexible production of larger-scale transformers in addition to replicating the existing capabilities.

CHALLENGE

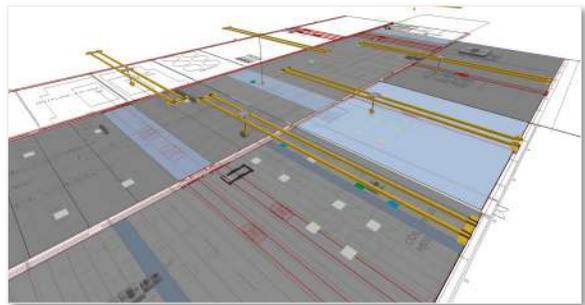
To ensure success of a major capital investment, NTC wanted to verify the proposed facility design could efficiently handle projected production volumes, while preserving operational flexibility and manufacturing excellence. The complexity of manufacturing power transformers, variability in routing, and potential changes to future demand made it difficult to evaluate the design without a simulation-based digital twin.

SOLUTION

MOSIMTEC developed a dynamic and data-driven Simio model to evaluate the design across a variety of demand scenarios. The model simulated the production flow of transformer units through a to-scale 3D layout of the greenfield plant. The scope of the model included:

- Multiple work centers of various types
- Cranes and other material handling equipment
- Tooling requirements
- Labor by skill set and shift

Users could assess paths, equipment, and staffing levels required to meet production targets.



BENEFITS

The simulation project identified bottlenecks preventing the design from achieving desired performance targets. Proposed improvements were able to be quickly analyzed, ensuring the facility will support future growth while maintaining operational efficiency and production reliability.

Key Performance Indicators included:

- Order cycle time and system throughput
- Utilization rates of critical equipment and staff
- Work-in-process visibility to highlight inefficiencies
- Labor hours per unit for workforce planning

Testing design alternatives in a virtual sandbox saved significant capital compared to modifying the system after go-live.



“Thank you very much for your work. We are very impressed with how Mosimtec captured the nuances of our operations and generated insights for our new facility” - Alexei Miecznikowski, President and CEO, Northern Transformer Corporation

MOSIMTEC expertly guides clients – from pharma to farming, from climate change to change management – through simulation modeling so they get the MOST knowledge, the MOST insight, and the MOST intelligent answers to Future Proof their Business.