ESTIMATING THE PRODUCTIVITY OF A MODULE ASSEMBLY YARD

Background

- Modules are preassembled units built off-project in the yard for oil sand refinery projects.
- Projects in module yards can experience multiple change orders, which, in combination with other factors, cumulatively impact project objectives related to time, cost, and productivity.

Objective

The objective of this study was to determine the effect of change orders, when combined with other factors (e.g., type and complexity of modules), on the productivity and required manhours of module assembly yard projects.

Methodology

In pursuing this objective, we developed and executed the following methodology:

- Estimating effect of significant factors
  - Change orders
  - Complexity

- Conducting if-then analysis for different planning strategies
  - Schedule crashing
  - Material delivery

- Realistically considering uncertainties
  - Randomness
  - Fuzziness (subjectivity, imprecision)

Industry Applications

This project is now considered complete. Research resulted in an integrated prediction and simulation model for estimating the productivity of module assembly yards.

The integrated simulation model is capable of...

- Estimating effect of significant factors
- Conducting if-then analysis for different planning strategies
- Realistically considering uncertainties

Applied uses for this model include bidding, impact claims, scheduling, and process improvement.