

Process Simulation

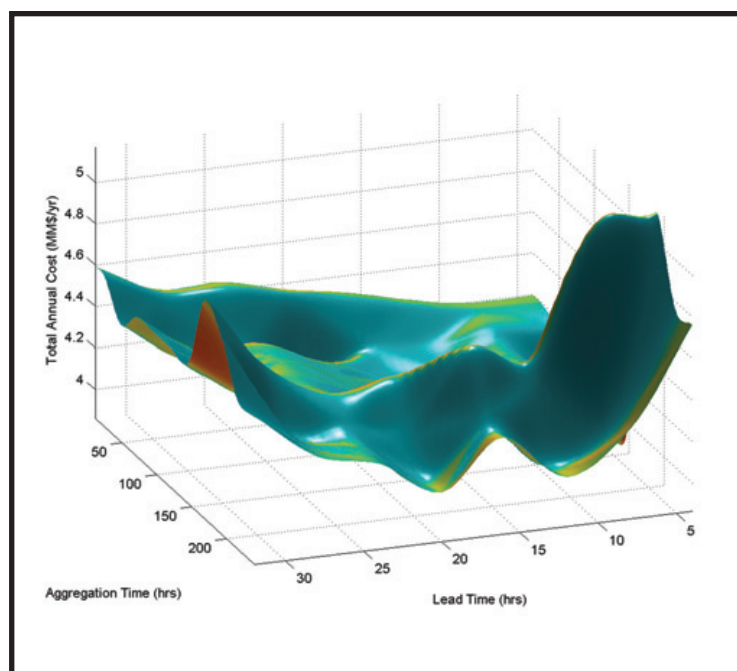
The design of an efficient production plant is a complicated and time-consuming effort. It can be costly to do it properly, but even more costly if done improperly. Process simulation is a valuable tool to expedite the design process and save you money.

Process simulation is a computer representation of a unit operation, a single process train or an entire plant. Because it is developed on a computer, you can quickly and easily study process alternatives before risking capital expenditures. At CRB, we will work with you to construct an appropriate model, qualify the model and conduct case studies. We provide training so you can use the model yourself to enhance throughput, reduce costs, or study potential changes to your process.

Process understanding is essential for developing an effective process model. CRB's extensive process design and operations experience is leveraged to get the right process data and the appropriate level of detail into your model – so you get out of the model what you wanted!

CRB has no allegiance to any particular software package – we use the best commercially available tools for your application or develop custom tools if needed.

Chances are good that CRB has experience executing simulation projects for a process just like yours. Whether it is a quick capacity analysis, a de-bottlenecking study or a complete design for a new greenfield manufacturing plant, CRB can deliver.



PROCESS SIMULATION

Process simulation adds value throughout the life cycle of the plant: from conceptual design through start-up, de-bottlenecking and even day-to-day operations.

Conceptual Design – Evaluate process options to find the most economical plant design

Process

- Reduce Risk – risk of under-performance AND risk of over-design
- Improved Designs – study many design alternatives in less time
- Cycle Time Analysis
- Number and Size of Process Equipment
- Number and Size of Buffer Preparation and Buffer Storage Tanks
- Design Data Repository – Keep all design parameters in ONE place: the model
- Staffing Requirements
- Production Scheduling
- Impact to Existing Plant
- Reduce Errors and Rework

Utilities

- Process Utility Requirements vs. Time
- Purified Water
- WFI
- Clean Steam (SIP)
- Clean-in-Place (CIP)
- Utility Storage Tank Sizing
- Utility Generation Sizing (RO Units, Stills)
- Waste Handling System Design
- Cold Storage Sizing

Detail Design – Plan for an efficient and trouble-free start-up

- Evaluate Last Minute Design Changes
- Operator Training Simulator
- Process Control Configuration
- Controller Loop Tuning

De-bottlenecking – Find the most cost-effective method to get more product from an existing facility

- Focuses Attention on the Critical Areas
- Process and Equipment Bottlenecks
- Yield Losses
- Staffing and Utility Restrictions
- Scheduling Constraints
- Maximum Theoretical Throughput
- Effect of Work In-Process
- Effect of Process Variability and Rework

Quality – Use a reliability model to understand and reduce process variability

- Understand the Effect of Variability
- Focus Attention on the Issues that have the Largest Impact
- Detect Out-Of-Spec Batches BEFORE they are Completed
- Reduce Production Yield Losses
- Effect of Delays Caused by Investigation Reports

Operations – Speed plant response time and reduce operating costs

- Use a Process Model in Parallel with Your Plant
- Prediction of Batch Completion Times
- Respond Better to Equipment Failure and Customer Demands
- Production Scheduling
- Improve Communication
- Operator Training

