

K-TOPS®
TOTAL OPTIMUM PLANT SIMULATION



	Title	TIC	Savings/Increased Capacity	Study Duration
Aviron	Fill/Finish Facility – Conceptual Engineering	\$15 MM	<ul style="list-style-type: none"> Verification that the existing utilities were sufficient for the addition of a second production line. Increased production by 9x with inclusion of 2nd line and identified requirements to achieve this additional output. 	4-6 weeks
Centocor	Purification Expansion	N/A	<ul style="list-style-type: none"> Identified and resolved purification and buffer bottleneck. Enabled the facility to achieve a minimum 2x production with expansion. 	6 weeks
Hemosol	Blood Processing Facility – Preliminary Design	\$90 MM	<ul style="list-style-type: none"> Determined that initial plant design would not meet production requirement. Redesigned the process to meet production requirement 50% production increase for a 7% increase in Capital costs 	8 weeks
ImClone Manufacturing Facility	Large Scale Cell Culture Manufacturing – Process Support Services	\$140 MM	<ul style="list-style-type: none"> \$4 MM direct capital costs savings via process support equipment optimization 20% Additional production capacity assured through verification of process CIP operability \$25 MM Saved by proving a small \$4MM expansion can increase production 100% 	6 weeks
ImClone Launch Facility	Simulation Study	N/A	<ul style="list-style-type: none"> Proved a 3 shift operation could be accomplished with 2 shifts in an existing plant. Increased capacity 17% with small capital investment. 	6 weeks
Amgen - BioNext	Large Scale Cell Culture Manufacturing – Conceptual Process Design Competition Awarded Detailed Process Design	\$500 MM	<ul style="list-style-type: none"> Tripled capacity for same price for similar process Showed feasibility of a complex time-constrained process at half the purification equipment anticipated. Identified ways of making the process easier to run. This allowed the client to move forward with a much greater degree of confidence. 	5 weeks
Ortho Biotech	Large Scale Culture Manufacturing - Conceptual Design (Grass roots facility)	\$200 MM	<ul style="list-style-type: none"> Original design included a 2X expansion option. It was found that production could be doubled with minor changes added to the original 1X design 	4-6 weeks
Ortho Biotech	Conceptual study for Expansion	\$15 MM	<ul style="list-style-type: none"> Saved \$30 MM of a proposed expansion through optimization of their existing equipment, reducing TIC by over 60%. 	8 weeks
Regeneron	Cell Culture Manufacturing Facility - Process Conceptual Design	\$145 MM	<ul style="list-style-type: none"> Modeled two scaled-up processes in full production mode. Doubled capacity of one product and increased capacity by 50% for the second product. Achieving these yearly capacities was not conceivable prior to modeling effort. 	10 weeks (combined with parallel effort)
Regeneron	Simulation Study of Existing Facility	N/A	<ul style="list-style-type: none"> Modeled three existing pilot-scale processes to determine the production capacity from the existing equipment. Identified ways of increasing capacity with minimal equipment changes. 	10 weeks (combined with parallel effort)