

### CAM Success Leads to CAE Integration

CAM Case Study: Simms Machinery International, Santa Maria, CA

Global businesses often turn to small, specialized suppliers for refined designs, quality components, and knowledgeable service. Apparently they also appreciate the way a small shop can directly, efficiently, and effectively address their needs.

That is how Jim Simms believes his customers view Simms Manufacturing International, a five- to eight-man turbomachinery design, manufacturing, and service shop north of Los Angeles in Santa Maria, California. “Simms Manufacturing is primarily in the business of designing steam-turbine and motor-driven cryogenic boil-off gas compressors for LNG tankers as well as cryogenic turboexpanders for LPG processing plants,” Jim explained in an interview with Concepts NREC. “We also manufacture complete systems and support installations with redesign upgrades, spare parts, and field service.”



***Jim Simms claims that being equipped with the latest CAM capabilities “... immediately elevated the prestige of Simms Machinery.”***

“Our shop may be small, but we’re uniquely equipped to design and manufacture turbomachinery – and every customer has a direct link to me. Our ability to quickly design and deliver a quality product has clearly earned the loyalty of our customers, and Concepts NREC has certainly played a significant role in that success.”

#### **Simms principles for success**

In 1988, with nearly twenty years experience designing turboexpanders and boil-off gas compressors, Jim decided to follow a vision that led to the formation of his own business. “As a small and focused company with top-class outside support, I believed we could better understand customer problems and solve them more effectively than the larger, more cumbersome companies such as those where I had previously worked.”

Jim further explained, “This business operates on a few basic principles that haven’t changed since we started. Most importantly, business is personal. Customers expect a knowledgeable response and an effective solution without surprises — not a routine reply from a ‘customer service’ rep.”

“Initially, we provided only diagnostic and design services, although we occasionally manufactured a

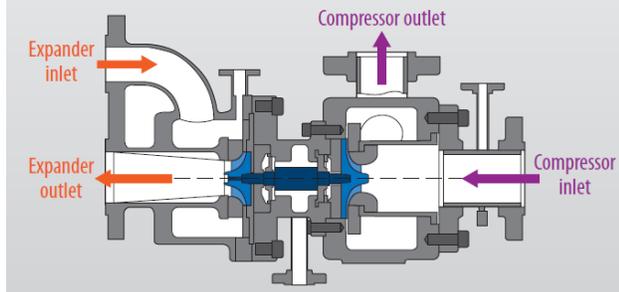
## CAM Success Leads to CAE Integration, continued

wheel through an outside vendor. But I had always envisioned in-house production as an opportunity to better control our rapid-response advantage. It would also bring our organization up to the latest technology that I had been reading about for many years in Concepts NREC's SpinOffs newsletter."

"If we were going to grow by being more productive, we realized that we needed the best turbomachinery tools. Five years ago, we took action and purchased a 5-axis mill capable of cutting up to fifteen-inch wheels. Unfortunately, the toolpaths generated by a local consultant frequently had errors that resulted in expensive delays, expensive fixes, and sometimes cut off blades."

### What is a turboexpander?

The name *Turboexpander* describes a single-shaft machine in which a radial-inflow expansion turbine drives a centrifugal compressor. When used in a gas processing plant, the primary function is to very efficiently generate refrigeration in the process gas stream. The heat energy extracted from the gas stream in the expansion turbine is converted to mechanical energy that powers the process compressor.



"The frustration of time and cost just to generate a workable toolpath program was the push we needed to consider licensing our own CAM software. The turbomachinery intelligence provided by Concepts NREC was the pull. I admired what I had read about MAX-PAC™ software and wanted to bring us to that higher level of intelligence and understanding in order to produce better parts while reducing production costs. It seemed our only obstacle might be the impact of cost on our limited resources."

"After explaining our CAM requirements, Concepts NREC offered (and I accepted) a 30-day trial license. I was immediately impressed with how

quickly we could achieve an excellent toolpath. We then leased the program with an option to purchase, and Concepts NREC provided a free part program with a one-week turnaround — including the NC postprocessor."

"That was something our company could financially handle to bring us up to par with the latest CAM capabilities, and something that immediately elevated the prestige of Simms Machinery."

In addition to acquiring Concepts NREC's MAX-PAC CAM software for machining turbomachinery, Simms has also purchased AxCent® CAE software for blade design. "We're just getting started with the analysis portion of the design software and studying the full capabilities of the program," explained Jim Simms.

Simms Machinery International recently built a new, larger custom facility in anticipation of "winding up" the business. "We continue to operate and grow with state-of-the-art capabilities supported by a few favored suppliers — among them, Concepts NREC. I've certainly learned through experience that if you're not moving up, you're sliding down."

**Concepts NREC**

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