

## Casebooks

### Creative thinking leads to better solution

Everite Machine Products Co. is a Philadelphia-based manufacturer of electrochemical machine tools and a subcontractor to the aircraft turbine industry. When an Everite customer, an air conditioner parts manufacturer, asked for a bid on new equipment, it started a chain of events that resulted in a more efficient and more profitable way of doing business for both companies.

The cost of the upgrade, which not only included new machine tools, but new controls and training as well, turned out to be too expensive for the customer to consider. Unfortunately, the customer could not continue to supply its client, a major manufacturer of room air conditioners, unless it used modern production methods.

Knowing that it wasn't viable to buy the new equipment but that Everite already had the necessary machine tools and technical know-how, the manufacturer proposed an alternative. It asked if Everite would be interested in producing the parts as a subcontractor instead of selling it new machinery.

Because Everite owns Tarcon Control Systems Inc., a high-technology control systems company, it was in an advantageous position. Everite also has knowledge of metallurgy and extensive experience in working with both unusual and standard metals, experience that is regularly put to use in its machine shop. However, all of these resources — machine tool manufacturing, control system design, knowledge of metallurgy, and metal-working expertise — had never been integrated under Everite's roof in quite the same way the customer was requesting. To deliver what the customer needed, Everite required a sophisticated yet flexible means of conveying and positioning each air conditioner part for maximum machining accuracy and speed.

The parts are the top and bottom flanges of air conditioner compressors. According to Stan Katz, engineering manager at Everite, the process includes polishing and grinding of the seat and flipping the raw blank part; turning the parts in a lathe; deburring; honing; and lapping each flange. Production goals are high — four million compressor flanges a year — and tolerances are tight. The metal-to-metal seal between the two flanges requires a tolerance of 0.000050 in. in surface flatness.

Katz realized that to meet both productivity objectives and exacting specifications, he would need a fully integrated, computer-controlled pick-and-place material handling and good machining operations. This, in turn, required a conveyor system that could transport parts efficiently through the process as well as permit accurate, automated positioning of the parts at the various machining sites.

The system Katz chose is an XM conveyor with customizable pallets from FlexLink Systems Co., Bethlehem, Pa. It offers accurate pallet indexing, position sensors, accumulation capabilities, and the flexibility to reconfigure and grow as production increases. Reliability was a big factor in the selection process, as production needed to take place around the clock, day after day. The ready availability of FlexLink's modular components is also important, because Everite needed to be at full production just four months after signing the contract with its customer.

As currently constructed at Everite, the conveyor and pallet system consists of a 300-ft loop

and two local lanes for accumulation. One local lane is 150 ft long and one is 75 ft long. Two hundred pallets are tooled to accommodate all part configurations and run continuously on the conveyor, from the initial roughing operation at the first lathe to the final honing operation. At that point, a robotic arm picks each flange from its pallet without touching the delicate flange surface and puts it in position for the lapping operation. The entire manufacturing process takes about six minutes: three minutes of machining time plus three minutes of travel time.

**Before:**  
*Everite client needed a way to provide its customer with accurate, cost-competitive parts.*

**After:**  
*The customer choose to subcontract the work to Everite instead of purchasing new machine tools and controls, offering a beneficial solution to both companies.*

Everite Vice President Dan Stern says



The conveyor system offers accurate pallet indexing, position sensors, accumulation capabilities, and the flexibility to reconfigure and grow as production increases. The automated pick-and-place material handling capabilities help Everite meet exacting specifications.

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that "only eight people are needed to operate the new system — a tremendous reduction in labor. Statistical quality control is now applied instead of 100% verification, which results in a huge time savings. Because of the precise

positioning provided by the FlexLink pallet system, process capability is no problem and there are virtually no rejects."

Everite's customer no longer worries about producing enough flanges of an acceptable quality for

its air conditioner compressors. It receives all it needs from Everite at a lower cost and higher quality than it could produce alone. And Everite, through the use of the pallet system, has found a way to connect its various areas of expertise.

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