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PowerUp

Build-to-order manufacturer gains control with comprehensive forecasting solution

Build-to-order (BTO) manufacturers must run lean operations, keeping a very low backlog of finished goods and only ordering components on an as-needed basis. This strategy tends to lower inventory costs, but also heightens a company's risk of stocking out of essential items. In the electronics field, where flexibility to changing business needs is key, this can be a critical issue.

Vicor Corporation, is a BTO manufacturer of power conversion products for the electronics original equipment manufacturer market. Employees at the Andover, Massachusetts-based business perform both assembly and fabrication of their approximately 30,000 products. These items are made from between 10 to 15,000 components and grouped into 42 product families.

While a few hundred of Vicor's products are sold on a regular basis, some are ordered as infrequently as every two years—a factor that makes demand forecasting and inventory planning exceptionally difficult. Of course, Vicor's business success depends upon having the right component in stock the moment it's needed to produce an item. Having an accurate forecasting process in place is clearly a necessity for achieving streamlined operations management.

As Vicor's chief information officer, Doug Richardson was charged with helping the firm achieve two strategic objectives: improve on-time delivery of products and reduce inventory levels. Richardson worked with team members to replace the company's previous manufacturing systems and its homegrown forecasting tool

with the PeopleSoft enterprise resources planning solution and Smart Software's *SmartForecasts Enterprise*. The software is a demand forecasting, planning, and inventory optimization product. Richardson says the Smart Software tool's ability to interac-

tively adjust statistical forecast results and take into consideration seasonality were two big selling points.

Within months of completing the integration of SmartForecasts with PeopleSoft's production planning module, Vicor managers were seeing positive results. Today, the business uses a two-phased forecasting process that combines both judgmental and statistical techniques. In the first phase, members of the sales force obtain judgmental predictions directly from Vicor's largest customers regarding their demand for each of the company's products. These customers account for 40 percent to 50 percent of Vicor's shipment volume.

In the second phase, the shipment history for these customers is excluded, and the SmartForecasts automatic forecasting capabilities are used to statistically predict the product demand expected from all other customers. By adding these two sets of results, a total production forecast is generated for each item.

Company managers also make use of the solution's multilevel modeling capabilities in order to assign future revenue goals for product families. As part of their sales and operations planning processes, employees use

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A Vicor Corporation employee tests controller circuits to determine proper laser trim values.

the tool to impose the build plan for each product family.

On the up and up

Before implementing the solution, Vicor employees had only been able to forecast about 20 percent of their products, in part because the previous, homegrown forecasting system was cumbersome to use and didn't have the necessary power or data capacity. Because of the speed and ease of use of the new tool, employees now can forecast more than 85 percent of the firm's items. The business also has doubled the number of product families that are forecasted, splitting products into smaller and smaller families and achieving greater granularity and accuracy in its forecast results. As a result, service levels have significantly improved.

"With SmartForecasts, we've been able to be much more aggressive with

our inventory planning," says Mark Vernaglia, Vicor senior operations planner. "You've got to have confidence in your forecast, and we now have the confidence to stock certain component parts that we didn't have before."

Vernaglia also relies on SmartForecasts to better understand the new directions in which Vicor's business is going and to uncover underlying trends in product demand. "SmartForecasts is a double-check on my own assumptions," he says. "If I do something counter to what SmartForecasts recommends, I'd better have a very good reason for doing it."

In less than one year following the integration with the PeopleSoft system, the forecasting solution also uncovered a critical upward trend in Vicor's business. "The forecasting results showed that a significant business downturn had hit bottom," Richardson says. "If SmartForecasts

hadn't uncovered the upward trend, we wouldn't have had enough product on hand to meet demand."

The system continues to deliver results that help company decision makers pursue strategic objectives. Specifically, on-time delivery performance has increased by 10 percent and inventories are down by 20 percent. In addition, Vicor managers have been able to maintain reduced inventory while facing longer lead times for many of their components, and employees are better able to predict inventory needs and understand demand patterns.

Positive changes

Vicor executives continue to put SmartForecasts to the test as they plan for the company's future. Vernaglia uses the system as part of a process that estimates future revenue projections and company decision makers' influence over demand and production planning. Looking several years out, this process provides buyers and planners with data they can use to make better long-term purchasing decisions. The information enables them to continue to reduce costs as they encounter longer lead times in their negotiations with component suppliers. Likewise, this "look ahead" forecast benefits Vicor's suppliers because they have a better understanding of what they need to provide over the planning horizon.

Vernaglia says he plans to continue increasing the number of product families that the company forecasts every month, and he hopes to expand the forecasting process to the component level. He also wants to make use of the tool's ability to set accurate safety stock estimates and optimize service-level inventory requirements on an item-specific basis.

Richardson adds that the many positive changes at Vicor continue today, and SmartForecasts plays an integral role in helping management team members achieve their strategic goals. "We're getting consistently excellent results with SmartForecasts," he says. "It has all the forecasting and planning capabilities we need and more." 