MatrixOne

Changing the Way the World Brings Products to Market™

The Company

Trek Bike annually produces an average of 1,000 new designs for its line of recreational and racing bikes. "The bicycle industry has been equated with the fashion industry," explains Kevin Clayton of Trek Bike. "It is a very competitive, dynamic industry." Once a competitor's product or new technology hits the market, Trek has a mere month or two to respond.

The Challenge

A few years ago, Trek found itself bogged down by its bills of material (BOM) process. The BOM includes specifications about every component, vendor and the materials needed to build the product. Only when the BOM is complete, can parts be ordered, tested, and piloted.

Prior to deploying the eMatrix solution, all changes to a BOM were implemented manually, thereby slowing Trek's ability to deliver new products. This manual process created numerous errors and consumed precious development time. With four BOM clerks repeatedly typing, checking, and double-checking hundreds of BOMs, accuracy rates dropped steadily. With every part on the BOM carrying a set of dependencies to other parts, any error could bring the production process to a halt.

Consumer Products

The Success

- **Enhanced Collaboration**
  Centralized, secure access enhances employee collaboration, communication and new employee productivity
- **Improved Market Responsiveness**
  Accurate, automated processes enable Trek to respond more readily in a highly competitive industry
- **Reduced Cost**
  Improved component and assembly order accuracy has nearly eliminated costly Asian air shipments
- **Increased Profitability**
  eMatrix solution-based constraint management system increases part re-use and significantly reduces scrap and rework

The Story

"The eMatrix solution is a tool that allows your creativity to determine what you are going to do with it. We haven't found a situation yet that we haven't been able to apply the eMatrix technology to solve."

Kevin Clayton
Manager Product Development Systems

The Solution

Automation Enhances Responsiveness

In the first year, Trek stored only parts quality information, such as cost, duties, and royalties. The following year, Trek added BOMs to the eMatrix system. This step helped staff make decisions, such as the optimum time to roll in production changes, with all the necessary information before them (e.g., cost, inventory and supplier details).

Next, in 1999, Trek developed an eMatrix system-based constraint management system. This rule-based system ensured BOM accuracy by tracking the interdependencies of bike component specifications. Now the BOMs are generated by and checked through constraints built into the eMatrix system. Therefore, only bikes that can be assembled are allowed to advance to the next phase of the product life cycle. "By automating and encapsulating the tools through the eMatrix solution, we were able to increase the accuracy and become more responsive to the market trends," said Clayton.

All the right numbers of parts are committed to the BOMs. All the parts fit. Production scrap and rework are significantly reduced and engineers are free to begin work on the next project.

Expanded Implementation, Impressive Benchmarks

Trek continues to add more information to the eMatrix system. The eMatrix system now controls most of the product development process and manages Trek's entire product line. The benchmark numbers comparing the two years are impressive. According to Clayton, Trek has experienced a 50 percent reduction in compatibility errors and a 43 percent decrease in engineering typographical errors. Clayton is most pleased with the 429 percent increase in non-current stock usage. "This figure means that what would have previously been non-current inventory is used and no longer sitting on the shelf. These parts are being placed on products going out, which allows new inventory to flow in."

Parts In Any Weather

Now, Trek uses the eMatrix solution to produce work units. As Clayton explains, "The work unit is really our work product." Yet, despite all the planning that goes into a work unit, manufacturing does not always have the necessary parts. Often, the slowdown is attributed to parts that never arrived from vendors.

"A 2-cent nut could keep us from producing a $2,000 bike," says Clayton. "Without the parts, you can't build the bike." He recalls an incident in which a cargo ship carrying parts ran into bad weather. The boat crew accidentally snipped the strap holding a container destined for Trek, sending the parts to the bottom of the ocean.

"MatrixOne gives us more tools for when a situation gets stressful like this," Clayton adds. "By looking at the attributes of a component and how it is used, we can adapt and find compatible parts to substitute for the part that's missing."

Supply Chain Collaboration

When the goal is to continuously cut development time, every gain in efficiency is extremely valuable. Therefore, Trek continues to put its eMatrix system to new uses. In the future, vendors will input parts information directly into the eMatrix system as well, thereby bringing components information to the engineering staff faster.

The Bottom Line

Clayton believes the possibilities with the eMatrix solution are limitless. "The eMatrix solution is a tool that allows your creativity to determine what you are going to do with it," he says. "Within the scope of most manufacturing environments, a tremendous number of problems can be solved with your imagination. We haven't found a situation yet that we haven't been able to solve by applying the eMatrix technology."

About MatrixOne

MatrixOne, Inc. is changing the way the world brings products to market™ by helping customers to accelerate the right products to market profitably. Committed to the success of innovative companies, MatrixOne, together with its partners, offers product lifecycle management (PLM) solutions that enable enterprises to reduce costs, speed innovation, and maximize revenues across global value chains. MatrixOne's approximately 600 global customers represent the aerospace/defense, automotive, consumer products, general machinery, high technology, and life sciences industries, and include GE, Procter & Gamble, Philips, Siemens, Agilent Technologies, Johnson Controls, and Honda. A global corporation, MatrixOne is headquartered in Westford, Massachusetts.

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