

# MicroStrain Inc.

Made2Manage<sup>®</sup> ERP



## Made2Manage ERP and Omnify PLM Help MicroStrain Reduce Leadtime

*Smart Sensor Manufacturer Also Doubles Revenue Without Adding Production Staff*

### Helping to Re-animate Paralyzed Limbs

Case Western Reserve University researchers are working to develop systems that will restore motion to paralyzed limbs by using electrodes to stimulate muscles and restore motion. A critical part of these systems involves measuring the angles of limbs to provide feedback to the control system. Many position sensors are available; however, they require battery power that is not practical for this application in which sensors are implanted at various locations in the body. MicroStrain, Inc., a startup company based in Williston, Vt., met this challenge by developing sensors that are powered by the field of a magnet positioned outside the patient's body.

These are just one of many smart sensors that have been developed by MicroStrain since its founding in 1987. In another example, the company is developing sensors that use the movement of the shaking of bridge beams or the straining of the walls of ships to power networks of monitoring sensors.

MicroStrain is currently working on several major government contracts to develop sensor systems that will enable aircraft to fly beyond their expected lifetime, saving the government billions of dollars in replacement aircraft while enhancing readiness levels. Solar-powered sensors produced by MicroStrain are already in place on the Corinth Canal Bridge in Greece and on an Interstate 95 Bridge in Connecticut. MicroStrain was recently awarded a Gold "Best of Sensors Expo" award in the sensor category. MicroStrain has now won nine Gold awards and one Silver award in the last seven years.

### Previous Manual Methods for Design and Production

MicroStrain sensors work by combining micro-electromechanical systems (MEMS) based sensor technology with microprocessors. The MEMS and microprocessors used in the sensor reside on printed circuit boards (PCBs). The company builds PCB prototypes and small runs and performs the critical packaging, calibration and testing functions internally. Most of the other parts used in the sensors are off-the-shelf items.

When MicroStrain was first founded, it used an entry-level financial accounting system and managed scheduling and job costing on spreadsheets. "Our production managers walked around the shop collecting parts and checking them off of a paper bill of materials," said Mike Jewett, project manager for MicroStrain. "Using this approach, it was very difficult to understand the demand for our products and the parts we had available to meet that demand. For example, we had no way to know that we were about to run out of an important component until the production manager could not find one. We spent a lot of money shipping parts at the last minute to meet production schedules."

The company's engineers stored their design information in various folders and it was often difficult to find the latest versions of PCB designs, mechanical designs, bill of materials (BOMs) and other critical information. The engineering change order (ECO) process was managed by passing around a paper form. There was always the chance that the paper would disappear under a stack of papers on someone's desk.



### Return on Investment at a Glance:

The implementation of the Made2Manage ERP and Omnify PLM systems helped MicroStrain, Inc., a leader in design and manufacturer of smart sensors, manage extraordinary growth without having to increase administrative staff. Specifically, MicroStrain has:

- Doubled annual revenue in the past two years without having to add production staff.
- Reduced turnaround time on the average order from one week to two days.
- Reduced inbound shipping charges by approximately 35 percent due to better material planning.

*“Since implementing Made2Manage ERP, our sales have increased at approximately 40 percent per year, yet we have been able to maintain the same number of production staff.”*

— **Steven Mundell**, Vice President Operations, MicroStrain Inc.

Jewett joined MicroStrain soon after the decision had been made to move to Made2Manage ERP and he was assigned to head up the implementation. After it was completed, Consona announced an interface between Made2Manage ERP and the Omnify product lifecycle management (PLM) system. “We looked at Omnify and liked what we saw,” Jewett said. “We saw the potential for further improvements by automating engineering change orders and integrating our product development and production management processes.”

### Automating the ECO Approval Process

The implementation of Omnify has resulted in a completely-integrated product development and production process that begins when MicroStrain engineers store their files in the Omnify vault. “Only the engineer that owns the design can make changes to it, which eliminates the problems with having multiple conflicting versions of a design,” Jewett said. “Any authorized user can find a design document in seconds by executing a simple query.”

Omnify also reduces the time required to process ECOs by automatically distributing them through the company e-mail system in parallel or series. The person who submitted the ECR can determine the status of each approval in a few seconds on the computer, making it easy to determine when a personal follow-up is required.

“Omnify enforces our business rules much more consistently than was possible with the previous manual process,” Jewett said. “For example, correcting a simple BOM error just requires the approval of the production manager, while a more complex design change must go through three layers of approval.” As soon as it is approved, the BOM moves into Made2Manage ERP. A key advantage is that any Made2Manage user can see the latest copy of the BOM and selected users can also access Omnify to see whether or not change orders are being processed that will affect the BOM in the near future.

### Enabling Users to see Aggregated Demand

When a sales order comes in, the sales team enters it into Made2Manage ERP. The system then explodes the order to calculate what parts are required to build it and generates the work order. The ERP software makes it

possible for users to see the aggregated demand from all customers along with deadlines and the availability of parts. Right now, MicroStrain production staff manually determines which orders to release into production. The company is planning to use the Made2Manage Shop Floor Manager to automate the scheduling process.

The purchasing queue in Made2Manage ERP shows how many of each part needs to be ordered and identifies any deadlines. This information enables purchase orders to be issued on a timely fashion so that express shipping is rarely required anymore. Consolidating demand enables purchasing to make fewer orders for larger volumes of components, which in turn makes it possible to obtain larger quantity discounts. Raw material is backflushed from inventory based on production volume. Meanwhile, information from Made2Manage ERP that is required by the engineering team is fed back to Omnify, including the cost, quantity on hand, and ordering leadtime.

### High Level of Integration Saves Time

“Made2Manage ERP makes it very easy to determine what our customers are asking for, what we have built, what materials we have used and what materials we have left,” Jewett said. “The high level of integration offered by the system means each area of the company is able to access and use data that was already entered by other functions, saving nearly everyone a considerable amount of data entry time, as well as preventing errors.” Jewett added that MicroStrain is now able to close its books on a timely basis because information flows automatically from sales orders, work orders, and inventory into the accounting system.

“Without this solution,” Jewett concluded, “we would need one or two more people to manage our ECO process and another full-time person to create BOMs. As it is, we have been able to approximately double our sales volume over the last two years without having to increase the size of our production staff. The average turnaround time from when we receive an order to when it ships has been reduced from one week to just two days. Automating these critical business processes has positioned us to continue our rapid growth while maintaining control of our critical business processes.”

## CASE STUDY

“Made2Manage ERP makes it very easy to determine what our customers are asking for, what we have built, what materials we have used and what materials we have left. The high level of integration offered by the system means each area of the company is able to access and use data that was already entered by other functions, saving nearly everyone a considerable amount of data entry time, as well as preventing errors.”

— **Mike Jewett**,  
Project Manager,  
MicroStrain Inc.



**Made2Manage**  
A Consona ERP Solution  
450 East 96th Street, Suite 300  
Indianapolis, IN 46240

TEL (317) 249-1200  
FAX (317) 249-1999  
Toll Free (800) 626-0220

info@made2manage.com  
www.made2manage.com