

Teledyne Microelectronics

Success Story

Using Ingenuus Software Manufacturer Saves More Than \$1 Million

These days the document control center at Teledyne Microelectronics is generally serene. It wasn't always so calm. This \$100 M electronic manufacturing services (EMS) division of Teledyne Technologies provides design and manufacturing solutions to the military, medical, telecommunications and industrial markets. The document control center used to be busy making paper copies of documents, storing master copies in a special document "vault", and providing employees with current copies of critical product data.

Microelectronics is not new to manufacturing. The corporate entity, Teledyne Technologies, was originally formed in 1960 and is a \$1 billion a year business. Microelectronics is a business unit of Teledyne Electronics and Communications - one of the 4 major segments of Teledyne Technologies. Microelectronics uses a fairly old version of Enterprise Resource Planning (ERP) software to manage manufacturing data like bills of materials (BoM). Their users were beginning to rely on it less and on the document control personnel more. According to Laura Ramirez, the Configuration Manager in charge of the document control center, things were getting out of hand.

"Managing changes to the BoM's was simply taking too long," remembers Laura. "There were too many Change Control Board meetings, changes were being handed off to our Mexican manufacturing facility via Faxes, FedEx or email, and we were just swamped with all the paper handling. Something had to be done." It was taking an average of 45 business days to process a change. They believed a move from paper to electronic documents would save time and money.

They needed a solution that would allow them to automate their engineering change order (ECO) process, and manage BOM information too. Product drawings, manufacturing instructions and assemblies are generated using AutoCAD, ORCAD and various Microsoft Office tools. Traditional document management solutions could manage these documents as electronic files, but did not have adequate process automation capabilities, and did not store the files as a BoM. These drawbacks led them away from traditional document management solutions to product lifecycle management (PLM) systems.

The major PLM solutions had problems of their own. Although they could manage the documents as BoM's, their process automation capability was not very useful. A deciding factor was their need to integrate with their ERP system. The plan was to load existing BoM data from the ERP into the new system and associate that information with the actual CAD files. Change requests would be managed in the new system, and when a change is approved, the system will automatically publish to their ERP software.

Like so many companies, they thought they would use a leading PLM provider. But when the vendor attempted the integration to the legacy ERP, an AS400 based solution from Pansofic, they failed.

"At that point we didn't know what to do," says Laura. "Then the Ingenuus sales rep called." Ingenuus was a newcomer to the PLM market but brought critical capabilities, like embedded middleware for integration. "Ingenuus promised that the integration to our ERP could be done in 45 days. We decided to give them a chance."



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They completed the integration before the deadline - Laura was delighted. They also discovered that in addition to powerful integration capabilities, the Ingenuus software could be easily configured to automate their ECO process. They did not have to conform to some off-the-shelf template.

"The Ingenuus design tools were made to be used by process owners like me," Laura points out, "not a consultant or an IT analyst." Laura found the Ingenuus software to possess powerful process automation capabilities not available in other software. She can map her process using the Visio-like mapping tool, and then quickly modify the user screens and business rules. Processes automated using Ingenuus are under revision control themselves, making management, deployment, and audits easy.

Laura, with the help of two team members from data control and two consultants from Ingenuus, deployed the solution in 6 months.

Things changed at Microelectronics after the Ingenuus implementation. Using the native web interface, an ECO can now be easily completed in 5 days, and emergency ECO's completed in less than an hour. Change control board meetings are virtually non-existent. Members use Ingenuus' embedded view and markup tool to review drawings at their desks. The document vault is now a training room. Users view the documents online and if a paper copy is needed, print documents as required.

Quality has improved. ISO and Government audits of the ECO process are a breeze. Each audit report praises the Ingenuus solution and recommends its expanded use into other processes.

The Mexico manufacturing facility used to wait weeks for ECO information and documentation. Today, they are a part of the process and get their own documentation.

The Ingenuus solution has also saved Microelectronics a lot of money. "Aside from the soft dollar savings like quality improvement, user satisfaction, visibility, and predictability, we actually have hard dollar savings," Laura explains. The cost to process an ECO is rarely more than \$250, a quarter of the previous cost. Using Ingenuus, people no longer waste time going to the document vault to get their drawings or documents. Clerical errors and wait times have been eliminated because BOM data is automatically uploaded to the ERP. Process delays trigger instant email alerts allowing process participants to manage their processes and tasks by exception rather than constant review. Access to critical product data is controlled via the process.

A current return on investment study shows that the Ingenuus solution is saving Microelectronics more than \$1 million a year.

What's next for Microelectronics? Laura plans to manage requests for bids. This is an important process because on defense contracts, the manufacturer is asked to show that the manufactured item meets all of the requirements put forth by the Department of Defense. Today, there is a manual process in place to accomplish this. Laura intends to automate this process using Ingenuus without assistance from the IT department.

Ingenuus Active Packet Technology Provides:

- ◇ Control
- ◇ Visibility
- ◇ Predictability
- ◇ A Great Return on Investment



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