Thomas Instrument

It takes a lot of expertise and know-how to keep U.S. military airplanes up and running, and Thomas Instrument has been providing both for more than 30 years. Headquartered in Brookshire, Texas, with satellite manufacturing and engineering facilities near major logistics centers throughout the U.S., the award-winning company provides engineering, manufacturing, and repair/overhaul services to the U.S. Department of Defense.

Headquarters for Thomas Instrument in Brookshire, Texas.

Thomas Instrument team members assemble and test gearboxes.

Thomas Instrument's numerous product lines include parts and components for various defense aircraft, such as F-15 and F-16 fighter jets and heavier cargo planes. These include brake units for the fighter planes as well as some of the plane's defense equipment. Additionally, thousands of flight components, assemblies, and systems currently in use worldwide were manufactured, repaired, or overhauled by Thomas Instrument. These products range from critical safety items to ground support applications for major military aircraft programs.

Thomas Instrument is certified to the AS9100RevC standard, and operates under an AS9100 certified quality management system that is openly audited by customers each quarter and by an assigned AS9100 registrar on a semi-annual basis. In 2013, the FAA certified Thomas Instrument as a Repair Station, approving it for maintenance, overhaul and repair of accessories and non-destructive testing. The company is currently working on obtaining FAA approval to work on commercial airline planes.

Saving Time with Auto Move Tickets

In the air defense industry, on time delivery is critical. But with 300 to 400 assembly and component work orders on Thomas Instrument's shop floor at any given time, jobs can sometimes get out of sequence, causing unnecessary delays. Global Shop Solutions ERP software helps to reduce these errors by simplifying the move ticket process and ensuring that jobs in progress go to the correct sequence after completion at each workstation.

In the past, creating move tickets at Thomas Instrument involved a manual process. After logging out of a sequence, workers would fill out a form by hand and attach it to the pallet holding the parts being worked on. The parts would then be moved to the next sequence indicated on the work ticket.

With Global Shop Solutions ERP software, the process is mostly automated. All the Shop Floor Data Collection stations on the shop floor are equipped with a move ticket printer. When a machinist logs out of a sequence, the Shop Floor Data Collection station automatically prints a move ticket and electronically sends a duplicate copy to production control. The machinist takes the move ticket from the printer and attaches it to the pallet. Production control uses its copy to locate the parts and move them to the next sequence in the workflow.

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"With Global Shop Solutions, move tickets are faster and more accurate than the traditional barcoded work order," says Mike Slamen, IT Manager for Thomas Instrument. "Machinists hit a few keys, the ticket gets printed, and they slap it on the pallet. When they log out of their sequence, everything is ready is to go."

Seamless Integration with Other Programs

In every business, managers like to see the data a certain way. At Thomas Instrument, Global Shop Solutions ERP software's ability to seamlessly integrate with other programs – such as Excel, Crystal reports and GAB – allows managers to see the data exactly how they want it. This includes creating a number of custom Dashboards that provide high-level overviews of each department.

For example, the shop manufacturing Dashboard created by Thomas Instrument gives managers a quick glance at how they are running for DPMO (defects per million opportunities) and other quality stats. It also shows how many work orders are behind or ahead of schedule. A similar Dashboard gives the purchasing manager a quick look at which purchase orders are overdue and by how much.

"The shop manufacturing Dashboard provides a detailed look at the whole shop floor," says Slamen. "We can see detailed information from the work orders, where they're at, and where problems might be occurring. One of the real benefits of Global Shop Solutions is its ability to work with other programs. We create the dashboards in Excel, connected directly to the database."

Precise Capture of Labor Time

On the Crystal reports side, one custom report in particular helps Thomas Instrument more accurately capture individual labor time on each job.

When machinists finish running the first part in a batch, the part must go to quality control for inspection – a process that can take up to two hours. Once the part is approved, machinists can finish the rest of their parts. During the inspection, however, they remain logged into the job, which doesn't accurately reflect the amount of time it takes to run the parts.

To address this issue, Thomas Instrument created a Visual Basic "FA Login" program. Machinists log into the program to select their name and sequence from the list. From that point, the inspection time gets charged to quality control rather than the machinists. When QC finishes the inspection, the time tracking reverts back to the technicians as they finish making the rest of the parts.

"This program is a valuable tool because it allows us to separate the time it takes to inspect the FA parts from the actual time it takes to machine them," says Slamen. "It also provides a better performance indicator for each machinist."

A product waiting in the Manufacturing & Repair Overhaul department.

A finished Thomas Instrument Gear Box Assembly.

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"We also created a custom Crystal report that continuously tracks the inspection process on a large TV screen so everyone can see it," he adds. "If inspection time exceeds two hours, it turns red on the screen for the employee and that sequence. We do a lot of reports like this that pull data from Global Shop Solutions and format it differently to help us work more efficiently."

Managing Change Orders with APS

The robust Advanced Planning & Scheduling (APS) application has dramatically improved scheduling efficiency and workflow through the shop floor. In particular, switching from infinite (extending the schedule out indefinitely) to finite scheduling (scheduling within a preset timeframe) has helped Thomas Instrument reduce the manual effort required to move work orders around.

"We get a lot of change orders to work in progress," says Slamen. "To manage them, we used to change work order dates every day. Now we use the finite scheduling feature in APS to set a window so that we only schedule out for 100 days. With this and several other finite scheduling parameters, APS keeps our schedulers from having do so much manual work to get the work orders when and where they want. It's a real time saver, and has helped with our on-time delivery rates."

Meanwhile, the messaging system in Global Shop Solutions ERP software is helping Thomas Instrument reduce scrap. When a machinist clocks out of a sequence and records scrap in the ERP software, the department manager automatically receives a scrap alert via email. He can then go to that machine on the floor and find out what caused the scrap and what action, if any, needs to be taken.

"Before, we often didn't know about scrap until months later," adds Slamen, "and by then it was out of sight, out of mind. Now, managers know immediately when someone records scrap on a sequence. As a result, DPMO is down from a year ago, and we've also lowered cycle times, which helps us get the product out the door on time."

Government contractors like Thomas Instrument depend on their ability to submit competitive bids to win their contracts. Global Shop Solutions ERP software helps with this process in several different ways: helping to keep costs down; providing accurate historical information on previous jobs to help with estimating and quoting; and of course, helping to get the product out the door on time by simplifying the production process.

"Global Shop Solutions is a very comprehensive ERP package," concludes Slamen. "From the Shop Floor Data Collection stations that track labor and machining time with great precision to shop scheduling, automated move tickets, and more, the software does everything you want it to. You get it all in one package without having to buy or use separate systems for accounting or purchasing. It has made a huge difference in every area of our business."

A machining center used to manufacture components.
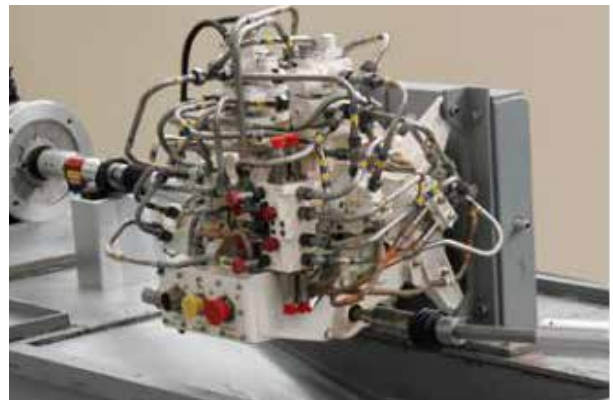
Assembly testing in a Thomas Instrument workcenter.

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