ABB Auburn Hills Robotics Division uses SmartSpares™ Inventory Management System to save time and money

**Business challenge**
- Thousands of low-value parts are of critical importance in manufacturing process
- No visibility into inventory stored in unsecured tool cribs spread around the plant

**SmartSpares™ Inventory Management System**
- Vendor managed inventory program covers more than 10,000 parts representing $1.3 million in inventory value and 290K items
- Inventory is stored in a 5,200 square foot tool crib
- Inventory movement is tracked with bar code scanning
- ABB and its suppliers collaboratively manage inventory levels using SmartSpares™ Inventory Management System

**Results**
- Cash outlays delayed until inventory is used, effectively saving hundreds of thousands of dollars of inventory carrying costs
- Annual inventory turns are now approaching goal of 6.0
- Consolidated purchases
- Expect incremental returns of $600 thousand in unused materials in 2006
- Over $2 million in annual productivity savings
- One full-time buyer has been redeployed to a more strategic role
- More square footage now utilized as build space
- Improved overall cost reporting for projects

**Company Overview**
ABB is a global leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 103,000 people.

**Business Challenge**
The ABB Robotics Division in Auburn Hills, Michigan manufactures custom automation systems and also does refurbishment work. In each of these unique projects it utilizes thousands of parts. While the individual parts may have relatively low costs—most are worth less than $250—stockouts can have serious consequences to ABB Robotics' operations. Charlie Newman, the division's material control manager, says, "Even a missing bolt can stop a project dead in its tracks."

Prior to deploying the SmartSpares™ Inventory Management System, ABB stored parts in various unsecured cribs throughout the plant. Once the crib received inventory, ABB had no visibility into what parts were available to use on a particular project or where individual items were located. With no way to know exactly what was in the facility, ABB often placed multiple orders for the same parts. In addition, materials that were left over at the end of a project would remain in a crib, even if no one planned to use them in the foreseeable future. ABB recognized that its inventory control model was resulting in significantly higher inventory carrying costs and potentially putting its projects at risk.

**The Solution**
The Auburn Hills Robotics Division decided to make major changes to how it managed its parts inventory. The materials management team worked with financial staff to build a business case in August, 2004; the system first went live in January, 2005. In deploying the solution, the ABB team worked closely with its own spare parts business, which was reengineering its approach to customer service and inventory management with the launch of its innovative SmartSpares™ Inventory Management System.

ABB’s new inventory model involved two major shifts in how it did business:
- **From distributed, unsecured cribs to a centralized, manned crib.** ABB consolidated its various parts cribs into a single 5,200 square foot crib manned by materials management staff members.
- **From traditional supplier relationships to vendor managed inventory.** ABB has now shifted $1.3 million in inventory held in its cribs to vendor managed inventory. ABB has no initial cash outlay for inventory, paying only for what it uses. Its suppliers capture more business by having inventory available when and where ABB needs it.
To support its new model, ABB needed accurate, real-time visibility into the inventory held in the parts crib. It also needed to be able to give its suppliers access to the inventory information so that they could perform planning and replenishment activities on ABB’s behalf.

The initial deployment took approximately five months from the completion of the business case to live operations. ABB uses Mobile Display Scanners to record inventory receipts in the crib and usage in a particular project. The scanning process captures not just what was used but who took the inventory, when it left the crib, what project it was being used for, and what its value was. When vendors deliver replenishment stock, they scan in their inventory. They also perform periodic inventory audits and can remove inventory that is not moving and purge it from the system. All of this information moves instantly from the scanning devices to the SmartSpares™ database via wireless technology.

SmartSpares™ provides ABB and its suppliers with the data they need to collaboratively manage inventory. ABB materials management staff track current and historical inventory levels and usage, monitor supplier performance, and manage exceptions. They work with vendors to establish minimum stocking levels for each inventory item. SmartSpares™ gives suppliers direct access to inventory and usage data for the crib areas that they supply, so that they can conduct planning activities with accurate information. Daily usage reports are shared with ABB’s ERP system and notify vendors of what to restock. The ERP system manages approvals and emails purchase orders to the suppliers, who then replenish their stock.

Three ABB staff members man the crib. One team member handles walk-up parts requests; another manages the SmartSpares™ Inventory Management System, audits inventory levels, and handles inventory entry and disposal of those items that aren't moving. A buyer also works in the crib area. Inventory data is visible throughout the company; in fact, more than 500 people have access to the system to view inventory and create pick lists. Newman says, “With SmartSpares™ Inventory Management System, information is accessible to anyone who wants it just by getting on the Internet.”

**Results**

With SmartSpares™ Inventory Management System, ABB has the accurate, timely information it needs to work collaboratively with its suppliers and make intelligent inventory decisions. ABB has also gained flexibility to address change, while effectively managing costs. According to Newman: “Our business changes every day, and we need to be flexible in the crib and stock the parts that are of high value to the organization.”

ABB has achieved a number of benefits with its vendor managed inventory crib:

- The company has delayed its cash outlays for inventory until that inventory is used, effectively saving hundreds of thousands of dollars of carrying costs.
- Annual inventory turns have significantly increased and are now approaching ABB's goal of 6.0, while stockouts are kept to a minimum.
- ABB has been able to consolidate purchases across projects.
- With increased inventory visibility, ABB has been able to immediately identify unused materials that won't be used on subsequent projects and quickly return these materials to suppliers. The plant expects to return an additional $600 thousand in unused materials in 2006.
- The system has saved ABB personnel significant amounts of time in inventory tracking, assembling materials for projects, and purchasing. The company estimates these productivity savings at over $2 million annually. The time that ABB spends managing and reporting inventory has shrunk from 28 hours per week to only 5 hours. In addition, ABB has been able to redeploy one full-time buyer to work on more strategic tasks.
- The space that was formerly used for distributed materials cribs is now being used as revenue-generating build space.
- The crib also expanded from parts inventory to tools. ABB achieved significant cost savings and productivity improvements by creating the same visibility that it has into parts inventories. In addition to tracking tools and notifying the supervisor that “John Doe checked out this tool on this date at this time”, people across the plant are able to see who has what tools and where they are in the facility. ABB saved thousands of dollars by managing tools centrally.
- Finally, ABB has improved its project cost reporting with accurate information about precisely what materials were used and how much those materials cost.
ABB’s suppliers are also very satisfied with the benefits they get from the vendor managed inventory crib. Their inventory is moving on a daily basis since it is always available when ABB project managers need it. In addition, supplier sales people can now focus their efforts on building strong relationships with ABB, since the SmartSpares™ Inventory Management System has eliminated much of the tedious order entry work.

Lessons Learned

ABB’s experience with the vendor managed inventory crib project underscores the importance of change management and building culture in the success of new initiatives. When the new crib first came on-line, some ABB employees and suppliers resisted change. Newman says, “People didn’t want to follow processes and be proactive. They didn’t want to learn. But after a period of time, we changed that. Today, people can’t picture doing it any other way. It’s actually made doing their job easier.”

The positive return on investment achieved at Auburn Hills has helped to encourage the expansion of the SmartSpares™ Inventory Management System to numerous ABB facilities throughout the world.

Future Outlook

The success of the SmartSpares™-powered inventory crib has spawned several new initiatives in 2006. Starting in March, 2006, ABB implemented SmartSpares™ technology in its receiving area in order to track all inventory as it goes in and out of the plant. For this project, ABB chose to implement 2D bar coding technology. This technology allows ABB to capture more information about its inventory and to eliminate scanning errors. In a single scan, ABB staff can capture information that would take 7 scans, all in the proper sequence, using traditional linear bar coding. ABB considered using radio frequency identification (RFID) for the project but found that the technology required for the receiving project was not yet available. Newman believes that the lessons learned from the 2D bar coding project will serve as a useful “stepping stone” to RFID for his crib and for other ABB initiatives.

When inventory is received, ABB receiving staff members enter receipt information into JD Edwards, ABB’s ERP system. This information is then automatically converted into a 2D bar code, which the staff prints and affixes to the parts package. Information on the 2D bar code includes part number, part description, vendor, job number, and purchase order number. When the information is scanned in at the receiving area, SmartSpares™ sends a notification to awaiting personnel that parts are ready for pickup. The appropriate person can then pick up inventory, or have it directly delivered to the project on the plant floor. At every step of the way, ABB knows who has touched the inventory.

Also in March of 2006, the ABB Robotics Division began utilizing SmartSpares™ to track production inventory in its circuit board reconditioning facility. With over 30,000 items to track, there were too many opportunities for miscoding or omitting parts on repair reports, which are used for job costing and ultimately pricing of the service to customers. An assortment of manual processes meant that jobs were not costed accurately, stocking levels were incorrect and were affecting lead times and requiring expedited shipments, labor costs were increased due to manual processes, and the cost of parts were increased due to multiple orders for replenishing the same part. In addition, there was no way of knowing if they had a problem with shrinkage. What they did know was that thousands of dollars every month were being misallocated because of inventory that could not be accounted for. And, with the recent Sarbanes-Oxley compliance requirements, the team knew they needed to get these areas under control.

Since the Circuit Board Reconditioning group was already located in a secured room with limited access, there was no need to provide them with the SmartSpares™ secured entry capability. Instead, they implemented the SmartSpares™ Mobile Handheld Scanner – a wireless real-time data capture and transmission barcode scanner. Results are just starting to come in for the Circuit Board Reconditioning group, but ABB expects it to be as successful as all the other SmartSpares™ applications.