

# Wireless Takes the Driver's Seat

Some spiffy software and wireless handhelds help American Seating boost worker productivity by 15 percent

BY JIM UTSLER

Cars, toasters and microwaves. When you look at them in the showroom or at the appliance store, it's like they popped out of the ether fully formed. "Hey," you say as you contemplate your purchase, "I like the way it handles," or "I like the wide, bagel-accommodating slots" or "Isn't that something the way the buttons beep when I touch them." That a line of harried shop personnel in a manufacturing plant somewhere assembled these everyday items often isn't even a consideration. The important thing is that it works (and in the case of a car, that it looks cool).

But unless you're familiar with the manufacturing process, the hows and whats simply aren't important. That there are part bins, specialized tools and highly trained personnel working behind the scenes to make your toaster toast when you lower the control lever is a distant afterthought, if indeed a thought at all. But that's exactly what's involved in the manufacturing process. People are taking orders from distributors and retailers, entering the orders into their ERP applications, ordering component parts (or making them themselves), taking delivery and posting the receipt of the parts, putting the parts into stock bins, removing the parts from stock as needed, adding the parts to the end products as they move down the line and marking products ready for shipment when completed.

Keeping track of myriad components is difficult. The shop personnel who ensure parts are at the stations where they're needed and when they're needed are a busy lot, supporting the line and physical assemblers in on-time, all-the-time manufacturing processes. And if they lose track of the parts or, worse, run out of parts, the assembly line comes to a screeching halt. This costs money. Shipments are halted, distributors and retailers are restless, and fingers are pointed.

Fortunately, today's technology can improve much of this. That said, it's now a matter of finding the right tools for the job. In the case of American Seating, the right tools came in the form of wireless handhelds, barcodes and the software that allows remote access to its mission-critical AS/400 and the applications running on it. Thanks to the implementation of this hardware- and software-based solution, American Seating is quickly climbing out of the missing-part pitfall.

## A Nebulous Area

The Grand Rapids, Mich.-based American Seating specializes in (as you might have already guessed) the manufacturing of seats—and we're not talking your average around-the-house type of seats here. No, the company focuses on widespread commercial seating applications, ranging from office, bus and stadium seats. In fact, the company has designed and built seats for such high-profile venues as new professional ballparks and stadiums in Buffalo, Milwaukee, Pittsburgh, Detroit and Houston. And, adds Jeff Taft, senior programmer analyst with American Seating, "We do that plus offices, auditoriums, lecture halls, schools and airport shuttle busses."

The company has grown significantly since its 1886 founding, so much so that it even has a Grand Rapids' street named after itself (American Seating Center). This isn't simply for vanity's sake, but more because of the size of the company's facilities, which span some two blocks on American Seating Center. It also has sites in Roswell, N.M., Grand Forks, N.D., Orillia, Ontario, Canada, and Winchester, Tenn., that work to support the Grand Rapids headquarters.

This manufacturing footprint requires some delicate balancing: from the time raw materials are received at the plants to when the company's products are assembled to when they're readied for shipment. Prior to its use of the handheld bar-coding solution (which is currently only in use in Grand Rapids), the company had difficulty keeping track of the individual components used in its finished seating assemblies. Those components were stored in what Taft characterizes as "a nebulous area called 'stock,' and that could mean a stock location in any of six buildings (in Grand Rapids)."

As American Seating's manufacturing process works (in a simplified description), raw materials based on customer orders and entered into the company's materials requirements planning (MRP) system are shipped to the company and stored in a stock location awaiting future disposition. (This MRP system is a heavily modified version of BPCS, which resides on an AS/400 Model 620 running OS/400\* V5R1. The company plans to begin an upgrade to J.D. Edwards running on an iSeries 830 later this year.) These materials are then used to create any number of seat subassemblies, per the exacting requirements of customer orders. Once a subassembly is manufactured, it's put back into work-in-process (WIP) inventory. As the manufacturing process proceeds (at, for instance, a welding station), the subassemblies must be pulled out of stock to complete an entire seat assembly. That final assembly is then put back into another stock location. In the best of circumstances, a bin of relevant parts would always be at the required workstations so as not to disrupt the manufacturing process.

At a shift end or during breaks, shop-floor workers would report both their labor and the materials used to the company's MRP system via terminals located throughout the various work centers. This reporting, which indicates the assembly or subassembly they were working on, would then relieve the appropriate parts, such as raw tubing material and nuts and bolts, from stock. Based on the results of this reporting, the used inventory would be replenished and the newly created assembly would be posted as available for the next manufacturing phase.

This process is as efficient as it sounds, with some minor caveats. Because the data entry was being done periodically during the day, American Seating's MRP system was-

n't being updated regularly. This lag in part-usage and -posting information was creating some problems on the shop floor, especially as the company continued to grow and inventory levels increased accordingly.

According to Jeff Reinke, vice president of IT with American Seating, "Much of the shop-floor activity involved manual processes. Parts were stored and taken out of WIP inventory without interaction with the MRP system, even though BPCS has all the discipline to identify stock right down to a specific stock location." As a result of this, shop-floor personnel would occasionally have to leave their stations to search for the appropriate parts or, if they couldn't find them, put in rush orders to have them made.

Realizing this was becoming a problem—and suspecting that there had to be a technological solution to ease the situation—American Seating began reviewing its options. The most obvious answer was a material-coding solution that would allow the company and its employees to precisely know where parts were located. This would help eliminate the need for their crib-by-crib search for assemblies and subassemblies and create new parts to take the place of misplaced parts. And ideally, the solution would interface with the company's back-office MRP application. The less obvious answer was how to implement it.

### A Big Return

Barcoding allows users to specifically identify items. In the case of American Seating, this type of technology would be a boon, allowing employees to know exactly where needed parts are located in real time. As a result of increased employee productivity, the company would save time and money and fulfill customer orders more quickly. The ideal bar-

coding solution would also allow material handlers to check inventory activity on the company's AS/400 in real time instead of during breaks and at shift end.

In 2000, American Seating attended a tradeshow where staff members discovered the Ann Arbor, Mich.-based Integrated Barcoding Systems (IBS), which offered a turnkey solution including handheld scanners, mapping software and barcode printers.

As a result of this meeting, American Seating began to explore how the option would help it enhance its existing business processes. The upshot was a comprehensive change in tools and processes that was completed for use in its transportation division in August 2001. "We went from an open area to getting all the crib locations coded, all the products moved and all the programming done in about six weeks," Taft says. "And just two of us did the programming."

Using IBS's QuikTrac software, a screen-integration tool that resides on an Windows NT\* or Windows\* 2000 workstation between the handhelds and the AS/400, American Seating easily mapped key BPCS data-entry screens to the Intermec handheld devices, with QuikTrac acting as the intermediary between the handhelds and the application. (QuikTrac is composed of four modules: development, runtime, printing and offline data-collection. The first allows for drag-and-drop mapping between applications and the handheld. The second acts as the "traffic cop" for the data as it's transferred from the handheld to the backend system. The third allows for barcode printing with devices connected to the handheld either wirelessly or via an Ethernet network. And the fourth enables offline data collection and subsequent batch downloads.) The handhelds are connected to the AS/400 via two receivers on an Ethernet-PC network (QuikTrac runs

on the PC), and the barcodes are generated using thermal printers from SATO America. The printers, which have been assigned specific IP addresses, are located throughout the shop floor.

As the new process works, raw materials are ordered and checked in. When, for example, parts are required for the customer order, workers stamp them and put them in a tub, along with their shop-order paperwork and a transfer ticket. Material handlers then come by, pick up the tub, move it to a controlled location and scan the barcode that accompanies the paperwork and the barcode location. As work orders come in, pick tickets are printed at the cribs. Material handlers then pick the needed parts at specific stations, manually enter that data into the handheld, deliver the parts to the assemblers and scan a barcode at the delivery location.

When an assembly is completed, another barcode is generated and placed with that product. Once a seat has been completed for shipment, its serial number is scanned and verified against the shipping label (the scanning at this point is done with wired wedge scanners, which are directly attached to a green-screen terminal). As this back-and-forth takes place, the data is automatically posted to the AS/400. According to Taft, "It's just like keying into a terminal. I can go down to our computer room and watch exactly what they're doing."

And that was the point. The company now has a real-time view of inventory. If a material or part quantity is running low, it can be ordered proactively instead of as demanded by emergency situations—such as when a part can't be found. This solution also has allowed American Seating to enhance its processes, creating a more organized and effective manufactur-

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ing flow. In addition, its labor-efficiency has increased, with productivity increasing 15 percent and inventory picking time decreasing 50 percent. "In the first 30 days, we were able to reallocate some of our material handlers because we didn't need as many people," Taft notes. "Morale is a lot better, too, because they're not getting frustrated trying to look for things." And that's only with 10 wireless handhelds in one manufacturing division. Now imagine what would happen if the company implemented the solution across its entire manufacturing base, which it has considered doing "wherever we can get the biggest return," Taft adds.

### Using it Anyplace

A proven solution in its transportation division, the company feels it can deploy the wireless solution easily in other manufacturing points. "I feel very strongly that this solution resulted in very positive process improvements with a very positive ROI," Reinke says.

So the next time you buy a car, toaster or microwave—or sit on a bus seat—just think about how it got there. While these items didn't come out of the ether, it's almost as if the information flowing from American Seating's handhelds to its AS/400 does, allowing for a much improved manufacturing process. **i**



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