

Cutting Waste generates Uniform Benefits in the Apparel Industry

As leading innovators in the design and manufacture of uniforms, in addition to providing equipment and supplies for pageantry groups, Fred J. Miller's customers include marching bands for high schools and colleges, drum corps, color guards, majorette and baton corps, dance lines, and so forth. With all manufacturing, sales and clerical activity located in Dayton, Ohio, the company averages approx. 100 people year round split between salary and hourly wage employees, with 2004 seeing an all time high of 157 people employed. When it came to sourcing a scheduling solution that could cope with the very individual requirements of Fred J. Miller's manufacturing, Preactor International was the only solution that measured up to the task.

Fred J. Miller has a long and successful history in this specialist area, with manufacturing beginning back in the 1970's, originally out of the home of founder, Fred and Marlene Miller. Whilst the business has now successfully grown over the years, the essential production process and the associated planning and scheduling issues have remained the same. These of course have intensified as business as grown.

Scott Plumlee is IT Manager with Fred J. Miller and has worked for the company for 3 years. He sums up the main business issue, "Our main challenges stem from our manufacturing process because almost every order is a new item or a substantial variation on an older item, preventing us from just reusing old patterns." A brief overview of the steps involved quickly makes this apparent.

First, the fabric needed for the items is determined and checked to see if it is in stock. If it is, the order is put down for sizing, a process by which the number of required pieces of each size for the whole order is determined by the CAD system. Depending on the item ordered, the next step can be a 'parts from stock' option or a cutting operation; the vast majority of items have to be cut to order. Some of these may be cut by hand, but most are cut via an automated process in which the appropriate fabrics, often many layers, are laid

down in the correct order, and fed through an automated system capable of cutting through 25 layers of fabric at a time with tolerances of less than a quarter inch.

Once the cutting is done, an item may go right to the main sewing step, a process called fusing in which reinforcing fabric is heat-treated to adhere to the uniform fabric, a parts or accessories sewing step, or an embroidery step. If an item moves to the main sewing step, it may go to one of two groups depending on the type of uniform. This stage sees the actual assembly of the items which again may take several steps. If the item needs fusing, it goes to one of two groups that perform the fusing and from there it may go to any of the aforementioned steps as well. If the item moves to the parts or accessories sewing, then up to three teams assemble the sub-parts of the main item and then pass it along to the next step. If embroidery is needed, it is subcontracted to an outside party for this and move on to another order until that step is done.

Once an item arrives at the main sewing step, all sub-pieces are assembled and the garment is actually constructed. From there the items are moved to inspection, where loose threads are removed, and finishing touches applied (buttons, etc.). Fred J. Miller's commitment to quality ensures that each uniform is individually inspected and packaged for delivery.

With so many potential steps involved, and only a finite limit of material and human resources, each step represents a potential bottleneck and ultimately, a reason for an order to not meet a delivery date. As Plumlee elaborates, "Our problems are compounded because most of products are custom, and all we can do is estimate for the time to allow for each step based on what we've produced in the past." He continues, "For example, we might allow 10 minutes for the sewing of an item, only to find it actually takes 15 minutes. Multiply that by 200 pieces and you've got a large amount of man hours. Or the other case, in which we find work gets done faster, so we've allotted too much time!" In the first scenario, orders might be taken with a delivery date that can't be met once the time factor has been realised. In the second, orders could be turned away that in actuality, could have been taken.

Plumlee also describes another planning and scheduling issue. “There is a large time period between our supplying the customer with a quote along with an estimated delivery date, and them coming back to us with a confirmed purchase order from their school or group. So for example, John Doe High School is told on May 1 that we can deliver their uniforms to them by August 1. But they don't place the actual order until June 15 - now we have to try and honor that date. Meanwhile, we might have added another 20 orders after the time we told them we could deliver on August 1, so now really we would have a delivery date of October 1.” Fred J. Miller tried to cope with this type of situation by allowing 5 months for an order as Plumlee honestly admits, “It was really just a lucky situation when we weren't late.”

Fred J. Miller took the decision in 2002 to investigate a more effective, computerised method of scheduling. Plumlee was tasked with the selection process and began by searching the internet extensively for software that could match Fred J. Miller's requirements. “We looked at every possibility”, explains Plumlee. “We initially looked at our accounting software to see if there was a module that we could add to do the scheduling, but there wasn't such thing. We also looked at some ‘packaged’ solutions that could handle everything from CRM to the shipping process, but we didn't want to make such a drastic change - just trying to add another system to our business was enough. Even the software companies that make solutions especially for garment companies didn't have a stand-alone system which met our requirements. Everyone wanted to sell us a package where our accounting, scheduling and CRM would all be tied to one vendor.” As if this wasn't prohibitive enough, for a company the size of Fred J. Miller, typical costs of systems including training and implementation often exceeded \$150k.

In the end, it came down to a straight choice between a company that uses spreadsheets to do everything in a very useable manner, and Preactor International. As Plumlee remarks, “Preactor won out because of the range of features that were available and the ways in which we could fine tune those features to match our business requirements and deliver

the functionality we needed. Furthermore, we didn't think the other company could be as flexible.”

The final decision was taken in the spring of 2002 to purchase a Preactor 300 system from US Master Reseller, Quinn and Associates. Plumlee describes the process. “Once the decision had been taken, we set up a training session and the meat of the implementing happened in a 2-3 hour conversation about how we needed to set up our system. We didn't want to try and integrate the scheduling with any other systems to start, as we thought it would be complicated enough just to get things running. Our main goal was to know at any time how far out we were scheduled, and when each order would finish.”

It was clear from the outset that the time-ticket system (the system used to track the man-hours each garment takes) would have to be represented within Preactor. When a worker works on a garment or order, they record the number of hours spent on that order. All the time tickets for an order are totalled to give the man-hours for an order. The sheer number of steps and orders we deal with in the summer, at times there are over 1600 orders in Preactor, make it impossible to only enter data through the single installed instance of Preactor, as it would make the system unavailable for a large amount of time during the day.

Fred J. Miller decided to set up a system where Preactor could export the schedule data and then import it into an MS Access database, where time ticket info could be entered. The data would then be passed back to Preactor. This was facilitated by Quinn and Associates which developed a system package that would allow this to happen. A database and interface was set up that would allow times for each step to be entered, and then the software would look at the times for each step, convert that to a number of pieces that should be done, before entering it as a mid-batch update in Preactor. “So at the end of the day, we can now see where we are at,” enthuses Plumlee.

Even before Preactor started delivering the typical post-implementation benefits, the solution was helping Fred J. Miller work smarter. Plumlee explains how. “One thing that Preactor did do was force us to follow some rules about how we handle orders. We now enforce some strict rules about what must be completed before an order can be placed on the schedule and this has helped remove much of the back and forth clarification "chat" that used to take place, saving us a lot of wasted time. We've also standardized the time ticket system and removed much of the ambiguity surrounding how they should be done, aiming for it to be easier for anyone to glance at a ticket and see what's happening.”

In short, Preactor forced the company to clarify exactly how things should best be done in order to be able to model things for the system. While still trying to find a balance between being as exact as possible in its scheduling and times, and the amount of work needed to be that precise, the benefits have been inescapable. Plumlee continues, “Working with a system that shows the results in exact numbers is helping us find out where we can improve efficiency and where we need to reconsider how we do things.”

This has all contributed to the main benefit for Fred J. Miller which is vastly increased knowledge about every order the company has. As Plumlee comments, “With Preactor, we now know how far out we are scheduled, how long it takes for an order, and whether or not we can make promises to our clients regarding their merchandise.” This has had quantifiable benefits as the in the first year the company used Preactor, the overtime bill was reduced by 50%. This has been reduced to almost nothing in the second year of use as the company has been able to plan significantly further in advance.

Moreover, the enforced modeling of its systems helped the company to look at everything with a critical eye which in turn led to the realization that major efficiency savings could be achieved with only minor operational changes. “Even better still” remarks Plumlee, “we can now test the impact of adding people or machines before we actually do it to see the ROI.”

Greg Quinn, CEO of Quinn and Associates is equally enthusiastic about the success of the project. "It is exciting to see the value proposition that Preactor offers deliver so dramatically for a customer. FJ Miller is in a very competitive space, and Preactor clearly makes a substantial improvement to Miller's bottom line and customer service."

And as for the future? In addition to using some sort of real time system that will automatically import the time-ticket data into Preactor to give the company up to the minute info, Fred J. Miller will be exploring the BOM options with Preactor to automatically explode orders into their parts and save some hand entry of orders. The final word remains with Plumlee, "In Preactor, we have a solution which matches very closely our business processes, one which has helped us fine tune these processes, and one which helps deliver the best results across our entire business. The fact it was so inexpensive is an additional bonus!"