

Connecticut Company Uses Self-Directed Work Teams to Improve On-time Delivery and Quality

Gaston Pelletier

With the help of a committed management team, a zealous company wide SDWT champion, dedicated team leaders/cheerleaders, and most importantly, participation of everyone on the shop floor, Farmington, CT-based Connecticut Spring & Stamping (CSS), is well on its way to meeting its ambitious goals, just two years after launching the initiative. They've used several tools to get them to their objectives, including following steps laid out in what some consider the SDWT "Bible," establishing an achievable, yet challenging reward system, and instituting a new way of visualizing work that synchronizes front end scheduling with actual shop floor execution.



For one Connecticut manufacturer of close tolerance precision metal parts, a nearly 20-year commitment to lean manufacturing has naturally evolved into using self-directed work teams (SDWT) to achieve such ambitious objectives as 100% on-time delivery and 100% quality.

What began as an experiment with one pilot work team has now been expanded to twenty-one teams that include both shop floor and office processes.

Lean manufacturing sets the stage for SDWT

CSS embarked on its long lean manufacturing journey in 1994. Continually looking for a way to embrace a cultural change that would help them reduce waste and increase production, in 2006 they sequestered 34 of their key management and production personnel to brainstorm on ways to implement lean manufacturing at the plant. Since then, CSS has looked at a variety of different approaches (both top-

down and bottom-up) to help implement their lean philosophy; management readily admits that some succeeded and some did not.

In 2010, the company began seeking a new approach or increased level of commitment to help them provide 100% on-time delivery of product to their customers, with 100% quality, and at the same time reduce internal wastes and costs. They opted for the use of self-directed work teams (SDWTs), one of a long line of ideas that had been floated over the years as possible lean initiatives. A SDWT is defined as a group of employees who combine different skills and talents to work, essentially without managerial supervision, toward a common purpose or goal.

And that's where it got personal for Gaston Pelletier, who was delegated the task of implementing the approach as part of the firm's 2010-2011 business plan. Gaston, who serves as VP of Continuous Improvement for CSS, began to educate himself on the SDWT philosophy, and figure out how it might work at CSS.

Gaston discussed the approach with CBIA (Connecticut Business and Industry Association) to learn if there was any training that he could participate in, and to find out if anyone was using the approach locally. Then, he and a small group visited Dur-A-Flex, Inc., an East Hartford, CT manufacturer of seamless commercial and industrial flooring systems, which had adopted the approach a few years ago.

Gaston really liked what he saw and began getting excited. He really "saw the light" after reading *Leading Self-Directed Work Teams: A Guide to Developing New Team Leadership Skills*, by Kimball Fisher. The book is widely cited as the SDWT "Bible," and provided a much-needed road map that would break down the approach into steps and guide their efforts.

After reading the book (and insisting that others on the management team also read it), he began working with a pilot group selected to try out the approach. The group selected was the 11-member automatic loop and torsion (Auto Loop) team, which makes extension springs and complicated wire forms. When this part comes off a machine, it is usually a finished product and does not require many other processes. As one of the more self-contained of the work groups, auto loop does not rely on many of the other shop departments, making it easier to effect change by their own efforts.

Pilot self-directed work team takes off



With a SDWT, management's job is to set the initial objectives and then provide all the resources the team requests to accomplish them. The team is also free to develop its own sub-tier objectives; basically steps it wants to take to get to the overall objective (100% on-time delivery of product to their customers, with 100% quality). The team meets frequently, decides on achievable goals, and keeps working toward continuous improvement to accomplish them.

Management is responsible for giving the SDWT the necessary authority to do whatever it takes to improve the process and reach new heights in terms of delivery performance – and then they step aside. “This is definitely the biggest step we have taken on our lean journey,” said Gaston. “We involve all the shop floor people to the ultimate level, and remove management from the picture.” Giving the team the levers to pull led to a gradual taking on of more and more responsibility and ownership.

Gaston himself served as a coach, initially guiding the team but ceding more and more latitude as the auto loop pilot team got rolling. He notes that the team immediately embraced the idea that they could make their own decisions and are in charge of their own destiny.

Once they got going, they held numerous brainstorming sessions and the ideas began to flow. The shop floor workers had always found that there was not an effective feedback mechanism between the shop and the front office. This led to a variety of problems and issues, resulting in reduced performance. For example, detail on jobs was often lacking, there was incomplete understanding of which jobs should be run on which machines, and teams would frequently use different machines for particular jobs but not communicate that back to the front office. Jobs that required the same tools were scheduled to be set up on the same day on different machines. There were days-long gaps between finishing one job and setting up the next job on particular machines. Sometimes, three jobs with the

same start date would be scheduled for one setup person, but no time set aside for set up on the previous week.

Jobs were getting done, but slower and less efficiently. Rather than making required changes to synchronize the electronic schedule with actual shop floor realities, the group had just made them on an ad hoc basis, not communicating the issues with the master schedulers. The team's first decision was to improve the business on the front end to make it work better on the shop floor.

One of the first things the team did was to radically alter the way the actual work flow and timing of work among teams was synchronized with the master schedule and electronic systems. They developed a brand new master schedule job tracker/work flow board system to help them clearly visualize each job, including how long each will take, which machine it will run on, how much set up time is needed, and which operator is responsible for the job. The scheduling board displays all jobs scheduled for the next 6 months. The scheduling personnel are alerted immediately when there are any conflicts or issues. The team also established a process to continually provide feedback and changes to the master scheduler. The electronic scheduling system was updated with the changes for all future work. This process helped minimize schedule juggling going forward.



Figure 1 - Auto Loop Team : Job Tracker / Work Flow Board

Figure 1 is a photo of the new job tracker/work flow board, which has seen 7 or 8 revisions since it was first set up, as team members constantly think of new information that would help improve performance. The team found the board to be

a huge success – instead of having to juggle 50 out of every 100 jobs, the new process means they may have to make changes (usually minor) to about 10 out of 100 jobs.

In addition to establishing the central job tracker/work flow board as a central communication tool, the team has implemented literally hundreds of other process & quality improvements. Examples include bringing some machines physically closer together, printing the job start date more visibly on work orders, setting up break areas closer to machines so workers don't need to travel so far for short breaks, establishing a permanent cell for quick die jobs, giving the team leader control of overtime, tracking the time parts should stay in the department compared with the actual amount of time spent in the department, and meeting with the team leader from the material work group to discuss ways to get material to the shop floor faster.

Underlying it all is giving the team an understanding that any waiting time between part processing steps slows down the whole production and reduces on-time delivery rates. Achieving as close as possible to “one-piece flow” is seen as the desired end.

Quality output to the customer was always extremely high, but the teams developed a focus on quality that promptly caught internal rejections in the department rather than further down the manufacturing cycle. This saved time and money.

A key element of the auto loop SDWT is a reward system for meeting objectives. CSS established a three-tiered program to make the rewards achievable, yet challenging. Each team has to come up with its goals and the time frame to achieve those goals.

For example, the first stage was to get a pizza lunch after achieving 95% on-time delivery performance for one week during a month. After reaching this goal three times, the team must step up to the next level, which is to achieve a monthly average of 95% to get the reward. In the second stage, if the team achieves an average of 90% on-time delivery for eight weeks in a row, each member receives a monetary gift card. After achieving the second stage goal three times, the team moves to the third stage goal, achieving an average of 95% for eight straight weeks to get the gift card for each team member.

At the outset, the auto loop team had a very low on-time delivery performance. The SDWT process took about six months before improvements could be seen. On-time delivery performance had increased significantly at the six month mark, and currently stands at about 96%. The remarkable process was helped by the two shop floor team leaders who jumped on the bandwagon and urged the team on to greater and greater success. The team members are now taking ownership, and steadily thinking about how to improve the process. Team leader Dennis Palmieri along with co-leader Vitor Louro says, “We find ourselves thinking about improvements 24/7, even while we are not at work.”

The energy and drive that the team has shown for on-time delivery has spilled over to quality control. The 11th member of the team is the quality control operator, who now is authorized to conduct the 1st piece inspection. The team hopes to be able to push the envelope even further by packaging and shipping its product directly from the shop floor.

According to Gaston, reaching 95% on-time rate is a remarkable achievement. With nearly 700 customers, and shipping out nearly 6,000 different parts per year, a 95% delivery rate across the company is tremendous.

One key to that success is a focus on measurement and posting of individual operator efficiency, because now workers can see the relationship between lost time and on-time performance. He says, "You can't improve what you don't measure." For example, if the goal is to produce 200 parts per hour, individual operators may vary from 150% of the goal to 60-70% of goal. No one is singled out, but there would be a discussion with the team leader on why an operator's performance is at the lower end. Does the person need more training? Or does he or she need a better or different tool?

Expanding the SDWT's across the facility



According to Steve Dicke, CSS vice president of sales and marketing, one of the most gratifying outcomes is how the boundaries and guidelines for the first team have expanded over time. "I am also pleased that the auto loop pilot team is now training and giving guidance to the 20 other teams we established and are now implementing."

CSS had established a steering committee in 2008 as part of its general lean manufacturing initiatives. Eventually, as CSS came to adopt the SDWT philosophy, the steering committee members became the first 12 self-directed work team leaders. Now the team leader group is up to 21 people. Not long ago, this group decided to go from a monthly to a weekly meeting to share ideas and conversation

on SDWT progress. No management employees are in the room except Gaston, who only reports what the teams' problems are so management can focus on providing the resources needed for the team to achieve their goals. According to Gaston, the group is pulsating with energy and is extremely positive about the process and the improvements it has brought thus far.

Individual SDWT's progress towards meeting goals varies; none are quite as far along as the pilot auto loop team, but several are picking up speed, particularly the secondary power press team, which is focusing on one piece flow of multiple operations. Each SDWT team begins by developing a complete understanding of the master schedule, then synchronizing work details with the electronic system. This process has also yielded a much closer bond, understanding and alliance with the office personnel.

The entire SDWT approach is backed by a new company wide philosophy emphasizing that all of the employees who do not touch parts are there to help and support those who do. The belief is that focusing on helping and supporting the people who make and deliver parts will make the whole company be more successful.

Gaston concludes by stating that any organization can benefit from the SDWT approach, but it will only be successful with the commitment and support of the management team. "It takes tremendous effort and commitment from the highest management levels, to the supporting office functions, to the shop floor. But the results are worth it."

Gaston Pelletier is the Vice President of Continuous Improvement at Connecticut Spring and Stamping (CSS). With over 40 years of industry experience, he is an expert on most aspects of metal stamping.

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