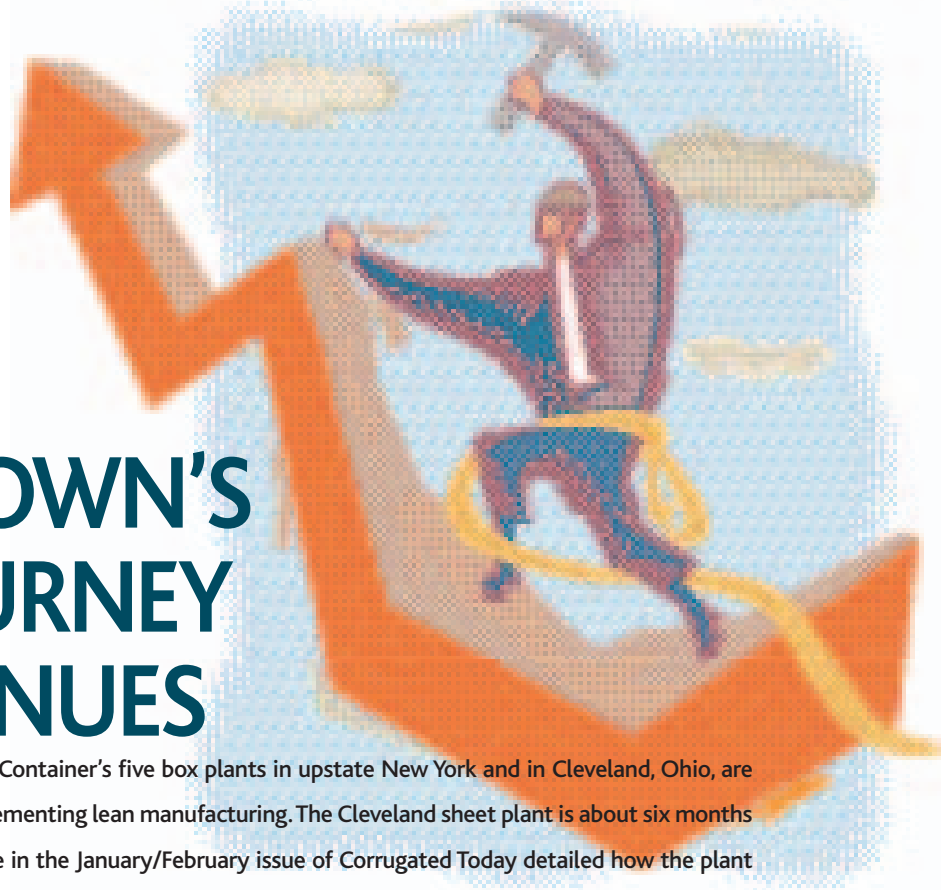


More than a year into the process, the Jamestown plants are moving forward with their focus on waste reduction. By Jackie Schultz, Editor

# JAMESTOWN'S LEAN JOURNEY CONTINUES



**Editor's Note:** Jamestown Container's five box plants in upstate New York and in Cleveland, Ohio, are in different stages of implementing lean manufacturing. The Cleveland sheet plant is about six months into the process. An article in the January/February issue of *Corrugated Today* detailed how the plant prepared for implementation and tackled the first steps. This article follows up the status.

Joseph M. Palmeri, director of technical services for Jamestown Container Companies, says there's never a light at the end of the tunnel when it comes to the implementation of lean manufacturing. It's a continuous process that requires periodic monitoring of every task in every department.

"The goal is constantly trying to improve. I see [the goals] getting harder as you get rid of the low hanging fruit but that's part of the challenge of how to keep moving forward," he says.

Lean manufacturing is a plant-wide program that involves reducing the cost of manufacturing through the elimination of waste. This includes material waste and waste in the form of time, motion, inventory, transportation and defects.

For Jamestown Container, which is headquartered in Falconer, N.Y., the main focus of implementing lean manufacturing is taking place

at the New York box plants because that's where most of the volume of work is. All of the plants have gone through 5S, which stands for Sort, Set in Order or Straighten, Shine or Sweep, Standardize or Schedule and Sustain. 5S is typically the first step in the process.

Lean manufacturing has not been fully introduced in the administrative areas of the Cleveland or Falconer plants. Both facilities, however, have organized files and desks in the same fashion. To do this, customer service managers observed the office, examined workflow and decided how to standardize the plants in order to speed up the process.

"There is some structure so if someone is not here someone else can walk over to a desk and see the workload and what's hanging open," Palmeri says.

In the manufacturing area all of the plants



ALL OF THE JAMESTOWN PLANTS POST 5S AUDIT REPORTS AND OTHER LEAN MANUFACTURING-RELATED DOCUMENTATION IN THE PRODUCTION AREA.



have gone through 5S at least once on all of the machines. This is one area where the process will never end, Palmeri says. Plant managers and supervisors conduct weekly audits.

"5S is more of a starting point of getting things organized and then it's moving into different process improvement techniques using different lean tools to determine what we need to address, whether it's setup or run speed or maintenance on the machine or anything in the office," Palmeri says. "In some of the plants, particularly in Falconer, we focus more upstream than we have in the plant because there are better gains there."

Palmeri defines upstream as looking at the process from receiving an order through sheet ordering to the arrival of sheets. This includes the paperwork that goes through the plant, the number of transactions, and how long it takes to put an order in.

Reducing waste in the form of paperwork and time involves meeting with customer service managers and representatives and analyzing the process to see how an order flows through the plant and through the different departments.

Managers look at what information is and isn't needed and how the number of pages of factory orders that go through the plant can be reduced.

### Benchmarking Plants

Even though each Jamestown plant is somewhat different in terms of product mix, the implementation of lean manufacturing is fairly standard.

"The actual product mix doesn't matter, but you can see the benefits that mix has on certain numbers we measure," Palmeri says. "We take that into consideration, particularly an OEE (overall equipment effectiveness) measure. Certain plants like our Lockport (N.Y.) plant that runs more high volume typically has better numbers because they're doing less setups and longer runs. The bottom line is improvement over time so you don't necessarily compare Lockport to the other plants given the mix differences."

OEE is a helpful tool when implementing lean manufacturing. It is used to understand where equipment-related losses are and how to reduce them. Major losses to equipment effectiveness include:

- Failures;
- Setup/changeover and adjustments;
- Idling and minor stoppages;
- Reduced speed;
- Defects and rework;
- Startup loss

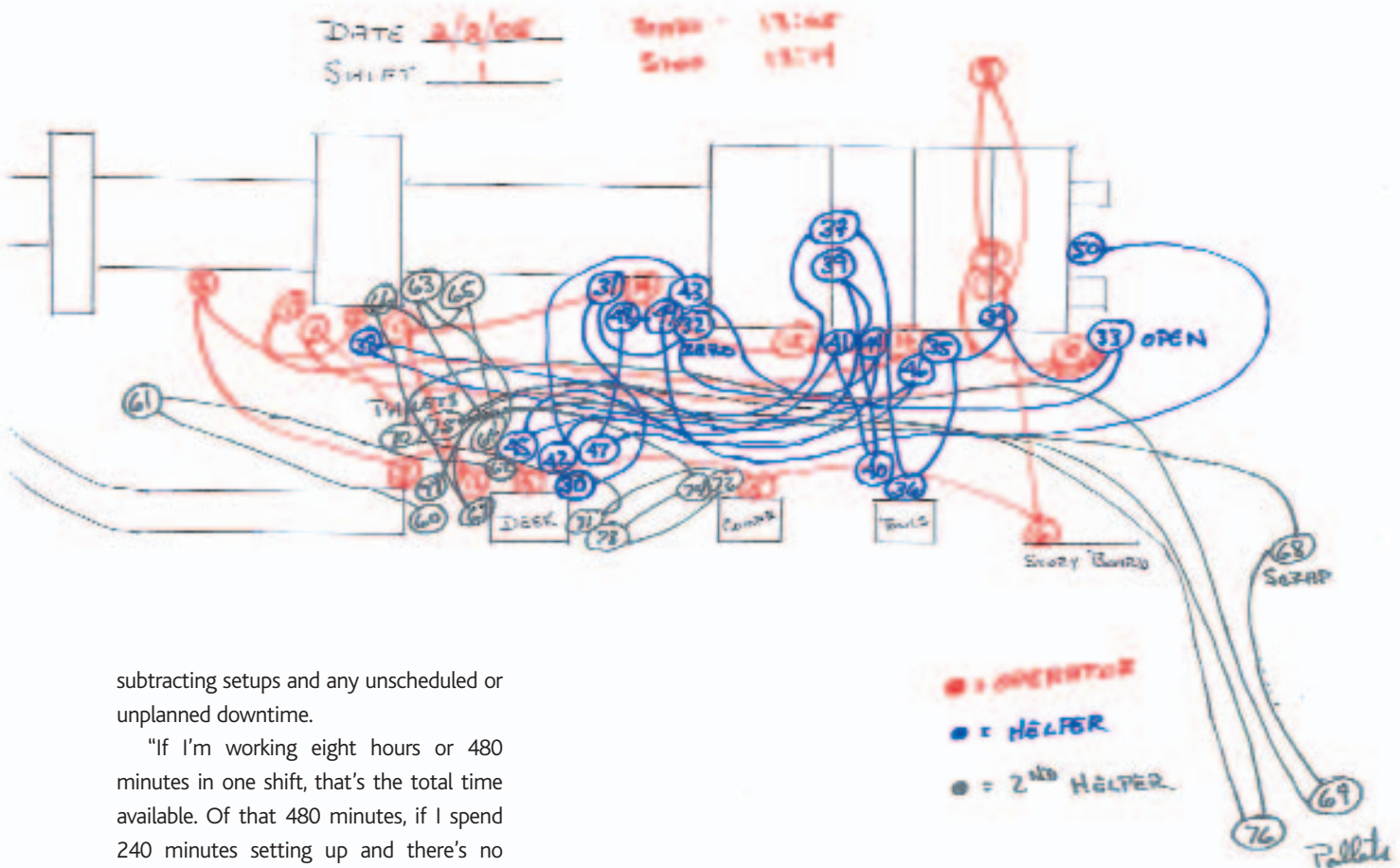
While it's not fair to compare the plants when benchmarking the status of lean, it is appropriate to look at how long it takes each of the plants to set up their flexos. "A setup is a setup," Palmeri says.

"We are collecting numbers on every major piece of equipment at every plant on every shift," he says. "That's being monitored and posted in the plants on a weekly basis."

The plant managers at all of the plants get together every six weeks or so to compare notes.

Depending on machine workload and the number of setups, OEE scores range anywhere from under 10 percent to more than 45 percent. Palmeri says the goal is to improve the score in 10 percent increments.

Calculating the percentages requires taking the total time in a shift and



subtracting setups and any unscheduled or unplanned downtime.

"If I'm working eight hours or 480 minutes in one shift, that's the total time available. Of that 480 minutes, if I spend 240 minutes setting up and there's no downtime, no breaks, and the other 240 was run, my availability was 50 percent."

The percentages paint a very straightforward picture of machine uptime.

"You can see the impact of a plant that does a lot of setups versus a plant that doesn't," Palmeri says. "That's the availability side so in that example I had 240 minutes of run time, we have machine rates pegged at what's a reasonable number of pieces per minute for this machine, so it will look at a performance rate based on how many pieces they ran in that time."

Of that run time Palmeri looks at how many pieces the machine ran per minute compared to what it should be per minute. "That's the performance and the quality number — how many sheets went in and how many good finished boxes came out and multiply the percentages across."

Breakdowns and setups count against the crew. "If you're waiting for stock or tooling, it goes against you. It may not be

the crew's or the machine's fault, but it makes us say, 'Let's look at these areas if we need to,'" Palmeri says.

Jamestown is calculating the OEE for any machine that is running at least two shifts. The age of the machine doesn't matter when calculating OEE scores, according to Palmeri. "I don't think it matters whether it's old or new. The goal is improvement. If you have equipment that automatically sets up, you may not focus on setup first. You'll look at making sure materials are at the machine or how well it's running once it's set up, but ultimately you'll get to all of it.

"There are probably bigger gains initially when dealing with manual or semi-manual type setup," he adds.

Another tool used in reducing waste is called a spaghetti diagram. A supervisor watches a crew set up a machine, sketches everyone's movement and notes how long it takes.

**This spaghetti diagram shows the movement of the three operators as they set up a flexo. Total time for setup here was nine minutes.**

**OEE, OR OVERALL EQUIPMENT EFFECTIVENESS, IS USED TO UNDERSTAND WHERE EQUIPMENT-RELATED LOSSES ARE AND HOW TO REDUCE THEM.**

"One of the places that we start when looking at setup reduction is doing a bunch of these by shift and sitting down with the crews," Palmeri says. "We tell them to look at their movement. There shouldn't be any lines crossing. It should be much more orchestrated. You're trying to minimize the movement and the motions."

When comparing shifts, none of the diagrams are the same. "It opens your eyes when you see it," Palmeri says.

## The Rewards

Jamestown has no firm numbers regarding the efficiencies the plants have gained, however, Palmeri says there has been definite improvement in terms of cost savings, productivity improvement and waste reduction.

"We're trying to come up with a decent way to collect the information that is easy," Palmeri says referring to waste reduction. "It's something that we need to be aware of. Waste is still a byproduct of the process. If we're doing the right things upstream process wise, there should be a reduction in waste."

Regarding cost savings, Palmeri says this is in the six figure range after implementing lean. "Even on the administrative side we've shaved a lot of time out and what it takes to get an order in the system, and we've cut the paperwork going through the plant by a third, and I expect to cut it by another third."

The company is also gauging productivity improvements. "We're trying to gauge this, just putting a stake in the sand," Palmeri says. "Are we going in the right direction, and are the OEE numbers moving on machines where we have ongoing process improvement teams? The answer is yes."

## Some Eye Openers

Having been involved in lean manufacturing for more than a year, Palmeri says there were several things that he was not prepared for.

"One thing that gets factored in that opened our eyes is the amount of downtime," he says. "It's a combination [of personnel and machines].

It varies all over the place. It may be personnel or not enough personnel or not enough support structure for the machine or not having a process set up for getting the tool into the machine on time."

Another eye opener was the juggling act involved when implementing lean.

"It's the reality of trying to run the business but still do [lean manufacturing]," Palmeri says. "Because you've got machines working two or three shifts, it's finding the time to meet with the crews or spend time at the machine with the crews, that's the challenge. It's just a juggling act between scheduling of the supervisors and how do we accomplish what we want to accomplish looking at improvement and still get the work out the door.

"You learn something new everyday. Something opens your eyes," he continues "The pressure is really on the supervisors. They're key in helping us do this out in the plant, but they're also trying to balance the fact that things have to get out the door. They have to watch safety, quality, delivery."

## It's All About Quality

When it comes to implementing quality improvement programs, Jamestown Container is a pioneer. In 1988 the company began practicing the management philosophy of Dr. W. Edwards Deming. Palmeri's father, Joseph R., introduced Total Quality Management to the Association of Independent Corrugated Converters in the early '90s. In addition, Jamestown plants are Q-S 9000 and ISO certified.

Palmeri says the mix of quality programs, including lean manufacturing, fit well together.

"I don't separate any of them," he says. "It's all blended for me now."

The lean manufacturing program does not replace any of the previously implemented quality processes.

Palmeri says he is happy with the progress the plants are making.

"Everybody is on board and we're definitely going in the right direction. Things are starting to click now."

**THE MAIN FOCUS OF IMPLEMENTING LEAN MANUFACTURING IS TAKING PLACE AT THE NEW YORK BOX PLANTS BECAUSE THAT'S WHERE MOST OF THE VOLUME OF WORK IS.**