News

Brown Machine LLC
May 3, 2005
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For Release: **Immediately** (BRO #6761) Meyer Plastics Case History/Article

Meyer Plastics, Inc. (Indianapolis)

BROWN SOLVES THERMOFORMER'S "BLACK MAGIC" RETENTION PROBLEM

Meyer Plastics, Inc. decided it was finally time to replace a 30-year-old thermoforming machine running at their Indianapolis, IN location. With the retirement of a 40-year Meyer thermoforming processing expert fast approaching, the need for a machine technologically advanced in programmability, set-up and controllability became more urgent.

Two main concerns were increased cycle and set-up/changeover times. Meyer Plastics would run 5 to 7 jobs across one machine in one week, with each job requiring different set-up specifications. The ability to recall those specifications at the push of a button was what Meyer wanted and that was what Brown Machine (Beaverton, MI) provided. Their solution was met with a 4' x 6' Brown (R-223E-46) Rotary Cut Sheet Thermoformer.

Meyer Plastics, Inc. officially began in 1950 as Meyer Materials, Inc., when Charles F. Meyer, Jr. began to sell crushed limestone throughout Indiana. Soon Meyer's two sons joined what was to become the family business and the focus on thermoforming, fabricating and distribution of plastics began in 1970. The company went through major expansion in the 1990s to Fort Wayne, Lafayette, Evansville, Goshen and Dayton, OH.

Meyer Plastics provides manufacturing solutions such as engineering, tooling, custom fabricating and thermoforming; plastic solutions, adhesives, prototyping and signs and graphics to a variety of customers. Ralph Meyer, President of Meyer Plastics said

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characterizing the parts is impossible. "The only rhyme or reason as to what we make out there is that it starts as a plastic sheet and it can be made on a CNC router or vacuum forming machine." Meyer serves a wide range of industries from automotive to boating to sporting goods.

The company is 50% plastic materials distribution (sheet, resin, silicone, compounds, etc.) and 50% contract fabrication, according to Meyer. Half of the fabrication work uses vacuum forming processes and the other half is produced across the CNC routers.

Upgrading to Modern Production Equipment

Lorris Brown, Thermoforming Plant Manager and a 40-year employee of Meyer Plastics, recommended looking for a newer, more advanced machine to replace their older thermoformer. In Meyers' words, "our old machine was on its last leg and Lorris's retirement loomed closer." Lorris was able to keep the machine running because of his years of experience and doubts arose as to how the company would continue on once the thermoforming process expert retired.

Meyer said, "He [Lorris] has a lot of secrets in his head as to how to run the jobs that we have. Lorris told me we needed to modernize . . . a computer controlled thermoformer that could keep the job parameters recipes, key to facilitating an easier transition upon his retirement."

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They wanted a machine that could be programmed to remember part specifications to cut down set-up time and increase reliability. Meyer Plastics has operated a larger (5' by 7' sheet size) Brown Machine for ten years. "It was our experience with that machine that convinced us that we ought to spend the extra money and stick with the Brown label," Meyer said.

The Brown Machine purchase/set-up experience was a pleasant one for Meyer Plastics. They requested that Brown Machine deliver the new rotary thermoformer before the end of 2004 and Meyer said "that every deadline we set was met very well." Lorris added that they were able to get the new machine up and running production in only 5 days.

The Brown Rotary Thermoformer offers the rapid set-up AL90 four-way adjustable clamp frame system, cutting the 3-frame clamping set-up time to about 15 minutes. This helps to eliminate approximately 45 minutes per job changeover on average. Top and bottom ceramic oven elements with multi-zone control is more efficient and is equipped with infra-red sensors that monitor the temperature of the plastic sheet, further allowing the cycle to be set by the surface temperature of the sheet. Meyer said the machine's controllability helps them to more properly heat sheets of varying thicknesses and material types.

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Lorris said when he first started in thermoforming, set-up information needed to be manually logged into a master book in order to be remembered and the art of this "black magic" knowledge was used to help tweak the machines and keep them running efficiently. "We had to know when the sheet was hot enough, as well as remembering things that we don't today because we have the advanced technology that is already built into the pieces of equipment," Lorris said.

Lorris recalls his on-the-job training in thermoforming and how he learned by trial and error, but with the cost of raw materials and resources today, companies need to get rid of the trial and error factor in order to reduce material loss and to increase production time. Lorris said that the Brown machine allows them to create a profile of a part and then later re-call it for another job. "All the technology is here today that enables you to do a program and enter that program, save it and reuse it repeatedly as long as you have a part to produce," Lorris said.

The machine's fully digital, computerized control offers a host of benefits. Meyer said, "This advanced control allows us to store hundreds of job set-ups online so that all we have to do is call it back up when we're ready to set up the next part." Meyer expects numerous benefits for changeover times because of the control feature and AL90 clamp frames. They estimate the equivalent of a full shift's worth of saved time over a week's production.

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The Brown thermoformer's control system offers numerous benefits, including:

- Open architecture design (and non-proprietary software/components used as a standard design),
- Allen-Bradley SLC-500 series solid state programmable controller for all process parameters and heater functions,
- Industrial PC (handles harsh noise and vibration environment) equipped with online diagnostics/troubleshooting, touch screen monitor/mouse/keyboard combination, Ethernet port connection. Operator interface uses user-friendly National Instrument's Lookout software for menu-based color displays, unlimited recipe storage, trouble shooting, many more features.

Processing a Wider Material Range

The Brown Cut Sheet Rotary Thermoformer gives Meyer Plastics the opportunity to process a wider range of materials. In the past, acrylic and black ABS were typically vacuum formed by the company, but now they can use materials like polycarbonate, polyethylene, polypropylene and vinyl.

"We started a project two years ago that was the vacuum forming of a heavily filled vinyl part (70% limestone, 30 plastic—deep draw part used as truck part requiring sound dampening) . . . and that's not the easiest material to form. The part had a very narrow processing window and required precise temperature control and cycle time control. We never would have accomplished success on that project without the capabilities of Brown's technology," Meyer said.

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Another benefit was a large reduction in scrap, one specific example includes the ability to run a vinyl part that was often ran at a 50% scrap rate and now has been eliminated to a less than 2% scrap rate. The oven on the Brown Thermoformer allows Meyer Plastics to have more control over the heating, which helps Meyer to succeed in forming the vinyl.

Typical parts sizes range from 4" by 4" all the way up to 7' by 8' (on other machines/processes—4'x8' and 5'x7' capabilities on the Brown thermoformers), with material thicknesses varying from .080" to ½" and draw depths ranging from an inch to 4'. Meyer hopes to be working with even more exotic materials with the new Brown machine. "The confidence, control and repeatability we get from the Brown machine allows us to work better with the material vendor and lets the vendor make changes to allow a wider window for production," Meyer said.

Both men are very optimistic about the benefits of the Brown thermoformer. Meyer said, "Many features on that new system will make us more reliable and I feel that as we can do a better job at the plant, we can go out and increase our customer base as a result of that."

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In closing, Meyer said, “To be more efficient, we need a shorter development time. And when you have equipment that runs well and gives you a clear indication how to handle a design, you’re going to be able to reduce development time and costs . . . and the Brown equipment allows us to do just that. Our old machine was on its last leg and we had to service it every three days to keep it going…and that keeps a man up at night. We’re not missing those times at all.”

For more information on Brown Cut Sheet Rotary Machine, contact Brown Machine, 330 North Ross Street, Beaverton, MI 48612, Phone: 989-435-7741, fax: 989-435-2821, www.brown-machine.com; email: sales@brown-machine.com.

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