

## Impacting the Pattern Labeling Process

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### Introduction

In a rapidly evolving shop environment, replacing obsolete equipment requires reviewing not just the equipment needed but also the process itself and the labor required. While sometimes processes can be eliminated, what do you do when the process is a vital part of making the product because that process allows for traceability? Add in the manpower changes resulting from attrition, advancement, or lack of qualified workers and simple equipment updates can easily become more complicated than anticipated.

ITT Goulds Pumps, Inc. needed to replace their aging pattern labeling equipment. This sand mold foundry manufactures industrial pumps used by customers in the oil, gas, mining, power generation, chemical, pulp/paper, and general industrial markets. Like many foundry operations, the resources and processes required for pattern labeling are being evaluated for the equipment needed *and* for their ease of use and manpower investment. The manufacturer depends on pattern labels to provide a mechanism for process control and quality tracking. Tracking piece quality throughout the process provides information that allows them to track operations and limit batch sizes if issues arise.



### State of Pattern Labeling

In many foundries, the equipment used to apply the date codes, heat numbers and other traceable identification elements applied to patterns is aging badly. The preferred equipment, used for decades, requires operators to rotate a wheel engraved with a given character size, one character at a time. Rotating the heavy wheel to make multi-character labels is quite frankly cumbersome and time-consuming. Additional character sizes meant the investment in duplicate systems to meet the various size requirements because the different-sized character sets and base equipment are not interchangeable. If multiple labels of the same legend are required, the process repeats. Manufacturers requiring high levels of traceability, such as automotive and aerospace, often have significant investments of time and equipment. These resources are needed to make all the additional labels used to identify line number, operator ID, or other factors so they can minimize batch size if a recall occurs.

The manufacturers who built these systems in the past, have reduced available character sizes and don't make spare parts for some systems. In addition, some marking companies have either shifted their focus to other, newer technologies where market size justifies production/development costs or simply shut down. Many foundry companies are forced to hunt for second-hand parts online or use letters and numbers that can be pinned onto patterns. Online parts are hard to find and may be a short-lived solution when purchased used. Pinned on characters work but are not cost-effective. Their application and removal is tedious and time consuming, moreover; the characters cannot always be reused. A shrinking workforce, needed for more important production tasks and not content with such menial work, compounds the problem.

## Pattern Labeling at Goulds

ITT Goulds Pumps had tagging equipment that embossed one letter at a time, which made producing tags a time-consuming process. Furthermore, if the letter wheel was not stopped at the correct spot, then the tag would have to be scrapped. The tagging equipment operated like a labeler where the user has to spin the letter wheel to the desired character, press the lever, and then repeat this process for each letter on each tag. Illegible tagging was also a problem.

The manufacturer determined that new equipment was needed to continue *and* improve the pattern labeling process. A number of different solutions were tried. One solution was an automated dot peen marker with tag feeding accessories, but the marks were not legible after the tag was cast in due to the dot pattern. Work continued to improve the solution but after the process was fully implemented, the labeling results were still unsatisfactory. The search for a better, more legible solution proceeded.

During this period, Kevin Lucas, [Pattern Shop Supervisor](#) at ITT Goulds Pumps, set out to provide a temporary solution by 3D printing the legend plates. He developed a custom font of characters to create more distinguishable marks. Though legibility was improved, the time to produce the 3D molded legends was not much faster than rotating wheels. Therefore, Kevin set out to find a more effective solution to support the organization.

Kevin took the initiative to identify their foundry marking requirements before looking for new equipment. He determined that an effective solution must include:

- Ability to mark multiple character sizes
- Fast creation of repetitive legends
- Material that was viable for the process
- Something that fit the budget

An article in Modern Casting describing Leading Marks tagging system caught Kevin's interest. "We had been struggling with tagging legibility issues for years... With our 3d printer, I had been adjusting and proving out a font and tag sizes, I printed thousands of tags, over the course of a year." He saw that the Boss Buddy embosses foil tape for use in foundry applications such as pattern labeling. He read that the Boss Buddy is compact, simple to operate, and cost effective and uses proven components, customized for foundry requirements.



## Solution: Boss Buddy

Leading Marks had been working with many foundries around the U.S. to improve their processes. After working with Leading Marks to test date code samples in a couple of character sizes, Kevin reported that he obtained much more legible marks that were created in less than half the time of the older system and with far greater ease. With favorable results in hand, they began defining what the package should include the:

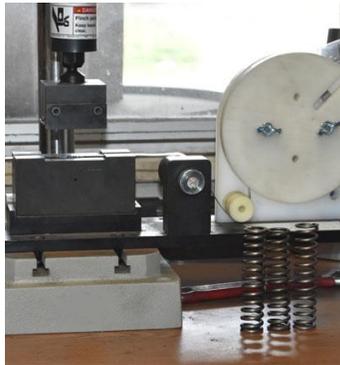


- Interchangeable type characters in the custom font that Kevin had designed
- Characters in a variety of sizes
- Manual Boss Buddy embossing system (vs. the automated system)

The Boss Buddy system shipped to their facility in Seneca Falls, New York in the spring of 2019. After Kevin's preliminary use of the Boss Buddy package in the pattern shop, it moved to the shop floor. Ryan Knapp, Molding Supervisor, at ITT Goulds uses it daily, quickly creating the pattern labels needed by the foundry.

## Leading Marks Follow-up

During a follow-up meeting with Laurie Barcaskey from Leading Marks, Ryan was able to create even more clearly defined embossed characters with a simple change in the spring used in the



impact press. Ryan is relieved he no longer has to use the old system aka the "Spin to Win" for pattern labels. Ryan will be championing the efforts of other departments to employ this solution throughout the plant. When asked about the implementation of the new system Kevin Lucas said "I was pleasantly surprised that Leading Marks did not flinch when I mentioned creating dies for the font I had been 3d printing. Leading Marks had some great ideas on implementing the tagging project. Prior to seeing the Modern Casting press release, I was going in a different direction. It saved a lot of time going with proven equipment and a knowledgeable vendor."

Leading Marks plans to develop other solutions for manufacturers, including more specialized labeling systems for foundries. Embossed characters, 3/4" and 1" high, are among the systems obsoleted but still needed for identification and traceability in foundries and other industries. Serialization for these embossed legends is the next challenge; she

has already done some preliminary testing and will be providing solutions for those in the near future.

Visit the website <https://leadingmarks.com> to learn more about the Boss Buddy and other marking and traceability solutions.

## Boss Buddy Direct Links

### Manual System

- Web Site  
<https://www.leadingmarks.com/marketing/boss-buddy/boss-buddy-manual/>
- Video  
<https://www.leadingmarks.com/wp-content/uploads/2017/08/manual-foundry-marking.mp4>

### Automated System

- Web Site  
<https://www.leadingmarks.com/marketing/boss-buddy/boss-buddy-plus-automated/>
- Video  
<https://www.leadingmarks.com/wp-content/uploads/2017/08/Foundry-System-Automated-w-manual-cut.mp4>

### Boss Buddy Brochure

- PDF  
<https://www.leadingmarks.com/wp-content/uploads/2017/11/foundry-pattern-labeling-2017.pdf>

This article is the full-length version of the article "Marking System Increases Efficiency," *Modern Casting*, February 2020. Pages 38-39.