C&J INDUSTRIES
Technology. Teamwork. Solutions.
760 Water Street • Meadville, PA 16335
P (814) 724-4950 • F (814) 724-4959
www.cjindustries.com

Tool Re-shoring Success Guide

Re-shoring has become a popular topic in the news lately, with large corporations making a push to bring manufacturing projects back to the United States from overseas and Mexico. Major OEMs and manufacturers have always looked for the most cost effective ways to produce their products. Thirty years ago companies moved their factories from the northeast and Midwest states to North Carolina and other southern states in search of lower manufacturing costs. Mexico was then the next low cost manufacturing source, followed by moves to China and other Asians countries. In the past few years, however, manufacturing work is starting to come back home to the U.S. The obvious question is: Why?

There are several factors that have convinced companies to re-shore their manufacturing work. In the past 5 years in particular, U.S.-based manufacturers have invested heavily in technology and automation. This investment has resulted in improved manufacturing efficiency and lower cost. A shorter supply chain with quicker response time is another benefit of re-shoring. With rising overseas labor rates, the value proposition to manufacture in the United States is making more sense to some companies.

C&J Industries has been in the tooling and plastic injection molding business for over 50 years. In the past four years alone, we have seen 135 plastic injection molds transferred to our facility from overseas and North America. With all the experience gained by requalifying and running these transfer tools, we would like to share the knowledge of our re-shoring process with other manufacturers.

Re-shoring tools from foreign countries today is very different from the tools that were outsourced from the U.S. in the past 15 years. Tools that were exported from the U.S. in the 2000's were typically built to the Society of Plastic Industry (SPI) Mold standard. SPI is a recognized industry agency that establishes standards for mold classifications. They are also responsible for creating plastic injection molding part standards for both tolerances and cosmetics finishes.

The tools that are being re-shored today from overseas fall into two categories. The first category contains tools that are built in foreign countries to SPI mold standards. These higher quality tools are built and are typically intended to be exported and run in the U.S. or Europe. The second category involves tools that are built to foreign standards using local materials and are intended to be run overseas. The problem with these tools is that they merely have to produce an acceptable part, not necessarily an acceptable process. In many cases, the tool produces a part that requires secondary operations such as trimming and painting to hide defects. Unfortunately, many of the tools being re-shored today are tools that were built to foreign standards.

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One of the first questions we are often asked about foreign built tools is “Will a tool built overseas even run in a U.S. injection molding plant?” The short answer is “Yes!” Equipped with enough knowledge and information, you can minimize your risk and reduce the fear of re-shoring foreign tools.

When you are given the task to re-shore tooling, where do you start? We have created a checklist that will get you prepared for a successful re-shoring project. Gather as much of this information as you can with your current foreign supplier prior to transferring the tool to your U.S. manufacturer.

Tool Re-Shoring Checklist

1. **Mold Dimensions (L x H x W) along with the mold opening dimension**
2. **The last or most recent full-shot (untrimmed)**
3. **Press size in which the tool was run including the tonnage and shot size**
4. **Any First Article Inspection data the supplier can provide**
5. **Print or electronic mold drawings if available**
6. **Hot runner switches and hydraulic connection information**
7. **Process information if available**
8. **Spare mold components**
9. **Any special gages or inspection fixtures that were used**
10. **Any secondary equipment such as sonic welding Horns or custom jigs and fixtures**
11. **Have the supplier provide photos of the outside of the tool as well as the core and cavity**

Once you have gathered all of the available information from your foreign supplier, you need to consider building gap stock. This simply means placing additional orders with your current supplier to ensure you have enough of your product on hand during the tool transfer. This will give you more time to properly transfer and recertify your tool at your new injection molder. Make sure that you share all the technical data about the mold and parts with your U.S. supplier prior to re-shoring. The more transparent you are with the supplier, the more likely you will have success with your re-shoring project.

Though gap stock will give you extra time, you still want the requalification process to move as quickly as possible. To do this, work with a U.S. supplier that has an in-house tool shop and in-house Quality Assurance inspection capabilities. You can also authorize the purchase of resin and other long lead-time items from your new U.S. supplier prior to the tool transfer. This can usually be accomplished by a letter of authorization with your new supplier.

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When you are ready to transfer the mold, it is a good idea to commit technical and commercial personnel to be at the new U.S. supplier when the tool arrives. If you are unable to provide the personnel, have the new supplier take photos or videos of the mold when it arrives. Make sure they note any unexpected details right away. When the mold is transferred have your U.S. supplier perform a steel hardness certification on key molding surfaces and components. Also have their in-house QA personnel perform a complete First Article Inspection report. When re-shoring a foreign tool be prepared to either make modifications to tolerances on the part print or pay for modifications to the tool.

After your tool is successfully re-shored and requalified by your U.S. supplier, what can you expect the long term performance of the tool to be? There are a few simple steps you can take to keep production up and running. The first is creating a mold maintenance budget. To do this, work with your U.S. supplier to identify the frequency and extent that the mold will need to be maintained. Some of this can only be determined through time and experience. You should plan on budgeting dollars for on-going maintenance so that you and your supplier don't have to deal with the interruption of unplanned problems with the tool. It creates down-time for the supplier and possible interruptions to you.

One solution to mold maintenance is to have your new supplier establish a stock of tooling component spares. This could include special, metric-sized knock-out pins to gate inserts and custom ejection blades. Planning for these spares might cost a little more up front, but it will definitely save time and money in the future.

Another possible mold maintenance solution is to work with a supplier that offers a mold warranty. This limits the risks to both parties by allowing the U.S. supplier to keep the tool in good working order. While very few suppliers would be willing to offer an unlimited warranty on a transferred tool, they may be willing to offer a limited warranty exclusive of catastrophic damage to the core or cavity.

Finally, if a tool continues to go down for unscheduled maintenance, it is probably time to evaluate if a replacement tool is needed. Unscheduled maintenance can lead to a lot of frustration to both the new supplier and the customer. On the positive side, the knowledge gained by your new supplier running the problem tool can lead to overall improvements when producing a new mold.

As mentioned throughout this article, re-shoring foreign built tooling has both challenges and risks. This guide should enable you to limit those risks and surprises. Most importantly following this guide will provide your company with a smoother tool re-shoring experience.