



EFFICIENCIES GAINED THROUGH SHORT-RUN STAMPING

STAMPING | METAL LASER CUTTING | FABRICATING & ASSEMBLY

TABLE OF CONTENTS

EFFICIENCIES GAINED THROUGH SHORT-RUN STAMPING	3
SHORT-RUN VERSUS LONG-RUN STAMPING	3
SHORT-RUN STAMPING: A BRIEF PROCESS PRIMER	4
BUILDING EFFICIENCIES INTO EVERY PHASE OF YOUR PROJECT	5
EFFICIENCIES IN THE ENGINEERING AND DESIGN PHASE	5
EFFICIENCIES IN MATERIALS SOURCING	6
EFFICIENCIES IN EQUIPMENT SELECTION	7
EFFICIENCIES IN FACILITY CONFIGURATION AND OPTIMIZATION	8
EFFICIENCIES IN THE QA PROCESS	8
OVERALL EFFICIENCIES IN OPERATIONS	9
CONCLUSION	9
ABOUT WLS	9

As you coordinate projects moving through your facility, you deal with a lot of moving parts—both literally and figuratively. When it comes to choosing the right metal-stamping services, you may not put a lot of thought into comparing the options out there. After all, your organization has always used X company, and it's good enough.

But if you're not taking the time to assess your options, you may be spending too much or settling for a subpar product. There are a lot of factors that determine the price per piece, including the optimization of the facility, the skill level of the team and management, how they source materials and how they communicate everything back to you.

Take the time to choose the optimal stamping partner, and that time you spend up front has a direct and positive impact on the quality, price and speed-to-market of your products.

SHORT-RUN VERSUS LONG-RUN STAMPING

If you need 500,000 pieces of the same part that you'll be manufacturing over and over again, chances are, you'll work with a long-run stamping facility that will help you custom-design a tool for your exact needs. You'll invest time and money into this tool—sometimes lots of time and lots of money—because you'll need it to churn out large volumes of your specific part precisely and over a long period of time. When you're making a million of something, saving half a penny on each part is a big deal. A long design and development runway for this type of project is normal. You need to finesse the design, create accurate prototypes, test them, redesign them and engineer them to perfection.

But if you need a much smaller number of pieces a year, or even a one-time run of a part in an extremely small volume, you're far more likely to use a short-run stamping facility. Short-run stampers are ideal for low-volume stamping projects because they can complete a project in weeks that would take a long-run stamper months or even years to do. Short-run stamping is also ideal if you're looking to reverse-engineer—and ultimately reproduce—a part where high volume is no longer required.

With short-run metal stamping services, you typically don't pay for the design and manufacture of the tools used to create your part, and at the end of the product cycle, you don't own them or have to worry about housing and maintaining them. This is another reason that short-run stamping can be more economical for certain projects. But make no mistake, short-run stamping is not like fast food. You don't order off the menu and get exactly what the person in front of you got, plus or minus the pickles. With short-run metal stamping services, there can be opportunities to customize a project and collaborate on the best materials, equipment and processes—some short-run stampers will even custom-build tools to match your specific needs.

Short-run stampers can offer inventory benefits as well. Rather than warehousing an enormous quantity of stamped metal parts and having to bankroll the physical space and manpower to house and oversee that inventory, some short-run stampers offer the option of just-in-time inventory setups where you receive inventory as needed, on a predefined schedule. And some also offer consignment inventory options, where you hold onto larger quantities of stamped parts so you always have them as soon as the need comes up, but you don't pay for a part until you use it.

Long-run stamping offers flexibility in certain ways; short-run stamping offers it in other ways. The intention of this ebook is to talk through the ways short-run metal stampers can work with you up front and behind the scenes to create a more efficient process and a less-expensive, better product.

LONG-RUN STAMPING

- CUSTOM-DESIGNED TOOLS
- A LONG PERIOD OF DESIGN AND DEVELOPMENT
- PROGRESSIVE STATIONS
- A LARGE INVENTORY OF PARTS TO MANAGE AND MAINTAIN
- TOOLS ARE OWNED AND MAINTAINED BY THE CUSTOMER REACH ASSIGNMENT

SHORT-RUN STAMPING

- TYPICALLY STANDARD TOOLS, SOMETIMES CUSTOMIZED
- QUICK RAMP-UP AND TURNAROUND
- USUALLY SINGLE-STATION OPERATIONS
- SMALLER INVENTORY WITH MORE FLEXIBLE STORAGE OPTIONS
- TOOLS ARE OWNED AND MAINTAINED BY THE MANUFACTURER

SHORT-RUN STAMPING: A BRIEF PROCESS PRIMER

Any short-run metal stamping project starts with a design. Sometimes, that design is an idea scribbled on a napkin. Other times, it's a highly complex, intricately engineered blueprint with very specific parameters laid out in advance. Regardless of the starting point, there are some common steps to every short-run stamping project.

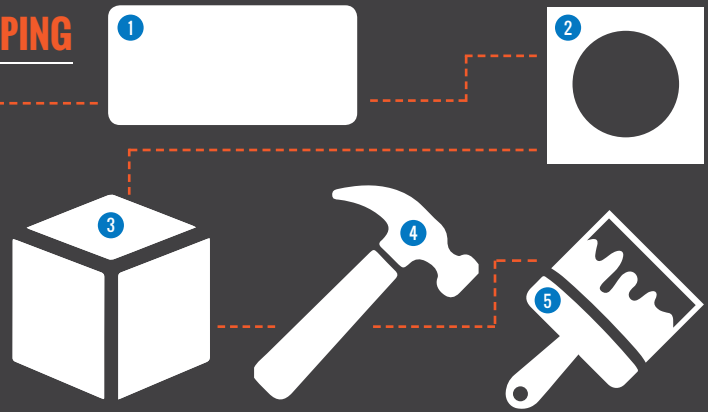
First, materials must be sourced. From here, stamping presses, dies and other tools are selected. Often, tools are customized or even custom-made to suit the particular project. The facility where short-run metal stamping services will occur is then properly configured for the project at hand and, finally, the part is made. It's important to note that any efficient short-run stamping process incorporates quality assurance (QA) measures at every single stage.

No matter which metal-stamping shop you choose to make your part, the process is more or less the same. But within this seemingly simple process are opportunities to make choices that will create further efficiencies. Introducing efficiencies as early as possible in each stage is crucial—especially when there's a possibility of multiple runs. And when you receive intelligent guidance from a short-run stamping partner, you can also receive options and variations in materials, tools and setup choices that can yield potential savings in the future.

Read on for innovative ways you can choose a metal-stamping service that will create a leaner, cheaper, more efficient process, help lower your costs and result in far superior products.

THE STEPS INVOLVED IN SHORT-RUN STAMPING

- 1 A BLANK IS CREATED
- 2 INTERIOR HOLES OR SLOTS ARE ADDED
- 3 ANY 3D FEATURES OR BENDS ARE MADE
- 4 SECONDARY OPERATIONS ARE PERFORMED
- 5 PARTS ARE FINISHED—(I.E. PAINTING & PLATED)



BUILDING EFFICIENCIES INTO EVERY PHASE OF YOUR PROJECT

When choosing a short-run stamping manufacturer, it's important to keep in mind how efficiencies can be achieved throughout the project. Some of these factors and choices will be openly discussed with you as the customer, but the great majority of them are decisions made behind the scenes. The more experienced and versatile the manufacturer—and the more committed to achieving a lean process with any project—the more you can trust decisions made to create a more economical process that will cost you less and result in a superior part.

EFFICIENCIES IN THE ENGINEERING AND DESIGN PHASE

In the beginning, a customer approaches a manufacturer with a need. This relationship can take a lot of different forms. Some product-makers have a general idea of how their part should be designed, and look to the manufacturer for guidance. Others have a very specific blueprint, designed in-house by an excellent, dedicated engineering team with intimate knowledge of how this part will fit into the final product. Still others have another manufacturer's part in hand that needs to be reverse-engineered and reproduced.

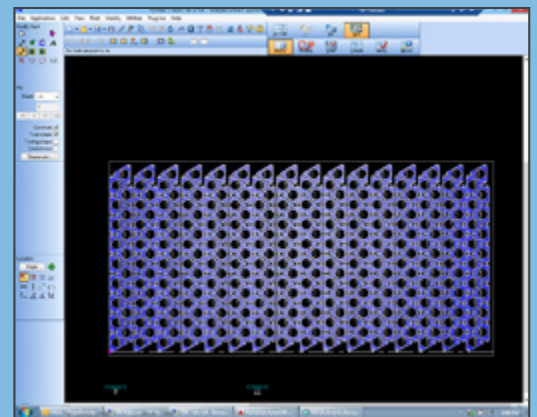
One of the best ways to create a more efficient part is with early stage collaboration. Teaming up in the design phase allows the manufacturer to suggest the optimal materials,

EFFICIENCIES ACROSS INDUSTRIES

Some industries stand to benefit more than others from efficiencies in the manufacturing process. For instance, aerospace companies are usually beholden to a strict set of rules and regulations that prohibit a lot of nimble decision-making on the part of manufacturers. For companies without a lot of flexibility in their product design and manufacture, efficiencies tend to come from the operations of a precision metal-stamping facility rather than design or material choices.

Other industries, like office furniture design, lawn and garden equipment and electronics typically allow more room for creative collaboration in their processes. For these types of companies, efficiencies can come from almost every area of the process, including design and material choices.

If your company has its own internal engineering department that's capable of sophisticated design, it's ideal for that department to interface directly with the metal-stamping partner you choose because they "speak the same language" and can collaborate on ways to build better products faster and for less.



thicknesses, finishes, process, etc. Where there is room for decision-making, there is opportunity to shave time and money off the project. Often, there are ways to reduce the total number of assembly steps or organize the machines for more efficient manufacture. Working with a shop that's nimble and experienced is key to this process, and giving that shop direct access to your engineering team is the most efficient way to enable that collaboration.

But, of course, some industries and projects have inherently less room for collaboration. As a customer, you might have a very specific set of plans for a part that's already fully designed, and that design cannot be altered for a number of reasons. Some of the most common reasons include:

- MATERIAL LIMITATIONS
- REGULATIONS AND COMPLIANCE RULES
- LACK OF DESIRE ON THE MANUFACTURER'S END TO INVEST IN OR RISK USING NEW TOOLS (IN INSTANCES WHERE THE TOOLS REQUIRED TO CREATE THE PRODUCT ALREADY EXIST)

For those kinds of projects, a manufacturer can stick to strict protocols in the engineering and design phase and find efficiencies later in the process.

EFFICIENCIES IN MATERIALS SOURCING

In any short-run stamping project, it's crucial to balance material costs with functionality requirements. This area is another early opportunity for efficiency.

Sometimes, organizations buy material in bulk with the intention to use it for various parts of the product. But this isn't always the most efficient or wisest design solution. For instance, Aluminum 6061 is a common alloy, with great mechanical properties, that's easy to use in welding and extruding projects. For this reason, a lot of companies buy it in bulk. But Aluminum 6061 isn't right for every part. If you're using it to create a simple, flat cover with no complexity, you might be wasting your money. And if you're trying to quickly form it into a shape with a sharp 90-degree angle, you risk the material breaking. Sometimes, it's simply not the right choice.

On the other hand, you might already have an abundance of Aluminum 6061 you need and want to use. A good manufacturer with a lot of materials experience can work with you to create a process

HOW TO THINK LEAN

"Lean is about constant ticking, not occasional kicking."
— Alex Miller, Professor of Management at The University of Tennessee ¹

Lean thinking is a progressive business methodology that encourages more efficient practices by way of better use of human time and talent, as well as eliminating waste. This methodology relies upon human intelligence at every juncture to create more value in each process, at the least expense for the company and its customers. While lean thinking applies to any type of industry and work environment, in manufacturing—and particularly short-run stamping—some of the ways lean thinking is achieved include:

- REDUCING SETUP TIME
- STANDARDIZING TOOLING
- CREATING SMARTER WAREHOUSING
- EMPLOYING CELLULAR MANUFACTURING
- REDUCING INDIRECT TIME WITH VALUE ANALYSIS
- JUST-IN-TIME STOCKING METHODS

When you work with a short-run stamping facility that practices lean thinking, these functions are inherently built into the process.

¹ <http://www.newcastlesys.com/blog/bid/337009/lean-manufacturing-quotes-for-education-and-inspiration>

that will optimize the outcome and minimize the risk of snapping. For instance, the manufacturer might slow down the bending process to avoid cracking.

Like with the design process, there are often limitations to how much choice you can endure in the sourcing of materials. Commercial-quality cold-rolled steel, for example, is subject to stringent industry standards, and only certain thicknesses are commonly available. Your designers know to take this into consideration, and so will quality short-run metal-stamping partners.

EFFICIENCIES IN EQUIPMENT SELECTION



One of the strongest areas for lean thinking in manufacturing is equipment selection, but this is also one of the areas you, as the customer, are least likely to be involved in. How your short-run stamping partner chooses and organizes the tools for your project typically happens behind the scenes. Simply to illustrate how this phase of a project impacts your bottom line, it's important to understand how a facility makes these decisions, but choosing a facility that you trust is the most important choice you can make here.

With short-run stamping, it's common to use single-station operations, meaning there's a unique station for each step of your stamping process—blanking, hole-piercing, forming, etc. For contrast, long-run stamping typically uses highly customized progressive, or compound, tools that allow for multiple actions with one machine. This is a much more efficient way to create a high volume of pieces, but customizing a machine to the precise needs of a project also typically involves a higher investment up front.

However, some short-run stampers make compound tools for certain types of projects. In some cases, a short-run stamper can also use your existing progressive tools, bringing them in-house for the life of your project. This usually happens when a customer has an obsolete product it needs in small numbers maybe once a year. It wouldn't be efficient for them to continue to run this tool in-house for such a low volume.

A short-run stamping facility that has up-to-date technology might also opt to update your legacy processes and tools to use new technologies, like state-of-the-art laser tools that are much more efficient for certain types of projects. It's a good idea to assess your manufacturer's technology up front so you know that the best range of options are chosen from when assessing how to complete your project.

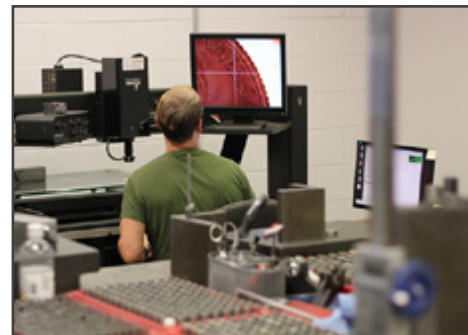
While these types of decisions typically don't involve the customer, they save you time and money and ensure you get a better, higher-quality product.

EFFICIENCIES IN FACILITY CONFIGURATION AND OPTIMIZATION

One of the ways a knowledgeable short-run stamper will make your project cost-effective is to arrange the configuration of its shop in order to maximize the efficiency of the manufacture. A subset of the lean-manufacturing mindset is cellular manufacturing, which means organizing your tools into stations that will enable the fastest possible movement of each part throughout the shop. It also creates as little waste as possible.

*“Almost all quality improvement comes via simplification of design, manufacturing, layout, processes and procedures.” – Tom Peters, author of *In Search of Excellence*²*

For example, instead of clustering all blank-pressing machines into one area of the shop and all hole-piercing machines into another, a facility might group the three machines needed for one product right next to each other. In this way, the part can be formed from start to finish in one area of the shop, without having to move each individual piece around the shop. If a part requires welding, for example, the welding machine may be moved right next to the forming machine. Sometimes, when machines are clustered by project rather than by function, one shop worker can run two or more machines sequentially, cutting down on labor costs and communication needs between co-workers.



Short-run stamping shops that are configured to be nimble, where machines may be on wheels and the operations are designed for versatile layout, is key. It's another area where you, as the customer, will have very little insight into the decision-making done behind the scenes. But you can still do the legwork required to choose a short-run stamping partner that you trust to make decisions on your behalf.

EFFICIENCIES IN THE QA PROCESS

“You can't inspect quality into a product. You must build it into a product.” – Jim Taylor, Mfg. Engineer

Quality control is a procedure or set of procedures intended to ensure a product is manufactured according to customer specifications. Some of the problems that are typically exposed during the initial QA process include incorrect dimensions, plating or painting imperfections and parts or materials that are inadequate or don't integrate well (should parts be brought in from outside vendors).

If proper policies and procedures are followed during the manufacturing process, quality is injected into a product. It provides validation that the product is of the highest caliber.

With a versatile shop, operations are constantly tweaked to make them more efficient, and that is always documented, with the documentation current and readily available to everyone. Any good short-run stamping partner will be ISO 9001 certified, so this is an important qualification to vet. ISO 9001 ensures that the stamper has well-documented processes and a streamlined, efficient operation that meets all industry regulations.

“Quality is not an act, it is a habit.” – Aristotle³

Look for a manufacturer that encourages checks and balances when it comes to QA. It's extremely important that a manufacturer be subjected to an annual outside audit.

² http://www.mapwright.com.au/quotes_improvement.html

³ <https://www.brainyquote.com/quotes/quotes/a/aristotle379604.html>

OVERALL EFFICIENCIES IN OPERATIONS

How a manufacturer runs its business might not seem like something the customer needs to be concerned with, but there is certainly a trickledown effect of a poorly communicating, badly organized operation.

For instance, an operation that fails to properly document processes is set up to fail. Throughout every phase of a project, documentation is a vital element of integrity. When there is a paper trail, a high level of transparency follows, and there's much less confusion about how to solve problems.

“Modern technology has become a total phenomenon for civilization, the defining force of a new social order in which efficiency is no longer an option but a necessity imposed on all human activity.” – Jacques Ellul⁴

Choosing a manufacturer that uses an enterprise resource planning (ERP) system ensures that it has a completely integrated process for documenting and reporting on every aspect of operations, from the quoting process to the sales process to the shop floor-control process to purchasing to quality. ERP software is a checkpoint for facilitating error-free operations, which eventually bolster customer experience.

Of all the places you can look for efficiency in the stamping process, finding a supplier that values and practices the integration of information flow throughout the company—and with you—is the most important. When everything is clear, there's less room for error.

CONCLUSION

While you can't control every aspect of the short-run metal stamping process, having insight into the nuances of the process ensures that you make informed choices, both when choosing a manufacturer and overseeing the operation. When you work with a short-run stamping facility with an excellent reputation, many years of experience and state-of-the-art equipment, you can lower your bottom line and raise your product quality with much less effort.

ABOUT WLS

WLS is a provider of short- and intermediate-run stamping, fabricating, laser cutting and assembly solutions. For over 73 years, WLS has built a reputation for producing the highest-quality metal stampings for over 800 customers across many industries, including aerospace, agriculture, appliances, electrical, food equipment lawn and garden, medical, military and more.

“I wish all of our manufacturing suppliers were as easy to work with as WLS!”
– Purchasing Supervisor at Wasson

CONTACT US TO DISCUSS YOUR SHORT-RUN STAMPING NEEDS

⁴ Mark Boyle, *Drinking Molotov Cocktails with Gandhi*, New Society Publishers, 2015.