



Save Money and Improve  
Quality On Your Complex  
Sheet Metal Assembly  
**AT THE SAME TIME**

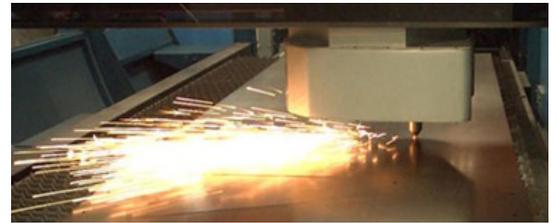




## 1. DIFFICULTIES IN SHEET METAL MANUFACTURING PROCESSES

Manufacturing parts from sheet metal is a complex task, involving many different processes. Hiring a parts manufacturer requires the consideration of all the factors involved in the creation of your parts, and whether the manufacturer can handle each step properly.

**CUTTING:** Sheet metal cutting can be done in a number of ways, from by hand with tin snips to computer controlled laser cutting, and everything in between. Small errors in cut sizes can create big problems in the assembled product.



Improperly cut metal will result in parts that do not meet the requirements of your application. They may not fit or interact properly with the other components of your product. Errors like these will cost the company money in lost production time, faulty products and time wasted by waiting for new, properly cut metal parts to arrive for assembly.

When selecting a supplier of sheet metal parts, ensure that the manufacturer is using the correct tools for the parts that you need, can manufacture them in the quantity and specifications that you require.

**BENDING:** The bending process is extremely difficult with sheet metal. The task of bending is highly sensitive to small changes in the geometry of the metal part. If planning is not done correctly, even small flaws can lead to large errors when the bending process is complete.

**WELDING:** Proper welding of critical components is essential to ensure the safe operation of a finished product. Welds that are improperly completed, whether it is through inexperience or improper technique, can cause a failure in the manufactured part.



A good supplier of welded sheet metal parts will provide welding service that is most appropriate for the material being used. Knowing which welding techniques will provide the strongest bond of metal parts provides you with the reliability that industries such as the military and aerospace rely on. Proper welds keep equipment operating, and a failure in critical components can potentially cause a loss of life in certain applications.



## 2. PRODUCTION SHOULD BE REPEATABLE

When it comes to limited runs or one-off parts, repeatability may not be a large consideration. But, when your part needs to be exactly the same over a long production run, you need to ensure that each part will be identical to the one before and after it.



Many factors can affect the repeatability of complex parts. Metal stamping equipment may become misaligned over time, leading to larger and larger errors. In addition, human error in the production of the part can lead to inconsistent quality.

With the rise of robotic fabrication processes, much of the human error has been eliminated from parts production. Once the settings have been programmed, robotic manufacturing is able to create identical parts with far fewer errors than humans.

In 2014, PricewaterhouseCoopers and the Manufacturing Institute published a report stating that 20.6% of manufacturers were employing robotics in machining tasks that required high dexterity and skill. In addition, 26% of employers believed that their biggest investments in robotics would be in the same applications.

Investments like this show that manufacturers recognize the importance of accuracy in component parts. In striving to maintain the highest quality and accuracy for their customers, more and more manufacturers are turning to robotic fabrication to ensure that the quality of their parts remains high.

Whether it is through human or robotic methods, ensure that parts can be manufactured reliably throughout the length of the manufacturing run and that robotic production is available to provide the level of accuracy required.

<sup>1</sup> "The new hire: How a new generation of robots is transforming manufacturing." PWC.com. PWC. September, 2014. Web. Aug. 5, 2015. p.5.



### 3. SHORT-TERM SAVINGS CAN CAUSE LONG-TERM LOSSES

Many times, when it comes to manufacturers, you get what you pay for, and a cheaper shop may not provide the quality or service that is needed for your product. Manufacturers that offer significantly lower production costs for parts may experience a number of issues that a more costly manufacturer may not. Some examples include:

- ▶ **OUTDATED EQUIPMENT** – A supplier may charge less because they have not invested in new machinery. As a result the older, less accurate or less efficient equipment can produce inferior parts. The resulting scrap and improper parts will cost you time and money.
- ▶ **INEXPERIENCED WORKERS** – Inexperienced staff may be the result of a lack of investment in training, or hiring experts in manufacturing. The inexperience of the workers means that errors can be made in the manufacturing process.
- ▶ **POOR QUALITY CONTROL** – With corners being cut to keep costs down, cheaper shops may have less stringent quality control on the products they supply. When parts are critical to a product, quality is not something that should be ignored.

While the initial investment finding a fabricator may be less, errors caused by the above issues, as well as others, may cost a company in the long run. Problems with defective parts, failures in the finished product, and delays in receiving parts due to retooling or a redesign can cost your company a great deal of money.

In addition, products that do not function as expected can cause your company's reputation to take a beating among customers. As word spreads of your product's unreliability, customers will look elsewhere for the quality they need.



## 4. DESIGN IMPROVEMENTS



When working with a sheet metal fabrication company, ensure that you are also working with the company's engineers.

Involving engineers ensures that the fabricator is both able to manufacture the parts according to your needs, as well as help you look for ways to simplify the design of the part. Design simplification can lead to cost savings for both you and your customers. Engineering involvement can also lead to improvements that make the part easier to manufacture, eliminating many of the problems with sheet metal fabrication.



## PMI CAN HELP YOU

**At Precision Metal Industries, we offer high quality sheet metal fabrication services which include:**

- ▶ Automated laser cutting of precise shapes at low cost.
- ▶ Robotic welding for repeatedly perfect welds on a range of part sizes
- ▶ CNC precision forming for high volume production runs, with accurate CNC programming and minimal lead time.
- ▶ Part prototyping to ensure that the design matches your needs.
- ▶ Robotic and CNC Forming
- ▶ And much more.

PMI uses cutting edge equipment to produce the parts that you need for your products, and to ensure that those parts meet your demanding specifications.

Each of these cost -saving capabilities are available in-house at PMI. In addition, we have the ability to machine and paint finish your product. Finally, we are able to assemble the finished design, meaning that PMI can be involved in the fabrication process from implementation to final assembly.

Most suppliers do not have the in-house ability to design, manufacture and assemble the product. This inability can add to costs, since you will then need to ship an incomplete part to another location to undergo these processes.

PMI uses cutting edge equipment to produce the parts that you need for your products, and to ensure that those parts meet your demanding specifications.

For all your fabrication needs, PMI is your one-stop shop for everything from design through fabrication, finishing, and final assembly. Our team is heavily involved in every step of the process to ensure that you are satisfied with the finished product.

**Contact us today** to let us answer any questions you may have about our manufacturing capabilities, or visit our website at [www.pmiquality.com](http://www.pmiquality.com). Let PMI show you what we can do for your manufacturing business.