

4 Ways in which Laser Technology has made Manufacturing Easier

Lasers have become one of the most extensively utilized technologies in today's manufacturing arena. It's especially true now that Industry 4.0 and additive manufacturing have made it possible for designers to construct more sophisticated product designs and attributes that demand closer tolerances.

Precision manufacturing is now a reality because of the advent of laser machining, which can produce minute features that would be incredibly challenging to manufacture using conventional machining equipment.

As automotive, electronics, apparel, and medical device manufacturers strive to create increasingly compact and sophisticated products, laser processing has emerged as a crucial production technology. So here are some of the most prominent ways laser technology facilitates manufacturing processes.

1. Produce Cuts Without Applying Force

The process of mechanically breaking metal creates pressure on the material all around the spot where the cut is to be made, which is one of the critical drawbacks of conventional metal cutting technology.

Whenever this occurs, a structurally weaker spot is produced in the metal form being cut. Because of weak spots like this one, it is more probable that the finished product may break down when it is exposed to stress later.

On the contrary, lasers do not require the application of external mechanical force to pierce metal. Also, since the heat produced by a manufacturing laser gets directed quite precisely, the amount of heat stress applied to the material close to the region where the cut is made can be maintained at an acceptable level.

The ultimate result is that metal that has been cut using a laser keeps its tensile strength better than the metal cut with physical pressure. It enables the finished product to successfully support the additional weight without breaking.

2. Enhanced Material Efficiency

Scrap and trash are two byproducts of manufacturing, and the companies involved in this trade constantly look for ways to cut down on them. Any procedure that results in the production of a

large quantity of scrap material leads to the loss of a significant amount of funds & resources. It's due to the need for an excessive amount of materials.

Hence, by increasing the number of cutouts created in a single metal sheet, lasers can assist manufacturers in lowering their scrap production and thus save money.

Cuts in sheet metal plates can be made fairly close enough using laser cutting because the process doesn't exert as much mechanical force on the material getting cut. If you could minimize the amount of space required between the cuts by more than half, you would indeed be able to accommodate more cutouts into a single sheet metal plate.

If there are more cutouts on each sheet, then there is less material that will get wasted per sheet. Because of this, manufacturers can produce more parts while simultaneously reducing their overall expenditure on materials.

3. Lesser Number of Secondary Operations Required

When metal is physically shredded, the process typically leaves a lot of sharps and abrasives along the borders of the cut. Because of this, running the chunk of cut metal through additional deburring procedures is frequently necessary to eliminate the distortions so that the part may either comply with the tolerances or be safe for manual handling.

The powerful and concentrated cutting heat from a laser produces cleaner instead of abrupt edges on the material it cuts, which makes it more efficient than a [CNC machine](#).

Because a laser cut is so flawless and precise, the probability of sharps, protrusions, and other irregularities gets drastically reduced, which in turn lessens, or eliminates the number of tasks to be performed in secondary deburring processes. Due to this, production gets ramped up, which ultimately results in increased manufacturing efficiency.

4. Engineers Enjoy Better Design Flexibility and Freedom

Cutting a slab of sheet metal employing a manufacturing laser can result in highly intricate and precise cuts.

The touch-free cutting mechanism of lasers makes it simple to cut innovative sorts of patterns & geometries that would have been challenging or impossible to manufacture properly via techniques that rely on mechanical stress application. These shapes include delicate contours and taper cuts, and they can be easily cut using lasers.

As a result, it is now much more straightforward for designers and engineers to develop elaborate designs for cuts and pieces made from sheet metal.

Better design flexibility enables the team to modify designs to achieve peak quality & performance characteristics instead of simply concentrating on what is cheapest & simplest to cut or contour.

Concluding Remarks

The adoption of laser technology in all sorts of industries is rapidly increasing. Laser technology has emerged as a more effective and affordable production method in the industrial landscape.

Automating production processes through laser employment has improved efficiency, decreased costs, and put the consumer's requirements first.

Thus manufacturers looking to achieve supreme quality, better efficiency, and scaling prospects for their business operations must adopt laser technology in optimum capacity.

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