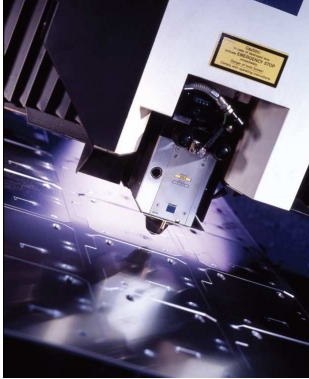


Laser cutting - where are we now?



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Laser Process

Laser cutting has been around for over 25 years but still manages to maintain a certain mystique. It is still looked on in certain quarters as a special process with limited applications.

There are still potential purchasers of laser cut products who consider that their requirements are too low-tech for laser processing and more who consider, without investigation, that it is too expensive. The truth is that laser cutting is now an every day process and as much a part of manufacturing processes as milling, turning or presswork. Hopefully this article, without any attempt to preach to the converted will provide a brief overview of the types of work currently being undertaken every day by jobshops all over the world.

It is true that laser cutting can be a very precise procedure with tolerances measured in microns but is also true that many machine hours every day are given over to produce items where tolerances, of any kind, are almost irrelevant. Such things as weather vane motifs or decorative fencing panels are produced very easily and very quickly. In a lot of cases the previous alternative would have been, at best, expensive or, sometimes, impossible. The advantages of laser cutting are such that, even for non critical parts that would previously have been produced fairly cheaply, further savings can be made. Such savings may not always be made in the initial cost of the component but when time savings in post operations, fit up and consistency, all leading to greater manufacturing efficiency, are taken into account a much more economic process is achieved.

Laser cutting can be used for producing flat blanks of almost any shape and its versatility lends itself to applications in a wide variety of industries from model making to shipbuilding but one of its most important features is its ability to produce blanks without the need for

hard tooling. This not only vastly reduces the cost of producing prototypes but also greatly reduces the time required. It also enables modifications to be made quickly and easily. The time and cost savings to pressworkers is enormous. Blanks, or modifications, can be produced in a matter of hours whereas in the past it may have taken weeks.

One of the earliest applications for laser cutting was in the sign making industry and this is still an important area for some subcontractors. Most of the early work was with acrylics but these days it is just as likely to be in metal. The main advantages here are, firstly, that any design can be accommodated and, secondly, that the narrow kerf width of the laser beam facilitated inlays which would previously have meant a great deal of handwork and a lot of wasted material. With architects and designers wishing to put their own stamp on their projects laser cutting has become a popular method of producing bespoke items. Such items, as well as signage mentioned above, might include balustrading, wall/fence panels or furniture.

The biggest sector these days is in machine parts and this would include parts for any type of machine. This could be white goods, yellow goods, machine tools or any special purpose machine. Within this sector yellow goods probably constitute the greatest part. All of the world's manufacturers of excavation, agricultural or construction equipment will use laser cut parts in their products and most jobshops will be producing these parts every day. Again, a vast range of components would be involved particularly chassis and body parts.

Materials handling is another important sector and this would encompass fork lift trucks, cranes, conveyor systems and shelving systems. Tens of thousands of shelf brackets, to many designs, are laser-cut every day particularly when, as of late, the retail sector has enjoyed high growth.

The automotive industry is becoming a large user of laser technology but not for laser cutting of flat blanks in production volumes. These volumes tend to be so high that there are cheaper ways of producing the parts. Where laser cutting is used it is usually for pre-production prototypes or for small scale production, either for low volume variants or for smaller manufacturers of specialist vehicles, kit cars etc. Automotive manufacturers are, however, more and more incorporating multi-axis robotically operated cutting or welding systems into their lines.

Over the last few years manufacturers have introduced specialised laser machines that have opened new markets and created more

opportunities for process improvements. Multi-axis machines have become a common sight in jobshops and on production lines around the world. These machines are used for trimming or modifying formed components. They are used extensively in the automotive industry, again, usually for prototypes or low volume variants. The latest specialised machines are those developed specifically for tube cutting. These machines will process tube of any shape whether it is round, oval or rectangular. The advent of these machines has opened up the possibility of new manufacturing procedures being developed specifically around the process. The position with this equipment is similar to that of flatbed laser cutting systems twenty five years ago in that it was apparent that it was a very useful tool and engineers were working hard trying to find new things to do with it. The coming months/ years will see some exciting developments in tubular work.

The most interesting aspect of the laser cutting business is the variety of items jobshops are asked to supply.

A few examples:

- * Door panels/screens for Middle Eastern palaces.
- * Light fittings for British royalty.
- * Scenery/props for television programmes.
- * Components for steam engines from 1/100th scale to full size.
- * Components for space satellites.
- * Gussets for wheelbarrows.

The list goes on and is as long as the designers' imagination. Basically if a component is required up to (currently) 25mm in thickness the chances are that laser cutting could play a part in its production.

Laser cutting has come a long way since it was first introduced as a machine tool and it will, no doubt, continue to be developed. It is now an accepted, everyday, tool and the only mystique is in the mind of the designers/artists who are continually discovering new applications for their use.

