

Laser sintering: the way forward

By James Abbott

Betta Machine Tools, a division of Breseight Group recently hosted a Society of Manufacturing Engineers (SME) meeting at their facility at Ingleburn, Western Sydney. The topic was Direct Metal Laser Sintering (DMLS).

This technology has the potential to change the landscape of manufacturing in Australia.

It's already doing just that in Europe and offers more potential than just rapid prototyping. Mel McNair provides us with the following insight:

What is laser sintering? Essentially, a two-dimensional laser traces a pattern in the X-Y axes, sintering layers of plastic or metal powder.

The bed that supports this process, lowers by a pre determined increment, measured in microns, and another layer is sintered.

This printing process, or laser sintering, has traditionally been utilised for rapid prototyping.

However, more recently this technology has been utilised in the production of working parts. In fact, it is another example of lights out manufacturing that I rave on about, and hence gives you the subsequent labour savings.

This is a revolutionary technology that produces metal components that are up to 99.9 per cent dense, directly from your 3D CAD data.

The parts produced are comparable or better than investment cast parts and the mechanical properties are comparable to those of a machined component.

The Laser Sintering process is not restrictive in its application and the components produced can be used in place of almost any conventionally manufactured part, whether they would normally be machined or cast.

The advantage of the process is that the more complex or feature rich the component, the more economical the process becomes.

This fast, flexible and cost-effective method enables you to produce prototype or production parts without the investment in time and money of conventional tooling. Current applications are as diverse as aerospace, medical, tooling, architecture and consumer goods.



Fast and flexible ... laser sintering technology



James Abbott

Laser Sintering is fast becoming a recognized manufacturing method for the fast, accurate production of one-off prototype components or for the economical manufacture of small series parts for testing purposes or as final products for use in many different environments.



Strength ... laser sintering used for gear knobs

The process generates hard wearing but intricate components, opening up opportunities to all industries, particularly in die casting and injection moulding, where performance is a function of heat transfer.

Automotive, electronic and architectural industries are also taking advantage of the versatility of the EOS Laser Sintering process.

Certain materials give the parts rigidity and weight, thereby making it attractive to the aerospace and automotive sectors for vigorous testing and use in a wind tunnel, for example.

From a manufacturing perspective, laser sintered components have been known to exhibit porosity equal to steel billet and can be polished, machined, welded and even ground, which means tool making could return to Australia.

As an industry we need to keep up with the latest technology, use it in a smart innovative way to reduce production time whilst also increasing quality, so manufacturing in Australia can retain its competitive edge.

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