

SINTERING OF METALS

DIRECT METAL LASER SINTERING (DMLS)

This is a process, whereby a laser is used to form 3D components, layer by layer, from metal powder. This manufacturing process is only used when complex shapes are being manufactured, requiring structures, that cannot be manufactured through machining methods. Some complex jet engine parts are manufactured through laser sintering. Most metals can be used as powders, including titanium.

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HELPFUL LINKS

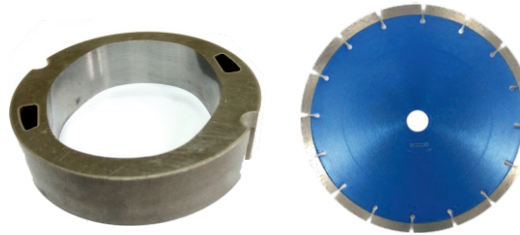
http://www.technologystudent.com/despro_3/sintering1.html

http://www.technologystudent.com/despro_3/sintering2.html

PRESSING AND SINTERING

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This is a process involving the use of metal powder, whereby parts / components are manufactured, through the application of pressure and heat. The powder is preheated and placed in a mould. Pressure is applied by a hydraulic press, helping to start the process of fusing the powder particles together. The component being made is then placed in a furnace, which ensures the permanent fusing of the metal particles.



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THE DIFFERENCE BETWEEN 'DMLS' AND 'PRESSING AND SINTERING'

Laser Sintering of metals, is a process most suited to complex shapes, impossible to manufacture through normal engineering processes. Expensive 'one-offs'. It involves the application of an expensive laser system.

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Pressing and Sintering is ideal for the manufacture of slightly less complex components and ones that would not normally be achieved, through machining alone. A process suitable for batch / mass production. Components manufactured through this process, may require finishing through limited machining. It involves an hydraulic press, a mould and a furnace.

1. What type of components are manufactured through 'Direct Metal Laser Sintering' **3 marks**

2. Describe the process 'Pressing and Sintering'. **4 marks**

3. Describe ONE way, Pressing and Sintering differs from Laser Sintering. **2 marks**
