SLM- Selective Laser Melting

Applications
prototypes and small-series production of parts for:
- Aerospace
- Dentistry
- Medical Implants
- Automotive Components
- Jewellery
- Machine parts

Advantages
- Manufactured parts in standard metals with high density (above 99%) with high and good mechanical properties
- can be further processed like any welding part.
- Easy fabrication of complex geometries which would be challenging or even impossible for conventional production methods.
- With direct metal 3D printing even thin wall thicknesses are possible (0.3 mm)
- A constantly widening set of standard metals is available

Disadvantages
- The technology is rather slow and expensive
- Tolerances and finished surfaces are limited, however they can be improved through post-processing.

Materials
- Stainless Steel
great hardness and high ductility with corrosion resistance
- Aluminium
down weight with good strength
- Titanium
high strength, low density, corrosion resistance and bio-compatibility
- Copper
- Tool steel
- Cobalt chrome
- Tungsten

Costs
- Printers are expensive to purchase and operate.

- The main cost factor for steel and aluminium is printing time and post-production time; material use is a less critical factor. For smaller pieces, the printing costs for one item or multiple copies are often similar.

- For titanium the raw material cost is significantly higher than steel or aluminium.