

Rapid prototyping, also called 3D printing process, is more and more used for production of industrial products. Instead of producing (milling) a work piece from a solid block, work pieces are made layer by layer of a fine powder material. Different materials as metals, plastics and composite materials are available. Very often finds also laser sintering is applied. Here, a strong laser beam melts the powder at the exact spots, which have been specified by computer-generated component design data.

The resulting work pieces have, due to the manufacturing process, a fairly rough surface (Ra 3-6  $\mu\text{m}$ , Rz 15-45  $\mu\text{m}$ ). Technical and often also optical requirements demand that the surfaces should be smoothed or even polished after laser sintering.

Due to the manufacturing method, a surface finish of maximum Rz 0.5  $\mu\text{m}$  can be achieved.

Generally, there are three methods to smoothen the surface:

- 1) Manual finishing
- 2) Electrochemical methods
- 3) Mass finishing equipment.

Many of the work pieces produced with these methods can be finished with OTEC machines. Here are some typical work pieces:



Plastic parts



Implants



Dental prostheses, implant bars



Watches



Parts for hearing aids

## Finishing in OTEC machines

Since the roughness before processing is relatively high, the work pieces should be always prepared with ceramic chips. Preferably here DBS ceramic chips are used, which have a very strong abrasive ability. Often this process is followed by fine grinding with KM plastic abrasives and possibly even polished after.

OTEC has already sold a lot of machines for this application. It is therefore a very interesting application in a rapidly growing market.