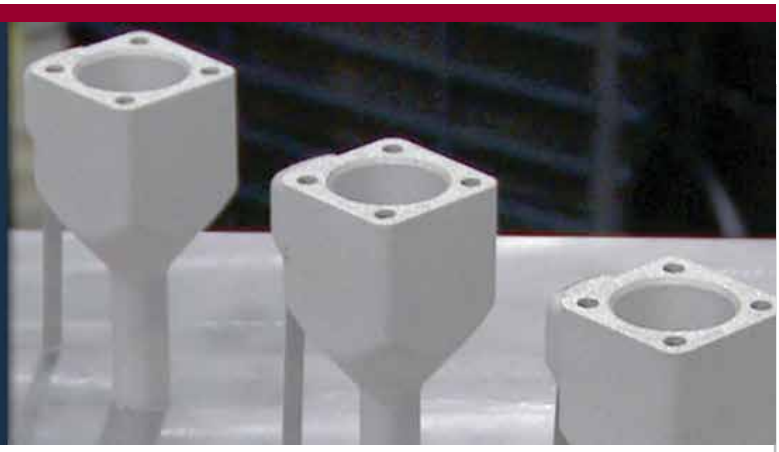
For R&D, Part Production, Prototypes and Repairs



Laser Powder Bed Fusion

Powder Bed Fusion-Laser is an additive manufacturing process in which thermal energy (from a laser) selectively fuses regions of a powder bed layer by layer. The end part(s) can be extremely complex and contain features not possible with conventional subtractive manufacturing processes. Common terms used for this technology include: Selective Laser Melting (SLM), Direct Metal Laser Sintering (DMLS), Direct Metal Laser Melting (DMLM), Laser CUSING, and more.

Benefits of Laser Powder Bed Fusion:

- Focused laser offers small feature size and good surface finish
- Ability to create complex feature(s) and internal cavities
- Wide range of available materials and growing
- Material is recyclable
- Part density can be > 99%
- Fine microstructure characteristics
- Open parameter equipment allows modifications for build enhancements

With the SLM 280HL, we create metal parts using various materials including aluminum, titanium, stainless steel, cobalt-chromium, and others.

Specialized Equipment

Concurrent Technologies Corporation (CTC) purchased an all-in-one SLM 280HL 3D printer after an extensive research process. With the SLM Solutions printer, CTC can create metal parts using various materials including aluminum, titanium, stainless steel, cobalt-chromium and others. The SLM 280HL is an all-in-one selective laser melting machine with a build envelope of 280 x 280 x 350 mm. The SLM 280HL is used for continuing research and development efforts at CTC, where we innovate and build upon industry knowledge of metal additive manufacturing. The equipment is also utilized for small production runs, prototyping and addressing client needs. Additional SLM equipment is anticipated.

Specifications

- 280 x 280 x 350 mm ~(11" x 11" x 14") build chamber
- 400W IR Fiber laser
- 200 °C heated build plate
- Real-time laser power display
- Automated layer control system
- Upgradable, open parameters
- Materials: Stainless Steel, Tool Steel, Cobalt-Chromium, Aluminum, Titanium, Inconel, more..

(continued)

Parts Manufacturing:

Powder Bed Fusion technology is being used to manufacture many and varied complex parts in the aircraft industry, as well as supporting a wide range of prototype applications in other areas of manufacturing. The process is becoming more commonplace in industry, but still lacks standards for widespread acceptance. While standards are not yet available, there are opportunities for this technology to be utilized. Proper post treatment of the parts can eliminate porosity, and/or produce desired properties for most applications. Additional test coupons can be fabricated and tested with each build to ensure consistency and evaluate quality and strength. Depending on the size of the part(s), multiple components can be arranged and fabricated in a single build scheme. Material change outs on the equipment are common.

Why Concurrent Technologies Corporation?

Concurrent Technologies Corporation is an all-encompassing service provider for Additive Manufacturing solutions. We offer complete process execution including reverse engineering, development of process parameters, powder and substrate characterization, surface profile preparation, material application, finish machining and inspection. We also provide services to evaluate, validate and qualify the repair through mechanical and physical property characterization. All processes are controlled in-house to ensure quality results.

CTC's quality management systems are certified to the ISO 9001:2015 (Quality) and 14001:2015 (Environmental) standards, and to AS9100D:2016 (Quality-Aerospace-Related Products).

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