Laser Manufacturing Technologies, LLC.

LMT'S INDUSTRY LEADING MACHINE.
LIMITLESS CAPABILITIES.

What are the benefits of 3D printing?

- Greater range of shapes and designs possible. The complexities which are possible with 3D printing would not be achievable via other methods.

- More cost-effective. For low volumes of manufacturing, 3D printing provides an economical option which can be individually tailored to meet requirements.

- Strong and robust finish. As the design is created as a continuous piece rather than having multiple welds and joins, there are no weak spots making it stronger overall.

- The ability to work with such minuscule slices means designs can be created that are extremely thin, or even hollow. The result is an overall reduction in weight of the end product. This is particularly beneficial in industries such as aerospace, where lightweight products are required to improve aerodynamics and reduce fuel consumption.

- No waste. Almost all the powder left unused in the process of 3D printing can be saved and used again (apart from a low quantity of dust residue). Unlike traditional machining methods, there is zero waste, which means it's an eco-friendly choice. With traditional subtractive methods, an object is manufactured into shape from a solid block, and the waste materials that were cut or drilled out, are discarded.

- Although a mold may still take a couple of days to print – for more complex designs – this is still an extremely rapid process in comparison to other methods.

- Easy to tweak. If you need to change the design, the process is simple and only requires a few buttons to be pressed rather than an expensive and lengthy re-design.

- No need to stock expensive designs. With 3D printing, provided you have the materials to run the machine, there's no reason for any item to be out of stock. All you need is the STL file and you can print a product whenever you need one.

Photo courtesy of SPI Lasers

Technical Specifications

Laser Power	500W - Water Cooled
Growth Chamber	6.3" x 9.8"
Air Supply	90ps: @1cfm
Argon Supply	90ps:@.01cfm
Supply:	220 VAC 1-Phase 25 amps
Weight:	2200 lbs
Scan Speed	200"/second
Feeder	Thread
Software	Windows 10/OmniMark100/STL Slicer/Magics compatible
Materials	Stainless Steel, Inconel, Titanium, Tool Steel, etc.
Optics	F-Theta Lens with distortion correction
Machine Size	90.5" W x 34.5" D x 78.5" D
Safety	Complies to FDA/CDRH Requirements
Laser Source Type	Ytterbium Fiber Laser Wavelength 1080 ±2 nm
Output Power	500W CW (M2 ≤ 1.2)

LMT INTRODUCES THE

RAPTOR 3D™

500 WATT

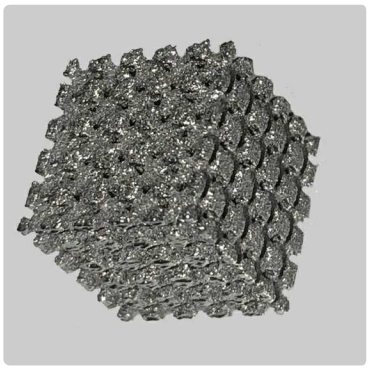
INDUSTRIES

MEDICAL | AUTOMOTIVE | FIREARMS | AEROSPACE | ELECTRONICS

Titanium Cage for herniated disk replacement

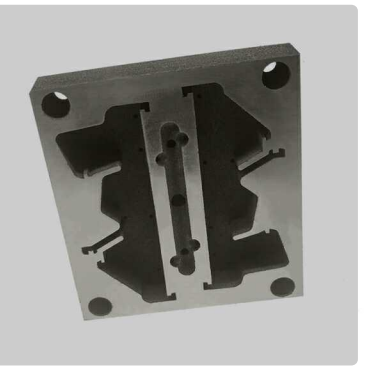
Titanium Cranial Implant

Inconel 718 for miniturbines for airmodels



Titanium Bone Scaffold

Inconel 718 for miniturbines



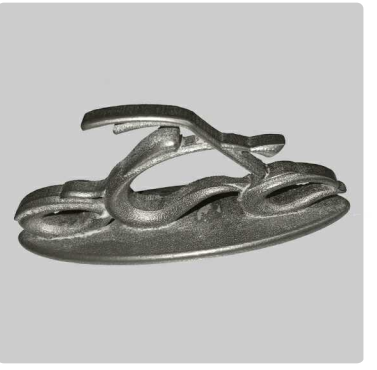
Maraging Steel mold cavity

316L Cranium Implant

Inconel 718 - Fuel Mixer

316L Extrusion Tool

Titanium implantable bar for dental application



Orange County Choppers

316L Nitrogen Gas Manifold

Why SPI Lasers?

With so many companies entering the 3D printing market, competition is stiff. However, when it comes to choosing your 3D printer, and the components it contains, there's really only one choice you should consider: SPI Lasers.

Compared to the rest of the field, 3D printing machines made with SPI Lasers are far superior, offering better functionality and excellent results, utilizing a laser with time tested longevity. The advantages start as soon as the machine is switched on, as the laser provides immediate power and stability for part production. Once the task of creating the piece begins, finer processing and higher throughput can be achieved; due to the use of faster pulse rise times and subsequent shorter pulses. Temporal pulse shaping can also play an integral role, and is considered as one of the most desirable features to look for. In process monitoring is possible with SPI Lasers thanks to the PIPA fiber providing a back reflection signal; is also part of the laser design to help prevent any beam reflection issues.

Benefits of a 3D printing machine with an SPI Lasers:

3D printing has become a subject of public fascination with stories of huge projects such as entire houses being created through the medium. While building entire streets of houses created entirely from 3D printing techniques is a way off yet, there's no denying that the technology has captured the imagination and opened up possibilities which previously would have been unthinkable.

SPI Lasers has been at the forefront of the market offering significant advantages for any company working with metal-based products. Here's a look at why 3D printing is so desirable and just why SPI Lasers are so superior to their competitors.

Conclusion

We are one of the most innovative and pioneering Laser production companies with work in many sectors and industries. 3D printing is a true technology of the future which is expected to continue to grow in popularity and use and it's an area where SPI Lasers can offer a real advantage.

With Lasers such an essential part of the 3D printing process, can you really afford to risk using a machine which doesn't include the very best parts? SPI Lasers is THE 3D printing solution for the future.

Examples of Industrial Use in Additive Manufacturing

Although additive manufacturing is seen as a relatively new technology, it has been around for several decades and is already in widespread use across a number of different industries. Although the concept of 3D printing has only recently captured the publics imagination and been reported in the media, there's a number of different industries which have been increasingly using the technology to revolutionize their manufacturing processes.

Examples of just a few of these industries are as follows:

Aerospace

The ability to create lightweight components which are aerodynamic and can be formed in a variety of complex geometric shapes is paramount in importance to the success within the aerospace industry. Streamlining designs by being able to create components in a single piece (e.g. fuel nozzle), rather than having to join them together results in improved strength as well as better performance.

There are a huge number of applications within aerospace, with both interior and exterior parts benefiting from the technology. Functional engine parts such as turbine blades as well as interior parts such as cockpit equipment and seat belts can be made using additive manufacturing.

In aerospace, having lightweight parts is of particular importance. This isn't just for their superior aerodynamic properties but also to save money too. Lighter designs burn less fuel and so are far more economical to run.

There are a number of other ways in which the process helps to save money but for aerospace, the lightweight construction really is an important factor.

Automotive

When it comes to car production, the process is already used in a number of different applications across the body, interior and the engine.

However, the development of different materials to be used with processing such as laser melting and sintering leaves the way open for even greater utilization in the future. Exhausts, bumpers and fluid valves are currently made using these methods, but as the range of materials increases, more complex parts such as engine components and electronics could be created.

Combining nanotechnology with additive manufacturing could create a greater scope too. Experts believe that this could make metals such as titanium strong and stable enough to create a dense material product.

Other material such as carbon fiber is already in widespread use, desirable for its light weight yet extreme toughness and strength.

Medical

The field of medicine is one which is constantly evolving and changing, battling to overcome the effects of age and disease on the human body. Additive manufacturing has already proven to be a useful tool in the fight, allowing doctors to provide far more precise surgical outcomes and heal more easily.

Bodily implants are the perfect target for additive manufacturing as it requires absolute accuracy and a customized approach. Additive manufacturing makes this a far more cost-effective process because of the ease in which individually-designed prototypes can be created with just a few clicks of the mouse.

The medical industry extends to dentistry too, with crowns and bridges being manufactured via additive means for almost a decade already.

The ability to create geometrically complex dentures from impressions and scans means a far more comfortable fit for the patient in the long term.

Electronics

Two industries which are bound tightly together, electronics and semiconductors have the capacity to achieve great things with the use of metal additive manufacturing. By combining the latest developments such as quantum dot LEDS, created via 3D printing techniques, and bioscience, there's the possibility that superior prosthetics and medical aids could be created such as smart contact lenses and reactive prosthetic limbs.

Being able to print on 3Dsurfaces means that electronics no longer need bulky circuit boards or wires and cables; the entire package can be shrunk down into a micro size and made far more attractive for the commercial market.

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