

REIMAGINE MANUFACTURING

TAKE ADVANTAGE OF TITANIUM ADDITIVE
MANUFACTURING IN YOUR NEXT PROJECT

ZENITH★TECNICA



Contract manufacturing specialising in

TITANIUM

3D PRINTING

Helping you improve the performance of your parts, decrease the time to manufacture and assemble, reduce labour and tooling costs, and effortlessly scale from prototype to production.

Zenith Tecnica was created with innovation in mind. The company has since grown, adapted and progressed into leaders of titanium 3D printing using Electron Beam Melting (EBM) technology.

Additive manufacturing opens the door for applying an incredibly capable material for a wide variety of needs. Through utilising our expertise, Zenith Tecnica provides you with new possibilities and manufacturing pathways to explore.

Our team of AM experts collaborate with you to help optimise and maximise the potential of your designs. Allowing you to achieve benefits through new and unique geometries that were not previously attainable using conventional manufacturing methods.

Our team has the highest level of OEM training and some of the longest-running hours utilising EBM 3D Printing technology in the world. Tap into our deep understanding and wealth of knowledge.

Take advantage of titanium additive manufacturing in your next project.



"Zenith Tecnica has put New Zealand on the global metal additive map. As an early adopter of Arcam EBM machines, the team has built a deep understanding of our technology that is second to none. It is no surprise therefore that this technical knowledge and engineering expertise is increasingly being sought out from customers around the world."

Oscar Angervall,
GE Additive



Active in the Global Supply Chain

Using EBM additive manufacturing, we successfully service a wide range of local and international applications, including:

- ★ Critical components for communications satellites and robotic space applications
- ★ Leading edge yacht and bespoke marine applications
- ★ Innovative medical and veterinary implant/device manufacturing
- ★ Rapid prototyping and production of one-off components
- ★ High performance sport applications such as supercar engines, Formula One and the America's Cup

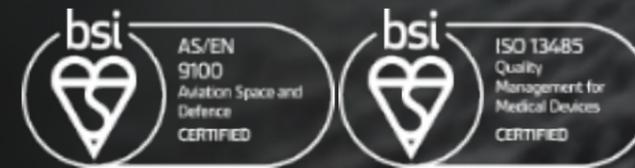
We have a proven track record of delivering urgent components worldwide and our team understands the time sensitive situations our customers often face.

The Zenith Tecnica team is trained in U.S. export controls that cover EAR and ITAR classified digital files and items. Please contact us if you have any specific questions regarding export and shipping.

73% of our production is actively exported across the globe

Quality

Zenith Tecnica is quality focused and operates to internationally recognised accredited Quality Management Systems.



Sustainability

Through precise use of material, less waste and reduced need for tooling and labour during production - additive manufacturing is already an inherently sustainable option.

However, when merged with titanium, we create products that have greatly extended-life-cycles, through corrosion resistance and the structural capabilities offered.

Zenith Tecnica also participates in eco-friendly and socially sustainable practices, such as solar powered production, eco-friendly packaging, metal powder recovery & recycling, and university program sponsorship. This assists us in offsetting our freight emissions, as well as allows us to support the next generation of minds.

"OSSIS provides world-class solutions that are only possible through our partnership with Zenith Tecnica. Together we have created a new norm for 'patient-matched implants', delivering a solution within days that challenges off-the-shelf products. Our progress in providing innovative and life-saving implants could have only occurred through Zenith's rigorous pursuit of globally recognised quality systems and commitment to engaging and interacting with us at all levels of the organisation."

"As every case is unique and different, we required a collaborative manufacturing partner to work alongside us to truly help our surgeons and their patients in a meaningful way. OSSIS needed a partner that could adapt and grow with us. We have found that in Zenith Tecnica."

Kelvin Hyland,

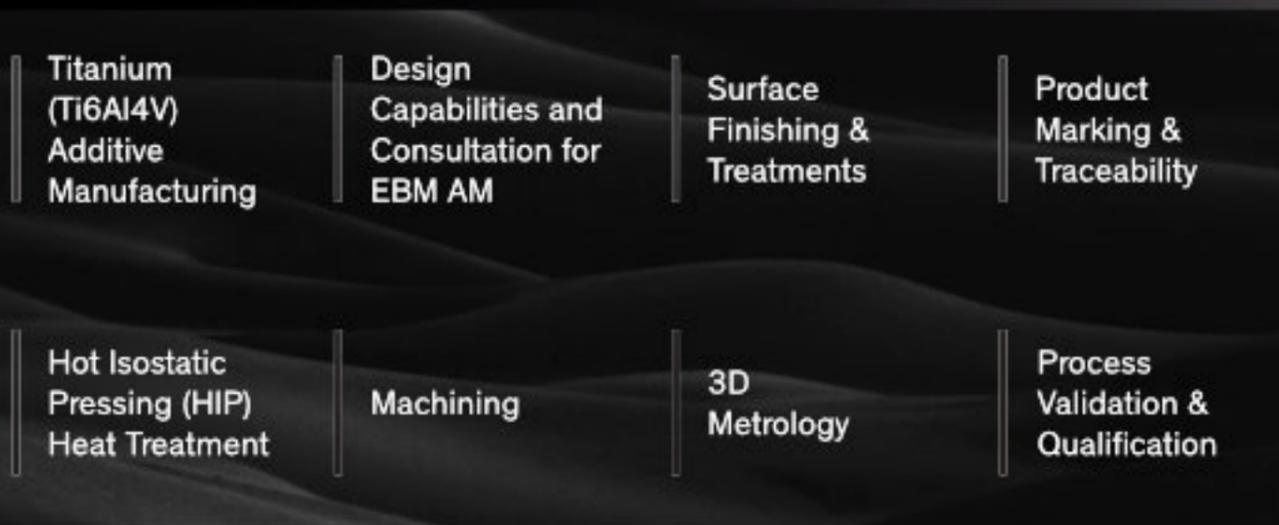
**Managing Director
OSSIS Ltd**

"The team at Zenith Tecnica operates as an extension of Maxar's team, and they always go the extra mile to ensure parts are delivered to a high standard of quality. Zenith Tecnica has been with us since the first metal additive manufacturing programs at Maxar and has performed a critical role in helping define and qualify these production processes."

Gina Ghiglieri,

**Additive Manufacturing
Technology Manager
Maxar Technologies**

Collaborating start to finish



Operating with agility and flexibility as a priority, we tailor our service package and level of integration to suit your needs.

With a build volume ranging up to $\varnothing 360 \times 360$ mm, we are ready to produce your components.

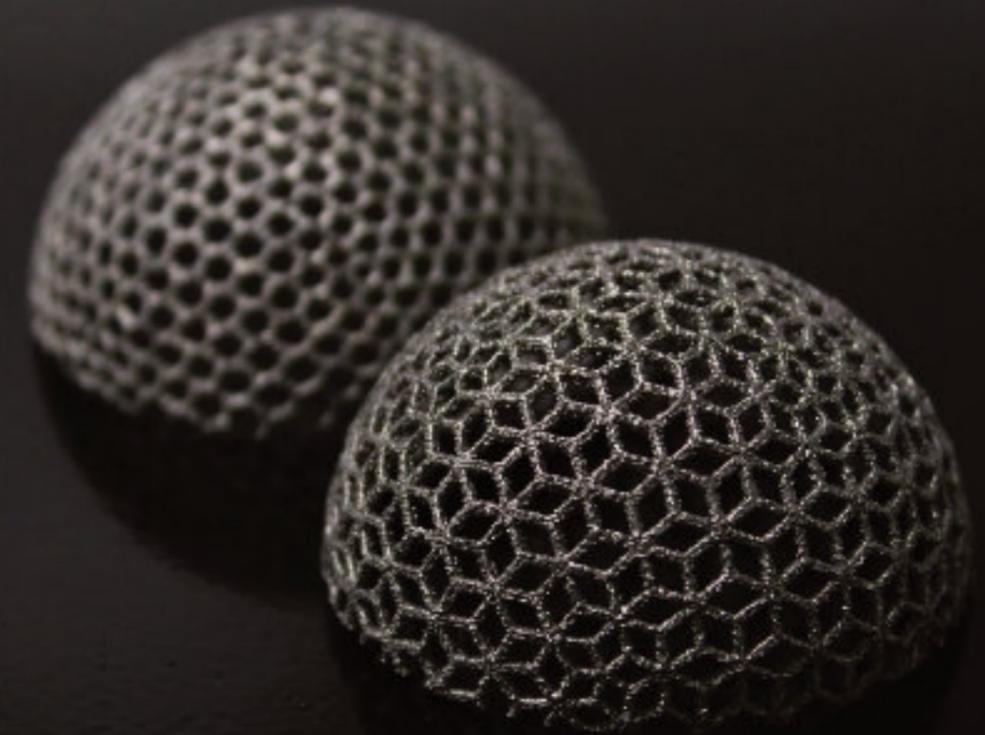
Job to Batch Manufacturing:

Our team of engineers work swiftly, collaborating with your own team to manufacture your components in a timely and economically friendly manner. Whether your requirement is for a one-off project or a series of products, we have a large amount of capacity to service your needs on our ride-share or dedicated builds.

Scalable Manufacturing:

Our team will collaborate with you to define a quality plan and validate a process to meet your monthly, quarterly, or annual requirements on-time. By using Additive Manufacturing we can find the most cost-effective solution using ride-share builds or scale our capacity of dedicated builds to suit the volume of production required.

More than contract manufacturers



Whether you have experience in additive manufacturing (AM), or this is your very first time, our team can collaborate with you to ensure your design(s) will meet your manufacturing goals.

We offer our experience and knowledge to help improve your components performance and quality, and help you find ways to reduce costs and lead time.

We offer new customers a free 1-hour consultation with our engineering team to get your project underway.



Titanium by Design

With such a capable material at our fingertips, we have been able to concentrate our efforts towards becoming world leaders in the art of titanium alloy EBM manufacturing. Thanks to our commitment to titanium coupled with our humidity and temperature-controlled machine environment, we reduce any risk of cross-contamination and material impurities.

Fundamentals of EBM

Electron Beam Melting (EBM) is a Powder Bed Fusion Additive Manufacturing (AM) process. Utilising an incredibly powerful beam of electrons, this form of AM heats and selectively fuses metal powder together.

The process begins with an extremely thin layer of metal powder spread across a build plate and pre-heated. Once the desired heat is achieved, the beam accurately melts areas of powder at speeds of up to 8000m/s, which is approximately 28,800 kilometers per hour!

Once the layer has finished being melted, the plate descends a distance less than the average width of a human hair. From here a new spread of metal powder is applied and the next layer begins.

The design of the finished part is achieved through the creation of a 3D CAD Model that is digitally sliced into thousands of individual layers, acting as a blueprint for the beam to follow.

Benefits of utilising AM Titanium

When paired with additive manufacturing (AM), titanium's potential increases tremendously.

Complex geometries

Production of unique and complex geometries can be achieved with additive manufacturing. EBM enables high productivity manufacturing of tall and thin-walled components, components with large cross-sectional changes, and the ability to consolidate assemblies.

Strength-to-weight ratio

Additive manufacturing can exploit the high strength-to-weight ratio of titanium better than more traditional manufacturing methods by making it possible to produce thin and complex geometry components.

Light weighting

Components can be designed using the latest optimisation techniques to reduce mass. Our customers have optimised these assemblies to reduce mass for thermal loading in space and mechanical loading in many high performance applications.

Corrosion resistance

Titanium is naturally corrosion resistant, assisting its performance in harsh environments such as salt water. Titanium also pairs well with carbon fibre composites due to their position on the galvanic series. This pairing leads to longer service life through reduced festering.

Bio-compatibility

Titanium is widely used in orthopedic implants due to its bio-compatible nature, corrosion resistance, and specific strength. Using AM, surgeons and implant manufacturers can create patient-specific devices on tight deadlines. This opens the possibility to incorporate metal porous structures for osseointegration to improve patient outcomes.



High productivity rate

Zenith Tecnica chose GE Additive Arcam EBM machines as they typically fit more parts per build than alternatives. This enables filling an entire 3D build volume of parts. Combined with the speed of EBM, this results in faster lead times through the efficient build process.

Tall thin-walled components

The sintered powder bed surrounding melted components in the EBM process supports thin wall components laterally. Allowing for more design freedom with large lightweight structures.

Reduced internal stresses

The EBM process takes place in a vacuum chamber and maintains a high temperature powder bed throughout the build process. This results in components being stress relieved and machinable straight after unloading without further heat treatment.

Large cross-sectional areas

The EBM process has enough speed and power to melt large volumes and thick walls without distortion, when compared with similar powder bed fusion technologies. This is useful for part consolidation and structural components which require extra material for high strength and stiffness.

EBM additive manufacturing (AM) allows for better performing parts and sustainable processes.

Benefits of utilising EBM AM



FROM SPACE TO SEA,
PROTOTYPE TO PRODUCTION,
AND EVERYTHING IN BETWEEN.

ZENITH TECNICA WILL HELP
MANUFACTURE YOUR
COMPONENTS TO PRODUCE THEM
FASTER, LIGHTER AND STRONGER

TITANIUM 3D PRINTING

How to get started

Whether searching for a simple quote or exploring options for your next additive manufacturing partner, please read the following to ensure the most efficient path possible.

Send to sales@zenithtecnic.com

ZENITH★TECNICA

Request for Quote (RFQ) Checklist:

At a minimum we require:

- ✓ CAD model of your component(s)
- ✓ Quantity required for this project

For our team to understand your application and provide tailored feedback and processes, it is also best if you can provide the following:

- Projected future quantities
- Manufacturing drawing(s) including surface finish requirements
- Deadlines for urgent projects
- Description of the next higher assembly (if applicable)
- Inspection & Quality requirements
- Any classifications required for shipping and Export Compliance such as ECCN and HS code



Enquiry sent to Zenith Tecnica

Manufacturing Review

Quote Generated

Order Confirmed

File Processing

Building in progress

Post Processing

Quality Control

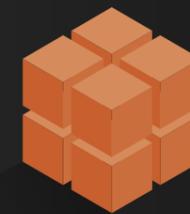
Delivery

The Process

Our customers' projects widely differ in size, scale and complexity.

We offer differing build options to suit your project. Providing the most economic and efficient solution on a case by case basis.

Dedicated Build



- Full builds provide the lowest unit price
- Launched as required to meet critical customer deadlines
- Scalable to volume required

Ride-Share Build



- Economy option for orders not filling an entire build
- Launched on a regular schedule
- Minimum order quantity of one unit