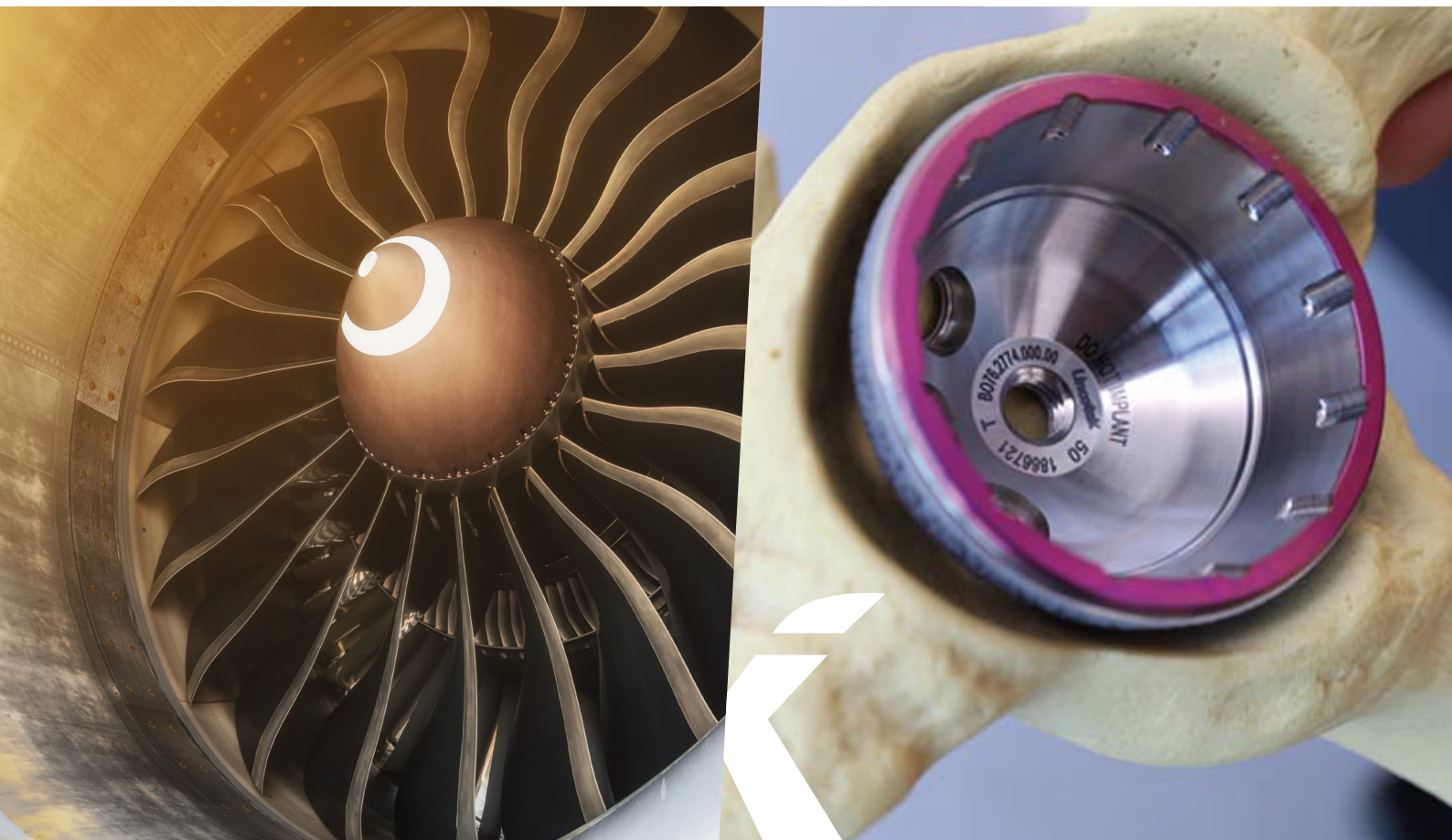




The End-to-End Additive Solution Provider





You have always been guaranteed a complete service through Lincotek Additive's unique serial production expertise in the field of global Additive Manufacturing.

Today, we go further than ever before, taking responsibility for a whole range of processes in-house. From design to final heat treatment, machining and finishing, we're with you every step of the way.

It's the simplification of your supply chain. It's Additive Plus.

Built on experience Ready for the future

We have championed innovation in additive manufacturing solutions since 2006.

Our company has long been at the forefront of research, design, engineering and manufacturing in medical, IGT, aviation and other industrial fields. If your business needs a reliable and sophisticated additive supply chain, our track record is hard to beat. We 3D-printed over 100,000 parts per year with best-in-class yield rates, material consumption and per-unit costs.

Leaders in research and development

From two innovation centres – one in Italy, focused on the medical sector and the other in Switzerland, concentrating on industrial applications – we foster a culture of continuous innovation. In addition, we have AM plants and related R&D services in the US and, in the near future, in China too. This enables us to offer in-depth insight and state-of-the-art solutions globally.

Serial additive manufacturing scaled up

We are specialists in scale-up, from part development to serial production. For instance, we are already a global leader in additive contract manufacturing of medical devices, at the lowest scrap rates and best-in-class cost efficiency. We can help you to begin or expand your serial additive manufacturing, wherever you are in the world. But we can go further too.

Enabling Additive Manufacturing with Post-processing

Post-processing can be one of the key bottlenecks in using additive manufacturing as an industrial process. So, when you have 3D-printed the part, you need to be able to complete it. Post-processing of AM parts is fundamental and truly challenging. It's this capability that sets Lincotek apart.

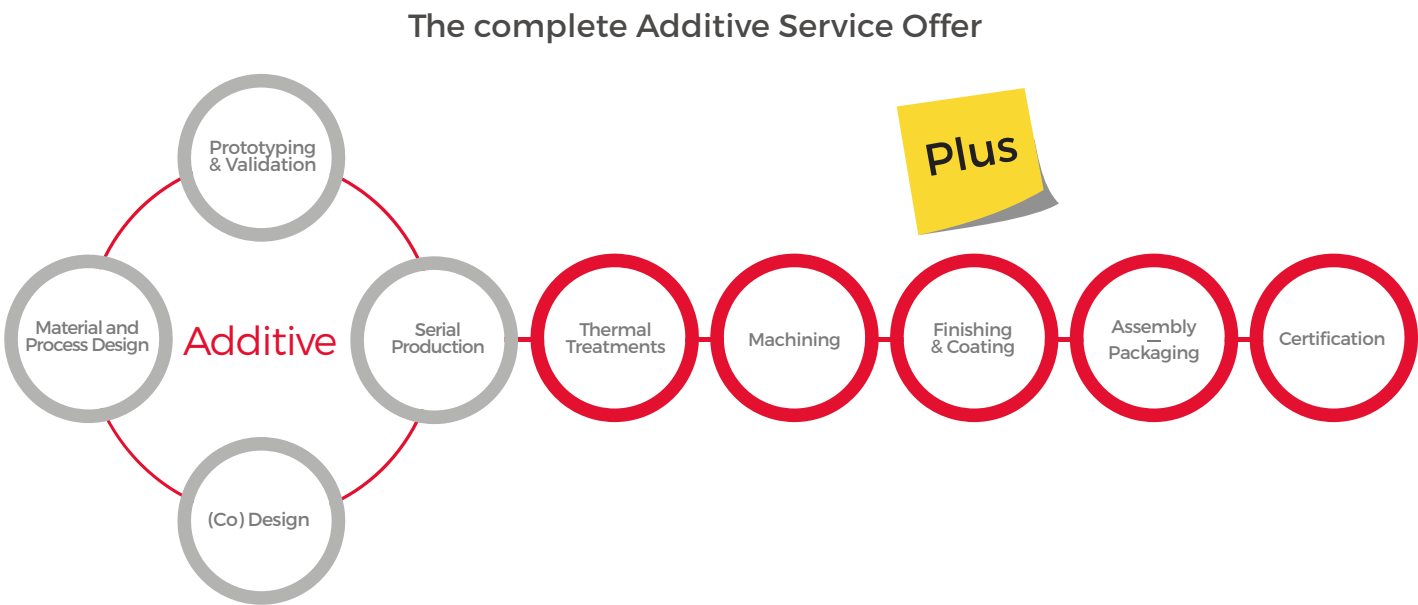
As we harness the disruptive power of Additive, we recognise that it is just one step in a much broader process. Our unique portfolio of special processes allows us to offer a complete value chain – starting from printing and going through to thermal treatments and machining, up to surface treatments and final certification. What makes us unique is the integration between the different processes that are already part of the design and development phase.

Long-term, reliable partnership

As your production grows, we're there alongside you, investing to support your plans.

Our group is family owned and has provided special services to global markets since 1973. We believe in building a reliable partnership that gives you confidence and reassurance to plan for the future.

From Additive Manufacturing to Additive Plus



We are aiming to design the best possible production process for the additive part, to ensure the most cost-effective way of producing the serial end-to-end part. Working with you on the design, materials and processes, we can then build on our extensive experience to deliver a validated prototype.

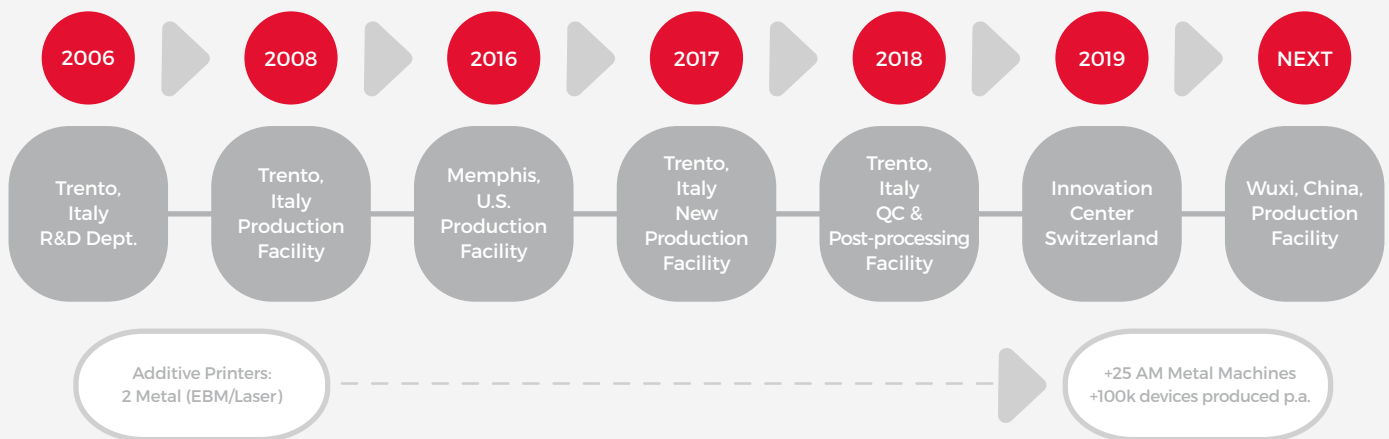
But with Additive Plus, you get more besides. And this is why we're renowned for our seamless serial production scale-up.

Quite simply, we take you from powder to ready-to-use part and then help you manage the complete supply chain. Thermal treatments, machining, coating and finishing are all part of the Lincotek Additive offering, as part of a complete and validated process chain. And that means you can be sure of the highest-quality products, as well as short development cycles, significant reduction in time to market, and real cost savings.



Constant evolution: the road to Lincotek Additive

Today, we're global in our reach, with the ability to serve any major market. Our European operation is headquartered in Trento, Italy, but we also have a strong presence in Spreitenbach, Switzerland, Memphis, USA and we are planning to build up additive capabilities in our production facility in Wuxi, near Shanghai, eastern China.



Lincotek Additive at a glance

Materials: Titanium alloys such as CpTi and Ti6Al4V, Cobalt alloys such as CoCrMo, Steel such as 17-4 SS and AISI316L, Nickel alloys such as HastX; IN625, IN718, IN738 and IN939.

Process Design: a sizeable R&D team of dedicated engineers working from locations in Italy, Switzerland and the USA, a full range of machines dedicated, and a technology span including laser and EBM with their crucial post-processing capability.

Post-processing: massive investments in post-processing for serial production, supporting all the necessary steps after the 3D phase: from thermal treatments to machining; from coating to surface finishing; and from final cleaning to final certification.

Serial Production: we integrate our additive base capabilities with the post-processing ones to enable true serial additive production with our Additive Plus offer. With production locations in Italy, Switzerland, USA and soon in China, more than 25 machines available and long-term consolidated experience (operations in place since 2007) we have produced more than 700,000 parts since inception.

Quality: supported by a team of dozens of professionals, serial production is based on validated equipment and run according to best-in-class scrap rates and OEE (Overall Equipment Efficiency) far above 90%;

- In the medical field: plants are ISO 13485 certified and release implantable medical devices (CE and FDA);
- In IGT/Aviation: main production facilities are certified AS9100/NADCAP



Shaping the future in the MEDICAL sector

We're an established global player in the medical market, dealing with some of the largest orthopaedic device companies, with the highest quality standards. The role we play depends on the precise needs of our customers, but it is likely to start with co-design and encompass the complete powder-to-part process. We run the entire supply chain, taking responsibility for the additive manufacturing process and the post-processing, including coating, machining, heat treatment, polishing and packaging.

With Additive Plus, we provide a fully-integrated supply chain service and solution for demanding applications, offering end-to-end capabilities. We're committed to promoting new technologies and constantly refining our business processes to reflect the demands of our customers.

Our subject matter experts offer in-depth additive and industry expertise. As you would expect, they support the process of setting ASTM/ISO standards.



We also offer:

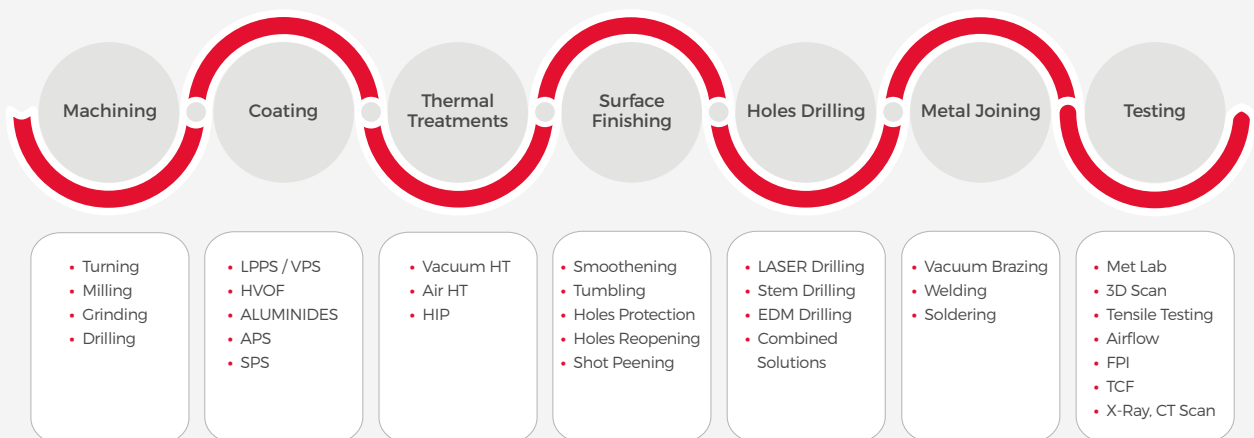
- AM processes that are validated and audited in line with ISO 13485
- Reduced time-to-market, thanks to streamlined processes and regulatory experience in Europe, the US and Asia-Pacific.
- Uniquely referenced finished products and quick delivery thanks to integrated production
- Capability to develop and validate tailored porous structure for osseointegration.



Meeting new challenges in INDUSTRIAL markets

Since 1973, we have been highly respected for our technical know-how in the gas turbine and aviation sectors, where we supply OEMs, who have challenging standards in part performance, process substantiation and time to market. We have championed special processes for the industrial market in several sectors (gas turbines, aviation, space, oil & gas and automotive) and we now offer our expertise to the additive market through Additive Plus. We work with several industrial sectors, which count on our engineering expertise and ability to explore the potential of new materials.

As with the medical industry, we start with co-design and then support you in everything from powder development and additive manufacturing to machining, thermal treatments, coating, finishing and all the testing and characterization methods (dimensional inspection, non-destructive and destructive testing, functional testing) to prove the results of the overall chain.



You can benefit from a unique supply chain experience, combining additive manufacturing with special processes and conventional manufacturing. A single point of contact with reduced delivery time and the support of experts in R&D, materials and industrialization.

We also offer:

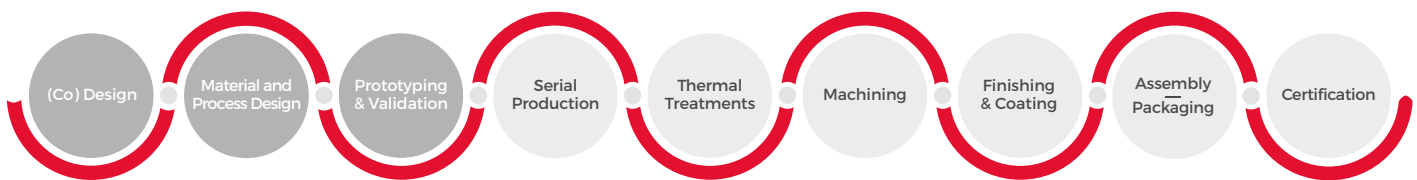
- Extensive understanding of materials and, in particular, superalloy development and characterization.
- High proficiency in AM production of high-temperature components, as well as in special processes, along the full manufacturing chain.
- A validated AM process chain in line with best-practice industry standards.
- A lean and efficient approach to manufacturing solutions.
- The flexibility to work on either small series or large scale-up programs.



The value we add: explaining our process

1. Additive Manufacturing Setup.

From powder to ready-to-use part



Reliable components are at the heart of your business and we are committed to support you.

At Lincotek Additive, we identify key process parameters and optimize them for best part quality and productivity.

We can start to support you in making your design suitable for additive manufacturing. Concurrent engineering is the key of a final successful design here. Through AM, we can achieve more than is possible with traditional machining and drive your complex design through all the detailed features.

A further step is the design of the materials: we can tailor the chemical and physical characteristics of the powder in order to make it printable and to obtain a printed component, with enhanced characteristics and with a high yield process.

We then tailor thermal treatments that play a key role in the final characteristics of the component. We can optimize their parameters to get the best performance out of certain alloys. In this way, we ensure the most effective combination between the alloy and the design of the component, in terms of mechanical and physical characteristics and, finally, in terms of the overall performance.

We perform material and component characterization according to your specifications, with the option to assist you in the definition of such specifications.



From design to serial production

Design for Additive

Porous structure design. Design changes to maximise buildability and process yield.

Proof of concept

Feasibility, AM prototype built, envisioning critical dimensions, tolerances and controls

Post-processing/HTT, machining, finishing, coating, cleaning

Selecting the necessary post processes, setting the pilot process

Testing and qualification of the prototype

The prototype device and porous surface is qualified and the process is defined

Process scale-up and validation

The process is scaled-up, validated and fixed

FAI

First Article Inspection, development phase ends

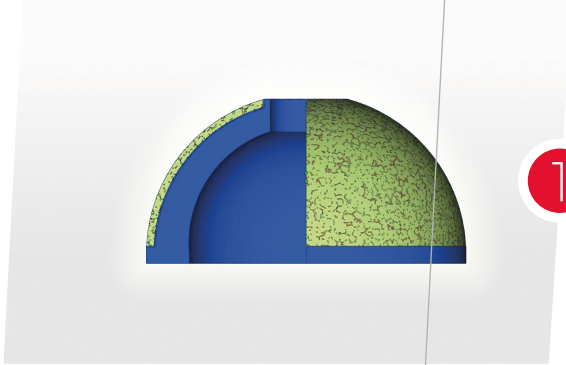
PLQ

Pilot lot qualification, production conditions

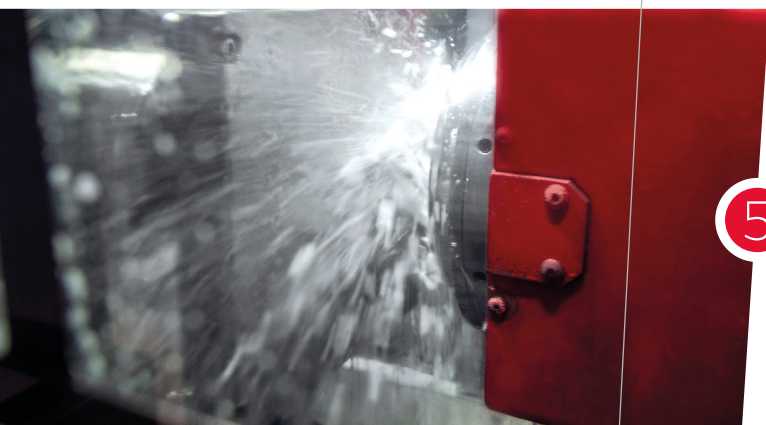
Serial Production

KPIs, continuous improvement, periodic audit





From design to serial production



Process and Product Validation

Machine Validation

IQ

Equipment installed in agreement with machine manufacturer specs

OQ

The system's operations perform in the anticipated range, in conformity with equipment specs

POQ

Test coupons, manufactured in extreme operative range conditions, respect acceptance criteria

PQ

Test coupons manufactured in nominal settings confirm a stable and consistent process

Customer Specific Validation

POQ

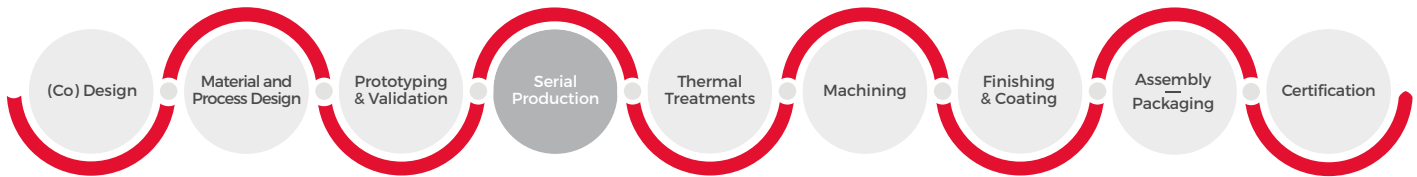
Customer-specific products, produced at extreme conditions in the operational range, meet acceptance criteria

PQ

Customer-specific products, produced at nominal settings, have stable and consistent performance



2. Additive Serial Manufacturing. Scale-up and Serial production



We share your desire for short development cycles and significant reductions in time to market.

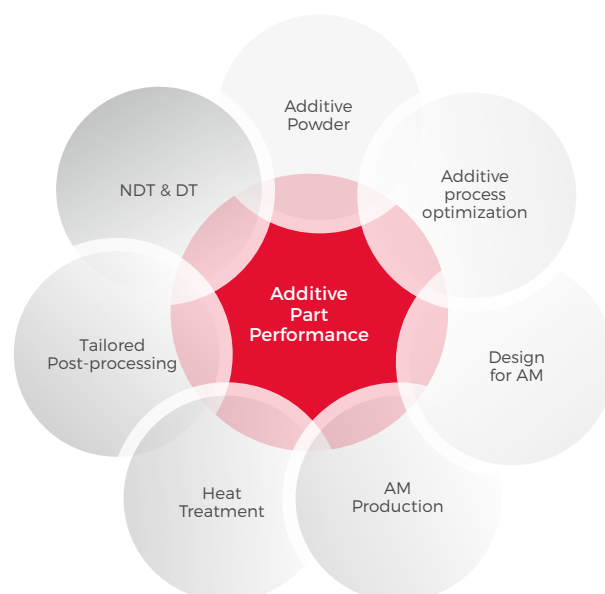
We therefore design and develop components with AM serial production in mind, drawing on an in-depth understanding of SLM processes and post-processes. We are also able to offer a holistic view of the validated process chain.

The approach starts with design for AM, aiming for highest process yield and maximum productivity of the component. It then continues with the development of highly productive and robust SLM parameters, but it also extends further, with the design of a cost-efficient, post-process chain, based on product requirements.

Lincotek Additive has huge experience in developing AM components for serial production within a validated, fully-integrated process. Thanks to our deep knowledge of the technology and mastering of the process – or what we call our tribal knowledge – we can offer a unique capability in maximizing the outputs of each operation and integrating them with each other in order to optimize the overall supply chain.

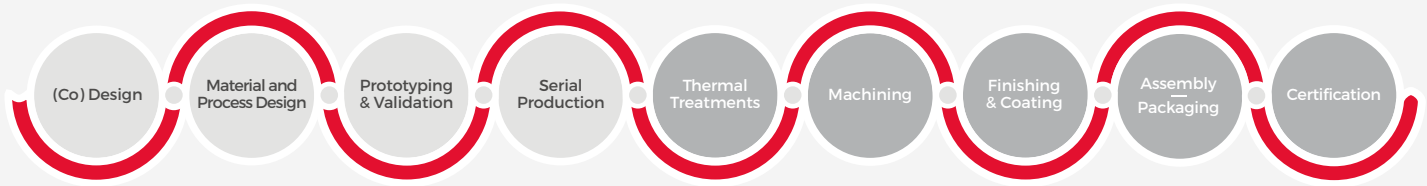
This experience may have an application in the most highly regulated sectors, both Medical or Industrial (such as gas turbines, aerospace, defence, oil and gas and automotive), where we take the responsibility of the overall chain by appropriate in-process controls and testing, and final certification.

The drivers of performance



3. Additive Manufacturing Plus.

Post-processing to deliver a true end-to-end supply chain



With Additive Plus, Lincotek is ready for the future. Our printers are never idle and when new opportunities arise to support customers, we're always prepared to invest.

When a metal part is 3D printed, you can't just extract it from the machine and start using it. It needs to be post-processed before it is ready to use. Thermal treatment, coating and finished machining of AM parts are fundamental and really challenging. Our ability to address these issues this is what sets Lincotek Additive apart.

We are also known for the deep in-house knowledge and practice of the different steps in the value chain, from design through ready to use components, via thermal treatment, machining and coating. We actually design and perform each step, respecting the features of all the other steps and optimizing the integration.

Lincotek Additive is known for guaranteed quality, on-time delivery and cost-efficiency. We have always moved beyond AM to focus on the big picture for our customers. We design, we print and validate, we machine, we finish. Everything in-house. And we're committed to being a global leader in integrated supply chain solutions.

- Parts detachment
- Powder recycling and tooling handling
- Thermal treatments
- Machining and surface finishing
- Coating
- Cleaning and packaging
- Certification







More about our Group

- Contract Manufacturer with specific focus on Integrated Supply Chain
- Focus segments: Energy, Aerospace and Defense, Oil & Gas and Medical
- Privately owned
- More than 45 years in thermal spray coatings
- More than 15 years in additive manufacturing
- 15 manufacturing sites overall
- OEM loyalty/focus
- Over 1,100 people
- Double digit % sales growth in the last 10 years
- 15% Revenue invested in CAPEX
- More than 60 thermal spray systems in operation
- More than 25 additive printing units in production



Lincotek

Additive 



Lincotek Additive Plus:
your global partner for
customized serial additive
production solutions

lincotek.com/additive