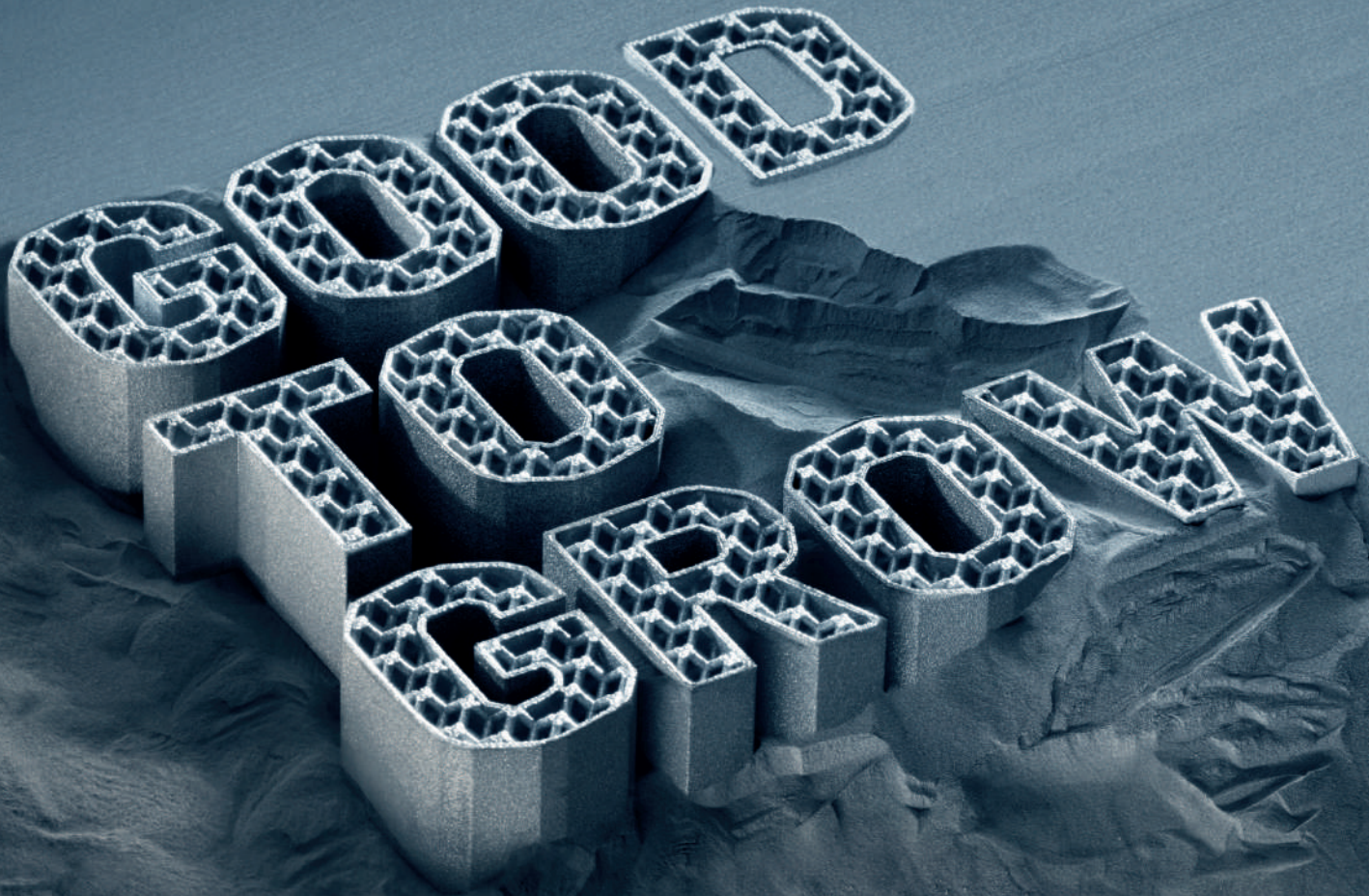


SPARKS

THE POWER LINE EBOOK

007



Let's grow together,
towards a new,
smart, sustainable
manufacturing.

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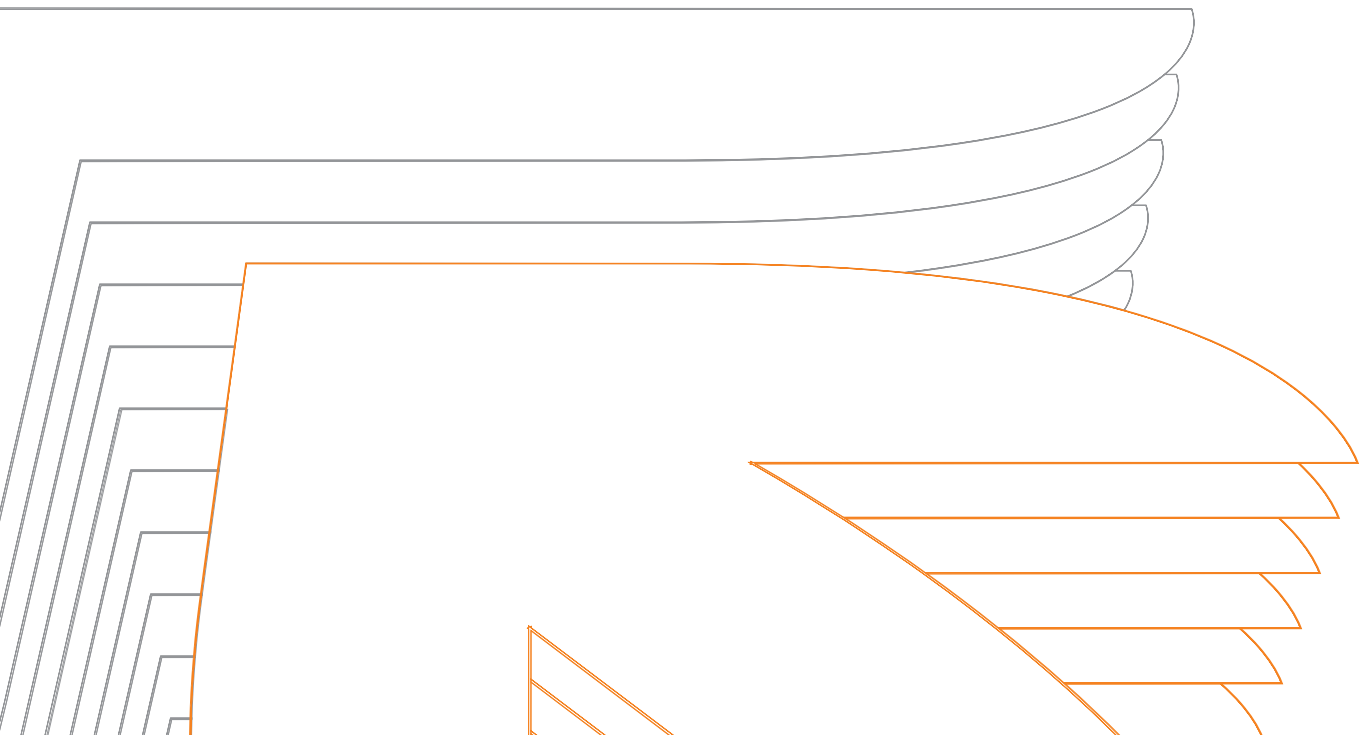
#1

GOOD TO GROW

GOOD TO GROW

Everything You Always Wanted
to Know About Additive
Manufacturing

(But Were Afraid to Ask on 3D Metal printing)



Drones, cryptocurrencies, smart cities, micro-technologies, nano-technologies and now Additive Manufacturing. How much cognitive effort you need to manage all the daily innovation that requires your attention, your consideration and your decisions on investments? How many times, as an entrepreneur, you gamble your enterprise by choosing the wrong or the right technology to improve or sometime to save your business? How much easier and effective would be to have a smart and expert partner with whom share your ideas and wild industrial dreams.

We like the concept of partnership, we love to work close to our client as a companion sharing knowledge, ideas, industrial dreams and, why not, worries. That's the only way to be really effective and successful in innovation.

Additive manufacturing is a profitable technology and a new business model, and you need a good amount of imagination to unleash all the huge number of opportunities. A sustainable production, products with an unthinkable complexity, prototypes just like real products, small batches of production, on-demand production such as spare parts. In Prima Industrie we bet on Additive manufacturing so much to build a fully equipped Application Center, to stay close to our customers and guide them in all the journey through the adoption of Additive Manufacturing in their company.

Don't you think that working together on your next big industrial idea would be amazing?

Paolo Calefati

Vice President Innovation
and Additive Manufacturing
Business Development at
Prima Industrie S.p.A.



#2

CHANGE SUSTAINABILITY SMARTNESS

CHANGE SUSTAINABILITY SMARTNESS



Introducing Metal Additive Manufacturing

Prima Additive develops and offers innovative laser systems for both the main Metal Additive Manufacturing processes: Powder Bed Fusion (PBF) and Laser Metal Deposition (LMD).

Prima Additive, responding to different industrial and research needs, provides the right type of machine for each application, ensuring through a network of business partners, services and suppliers a successful integration and operation of Additive Manufacturing machinery at your site.

Aiming to make Metal additive Manufacturing part of your production and research apparatus, Prima Additive has designed complete solutions, including not only machines but also pre and post-processing equipment, applications development, digital services and support.

The long-standing experience and expertise of the mother company (Prima Industrie) on laser systems and customer support is the main factor that guarantees a success story for every customer.

|| Manufacturing today changes very fast: companies should have a very prompt reaction. ||

ADDITIVE IS ADDICTIVE

From imagination to concreteness

AM shortens drastically the distance from imagination to concreteness, from an idea to its physical realization. In other words, AM's big idea is the possibility to quickly produce prototypes, small batches of highly precise and complex products or prototypes, spare parts, repairs and coating of metal parts.

This technology offers companies infinite possibilities and we can help you to translate your imagination into an efficient new business.

|| Many times the innovation process is perceived as a waste of time or a waste of money: the problem is not the innovation process by itself, the problem is to have the right partner for innovation.

||



WHY WE BET ON ADDITIVE MANUFACTURING

(SUSTAINABILITY-CHANGEMENT-SMARTNESS)

|| Additive manufacturing is more than a key enabling technology. It's the unthinkable made possible. ||

1

THE SUSTAINABILITY PILLAR

Recycling and reducing emissions are an important phase, but if we really want to change the paradigm, we must start from the beginning of the life of the product, where we can truly affect it in a virtuous and lasting way. For us, sustainability isn't just a matter of ethics, but a true will to find a convenient solution for both the environment and profitability.

THE CHANGEMENT PILLAR

A constant change, the adaptability is a vital need for every enterprise. Only those who adapt more quickly to the needs of the market survive and prosper. But to really understand change, we must be ready to embrace it. Only a fluid and flexible solution can guarantee us to survive in a market that changes much faster than us.

2

3

THE SMARTNESS PILLAR

In industry even if everyone applies the same rules of the game, there is always someone who manages to get better results than others. It is because it has a wide culture, a smart system of thought that goes from production to sales and marketing of the product. This, together with the time factor, is what makes the difference between a real market predator and a hamster that runs inside its wheel.

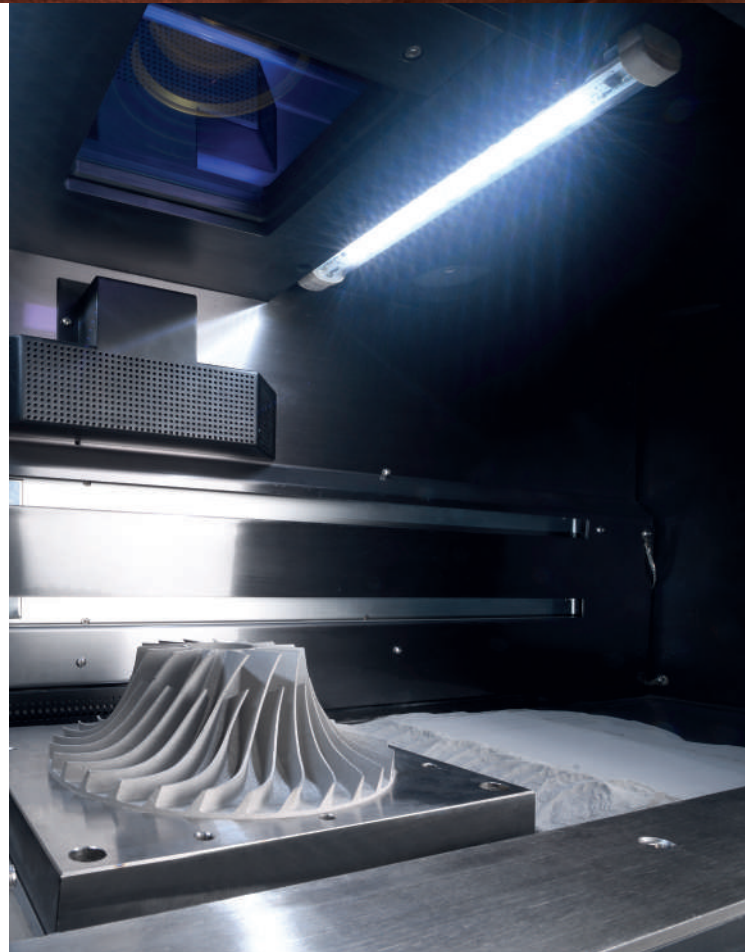
THE TECHNOLOGY

Prima Additive is active both on the Powder Bed Fusion and on the Laser Metal Deposition with proprietary technologies resulting from the group expertise in laser technologies. We carry out our R&D initiatives in Italy and we are an active part of several international research projects. From the controls and laser sources, developed by the Prima Electro division, to the technologies for direct energy deposition, we are always looking for new solutions to make the most of additive technologies.

Powder Bed Fusion

Powder bed fusion process uses thermal energy to melt specific points on a layer of metallic powder. The thermal energy – generated by a laser source – melts the powder material, which then solidifies as it cools, creating the part layer by layer. After the melting of one layer, the platform lowers, and the powder recoater deposits a new layer. This process is repeated until the complete component is manufactured.

**BEST FOR: COMPLEX PRODUCTS,
PROTOTYPES.**





“ Thinking in additive
you can improve
and functionalize
the components
for their use. ”

Laser Metal Deposition

The laser metal deposition process uses focused thermal energy generated from a laser source to fuse powder metal sprayed at the focal point of the laser beam. This laser beam melts the deposited powder to the component. The laser is coaxial to the deposition head which moves in 3 to 5 simultaneous axes. A rotary tilt table can also be installed in order to keep the melt pool created on a horizontal plane.

**BEST FOR: REPAIRS AND COATINGS,
ADDING FEATURES TO EXISTING PARTS**



THREE KEY ADVANTAGES OF AM

|| Sustainability and circular economy are not just ethics of innovation, but are something that can make you more competitive: you can save costs and be more profitable in your business. ||



1

Save time (and money)

A product can be designed, printed and tested in a much faster and precise way by eliminating several stages of the product development process. With a drastical reduction of mistakes thanks to a full control, layer by layer of the production process. The Prima Additive AM machines don't need highly skilled operators to produce very complex objects.

WYIIWYG (What You Imagine Is What You Get)

High geometrical complexity, fluid organic structures and whatever comes in your imagination can be produced within hours, with the same effort used for the simplest forms. Everything that with traditional metalworking technologies was just a dream can become a reality thanks to additive manufacturing. You will thus be able to unleash your imagination without taking into account the constraints of machining.

2

Sustainability

Three are the reasons for a true sustainability: Generally 3D Prints only uses the amount of material that is required while traditional manufacturing methods generally waste a lot of material off the initial block. The on-demand printing allow to avoid managing excessive stock of products or spare parts, reducing the warehousing space and costs. Thanks to additive manufacturing it is also possible to repair high added-value components, extending their lifecycle.

3

Need more? Then add:

Customization, precision, limitless application, fast prototyping.

FAQ

What metals can I work with a Prima Additive AM machine?

Prima Additive offers a comprehensive selection of metal powders ranging from aluminum through to nickel, steel, titanium as well as copper alloys. We develop the correct process parameters and set an optimal configuration for your machine to ensure quality and repeatability. We are always open to investigate and produce new materials suitable for additive in order to accommodate your specific needs.

What is the minimum dimension can I produce?


The minimum dimension you can produce is a thin line of 0.12-0.15 mm width, thanks to our Powder Bed Fusion machines. This level of detail allows you to realize very complex shapes also in very small components.

What is the maximum dimension?

The maximum dimension is depending on the machine's building volume: Prima Additive solutions are ranging from a volume of 250x250x300 mm of our Powder Bed Fusion machine Print Sharp 250 to a 4140x2100x1020 mm working envelope of our Laser Metal Deposition machine Laser Next 2141.

Can I combine different metals in the same objects?

With our Laser Metal Deposition machines, you can work up to two materials at the same time, thanks to a powder feeder featuring two different hoppers for metal powder. You can also execute claddings or adding custom features to a metal part in a different material than the original one.



What is the average time to produce an object?

It's not possible to establish the average building time of an object. Build Speed is depending on the application, and it is not related only to the part volume. It is influenced by many factors, like the laser focus diameter, the layer thickness, the material, the machine building volume, or the number of lasers.

What is the level of detail that can be achieved with Prima Additive machines?

For powder bed fusion technology the accuracy of our machines is ranging between +/- 0,05 mm for small parts and +/- 0,1 mm for large parts, while for laser metal deposition technology our solutions have a deposition accuracy of +/- 0,2 mm.

I already own a Prima Power laser machine. Can I convert one of my 3D laser machines into an additive manufacturing system?

Yes, you can convert your Prima Power 3D Laser machine into a machine for metal additive manufacturing thanks to our new Laser Metal Deposition Kit. The kit includes all the equipment needed for direct energy deposition applications: an innovative and multipurpose laser head, a highly efficient laser source and a flexible and reliable powder feeder.

Currently I produce mechanical components with traditional CNC machines, how can I know if I can realize the same products in additive and if this would be good for my business?

To answer this question we created this page: <http://bit.ly/applicationstudy>.

Through this page you can send us a 3D model of the part that you need to realize: our experts will evaluate your business case, and will send you a full application study. For free.

I am not familiar with additive manufacturing, how can I get the right skills to take full advantage of this technology?

Our team of specialized engineers is always next to you in your journey to the adoption of this technology. We offer training programs and updates for using our machines and software to their best, maximizing manufacturing capacity and quality. We provide training and support from the evaluation phase to the after sales.

EASY? ALMOST

In business nothing is easy. That's why we need to associate, to find a partner in business to boost the imagination, elaborate solutions, build scenarios. We are not here (just) to sell machines.

We are here to find entrepreneur with the spark of imagination, to create partnership, to build new business opportunities.

To keep it short: would you like to meet us and start a productive connection to work together about the future?

|| Nobody is really conscious about the importance of change. ||





PRODUCTS

Powder Bed Fusion



150 Family

Three models with a working volume of $\varnothing 150 \times 160$ mm:

Print Sharp 150 with a single IR laser, ideal for R&D applications

Print Genius 150 with two lasers working simultaneously, increasing productivity

Print Green 150 with a green laser for pure copper processing



Print Sharp 250

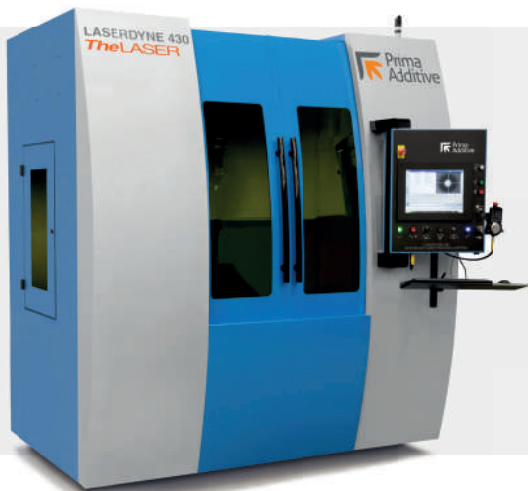
The medium volume (250x250x300mm) powder bed solution of Prima Additive for industrial applications. A compact and easy to use machine for the production of complex geometries with high-end part quality.



Print Genius 250

An optimized solution for production thanks to the multi laser technology. Two lasers that work simultaneously to decrease the manufacturing time, increasing productivity.

Laser Metal Deposition



Laserdyne 430

The smaller size product of Prima Additive for Laser Metal Deposition (LMD). A flexible laser processing platform specially tailored for Additive Manufacturing applications. R&D activities, small part fabrication and rework activities can be easily performed by Laserdyne 430.

Laserdyne 795

A large-scale machine for repairing, reworking, adding features, coating deposition and part fabrication activities. Extra capabilities in terms of automation, powder deposition and process efficiency make the machine an ideal solution to several industrial sectors.



Laser Next 2141

The large scale multi-purpose solution with advanced technology for different applications (Laser Metal Deposition, 3D cutting, 2D cutting and welding).



Laser Metal Deposition Kit

MODULAR DED KIT

FOR REPAIR/3D APPLICATION

The LMD kit includes all the equipment needed for direct energy deposition applications: an innovative and multipurpose laser head, a highly efficient laser source and a flexible and reliable powder feeder. Prima Additive can offer the main components together or separately, allowing the retrofit of any laser machine or the integration on any type of robotic arm and structure.

MODULAR

Modular design allows the laser head to be mounted in different configurations (straight, 90 degrees, with or without monitoring system).

Easy installation on any type of machinery and easy maintenance of all the components of the LMD kit.

FLEXIBLE

The kit can be integrated with any laser machine and robotic system. Possibility to satisfy different requests related to laser power, laser head configuration, process monitoring system, type and capacity of the powder.

EFFICIENT

The new nozzle design allows better powder use, while the fiber laser designed to offer high performance and efficiency guarantees low maintenance operations.

PROFITABLE

Low cost of ownership along with a wide network of suppliers for materials and consumables.

Let's grow together

We believe in continuous dialogue with our customers: that's why we are present in more than 80 countries with our Technology Centers, a fully operative local branch, a distributor or a group of service people.

Come visit us in our new Advanced Laser Center in Turin: we are available to evaluate and analyze your case study and guide you into additive manufacturing world, developing your application, your materials, indicating how to optimize the product design and what is the best solution for you and your business.

It's good to grow together, towards a new, smart, sustainable manufacturing.

For more information visit www.primaadditive.com
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