### Smart Devices for Additive Manufacturing

# Innovation is looking beyond.





### **40 YEARS OF INNOVATION**



A long history means a deep experience across different technologies and different industrial applications.





Almost 40 years of innovations

FARE IMPRESA CON I RISULTATI DELLA RICERCA

YEARS OF INNOVATION

### OUR WORLDWIDE COVERAGE

#### Next to you



The fighter think lank 41 The fighter think lank 41 PARE IMPRESA, CONTRACTOR OF A RECERCA



### **PRODUCT PORTFOLIO**



#### LASER AND SHEET METAL MACHINERY

#### **ELECTRONICS AND LASER TECHNOLOGIES**







2D and 3D laser machines for cutting, welding and drilling

**THE PRESS** 



Servo-electric and hydraulic press brakes



Servo-electric turret punch presses

THE BEND



Servo-electric panel benders and bending centers





systems punch+shear

#### **THE SYSTEM**



FMC & FMS to automate your production flow







#### **CONVERGENT**

Fiber and CO<sub>2</sub> Laser sources



**OSAI** Motion Control and CNC's





Integrated

systems

**THE COMBI** 

r SGes

### WIDE RANGE OF APPLICATIONS



Automotive Aerospace Energy Electronics Medical Agricultural & Construction Consumer goods General manufacturing FOCUS AUTOMOTIVE





### BACKGROUND

Continuous innovation in photonics for manufacturing and mechatronics for laser based manufacturing

- Photonics and lasers for material processing
- Mechatronics and automation
- CNC and redundant axis control systems





### LASERS FOR MATERIAL PROCESSING OUR VOCATION





### Prima Additive EU projects

#### European Additive Manufacturing Projects

Main Research Centers

### **Main Industrial Partners**









### **Reasearch and Innovation focus**

### Smart Additive Manufacturing:

high performance
mechatronic solutions
Flexibility: high level of
automation
AM process monitoring
loT connector
Laser sources custom
features
Materials



#### **PROCESS MONITORING**

Compact imaging system for RT closed-loop control to ensure zero-failure in laser-based manufacturing.

#### MODULAR AND FLEXIBLE SOLUTIONS

'Plug and produce' modular approach and a set of 4 elementary modules specifically designed for AM modules which can be integrated on new or existing concepts of machines and robots to realize different processes.

#### MATERIALS

To deliver a major step-change in the use of  $\gamma$ -TiAl by developing and experimentally validating new methods, tools and models for zero-defect manufacturing

#### SPECIFIC APPLICATIONS

Combination of process and machine (small and large parts) dedicated to the aerospace and medtech applications



Almost 40 years of innovations



Multimodal spectrAl control of laSer processing with cognitivE abilities

# 4D HYBRID

Novel ALL-IN-ONE machines, robots and systems for affordable, worldwide and lifetime Distributed 3D hybrid manufacturing and repair operations



Innovative manufacturing for GAMMA Titanium Aluminide

### SVMBIONICA

AM machine fos small parts and DED to work on medtech applications

### AMATHO

To design, assess and manufacture a novel tiltrotor drive system housing exploiting the features of AM techniques

# **INNOVATION PROJECTS** 4D HYBRID Control of Laser Modules Integration SVMBIONICA M **AMATHO**

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### **Smart Additive** Manufacturing:

-high performance mechatronic solutions -Flexibility: high level of automation -AM process monitoring -loT connector -Laser sources custom features -Materials

### THE BOREALIS EXPERIENCE

Borealis our first additive approach: EU H2020 funded project 3 A energy class flexible machine for the new additive and subtractive manufacturing on next generation of complex 3D metal parts





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HORIZON 2020 SUCCESS STORY 2018



### WHAT WE LEARNED FROM BOREALIS

The Additive Manufacturing machine is just the top of the iceberg!





### PRIMA ADDITIVE APPROACH: ADDITIVE IS COMPETITIVE

Additive Manufacturing turnkey solutions: full range of metallic laser additive manufacturing technologies full application support and global services





### TECHNOLOGIES INSPIRED BY CIRCULAR ECONOMY

Circular economy in terms of:

- design strategy for exending product lifecyle
- optimized process to use resources more efficently
- remanufacturing to return a used product to its original performances
- recycling of powder to close the material loop





### PRIMA ADDITIVE VISION – Supporting the additive industry





# APPLICATION CENTER

#### Prima Additive & Clients Meetings

STEP 1

Always next to the customer Prima Additive application engineers will guide you through a concrete approach to evaluate your case, reengineer your products, realise your prototypes and transfer to you the "know how" created.

Case Analysis	Process and material evaluation	Realization of the prototype in Prima Additive machines	Evaluation and characterization of the parts	Reporting & "know how"
Initial estimation on key	Experimentation for obtaining process parameters Realization of samples with the required material	Select appropriate process Verification o and machine parameters Obtain mecha Fabrication of the prototype thermal prop	Verification of quality targets	Customer manual (process details and application) Optimization of process techniques
Printing strategy simulations			Obtain mechanical and thermal properties	
Feasibility and sustainability		Repeatability of the printing procedure	Guidance to post-process phases	
report				Advanced training
	0			

STEP 3



STEP 2

Almost 40 years of innovations

STEP 4

STEP 5

# PRODUCTS



# DIRECT ENERGY DEPOSITION RANGE



#### Laserdyne 430

A compact and precise laser metal deposition platform with high build rate suitable for 3D fabrication, reworking and R&D applications.

Fiber I-6 kW Working volume: 585x400x500 mm

Deposition rate: Max 50 cm<sup>3</sup>/h



#### Laserdyne 795

Suitable to handle large-scale components with fast and qualitative results. Flexible to accommodate different options for machine and process set up depending on application.

Fiber I-6 kW Working volume: I,000xI,000xI,000 mm Deposition rate: Max 70 cm³/h



#### Laser Next 2141

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

Fiber I-6 kW Working volume: 4,140x2,100x1,020 mm Deposition rate: Max 70 cm<sup>3</sup>/h



### POWDER BED



# **PRINT SHARP 250: POWDER BED MACHINE**

#### **PRECISE PRINTING OF COMPLEX GEOMETRIES**

Print Sharp 250 is a competitive solution to guarantee reliability and guality of your printed components in your chosen materials. Equipped with easy to use control software, a fiber laser, a recirculating system and a modular scanning system the machine can meet the customer specific needs



#### **FLEXIBLE**

Suitable for a wide range of materials including reflective metals. An "open" system for process and machine parameter configuration.



#### RELIABLE

Able to work continuously up to 200 consecutive hours ensuring the repeatability and the quality of the process.



#### PROFITABLE

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



#### **USER FRIENDLY**

Simple operating process, intuitive software interface as well as easy maintenance and set up activities.





# PRIMA ADDITIVE/MATERIALISE PARTNERSHIP





### PRIMA ADDITIVE ACADEMY





### **INNOVATION STRATEGY:** laser based high performance





### **NEW BUILDING**

### Tech Demo Center on Laser Based Manufacturing



- Training and awareness on Industry 4.0. Prima Power academy
- Live demo on additive manufacturing and best practices for Industry 4.0
- Additive manufacturing Advisory Center

- Accelerator of new innovative projects
- Support and integration on new Industry 4.0 technologies (sensors and IT)

