Co-funded by
the European Union

3DoP Presentation Ecosystem Kick-off Event

WP2: Efficient and sustainable 3D metal printing

3D printing
Optimised
Production

Efficient and sustainable 3D metal printing

Increase productivity & drastically lower production costs of 3D metal printing

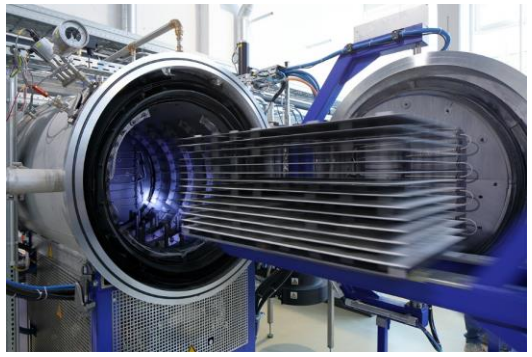
Make metal 3DP the obvious design and production choice: Technically & Economically

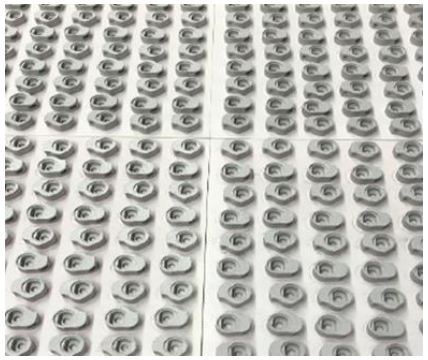
Partners:

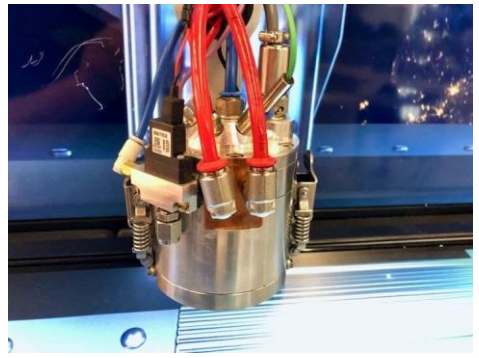
Challenge

- Technical benefits of 3D printing often do not overcome economical aspect
  - Therefore, traditional manufacturing techniques remains conventional choice
  - Industrialization phase of 3D printing; more focus on lowering costs

- Innovation steps in WP require disruptive technology
- Development of completely new printing materials, equipment and processes
- Multiple printing techniques in the WP enlarges the impact on a wide variety of products & industries





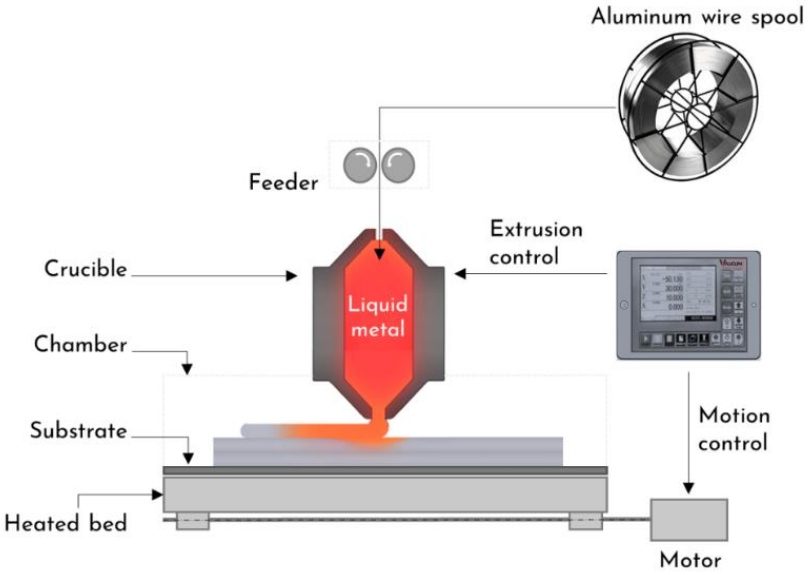


Solution: innovation in technical core of 3DP

- Innovation in printing techniques and materials for affordable (mass) production:
  - Metal Injection molding (metal granulate 3DP)
  - ColdMetalFusion
  - Molten Metal Deposition

- Innovation in printing techniques and materials lowering repair costs of high value industrial parts:
  - Innovation in printing
    - Directed Energy Deposition (DED)
    - Wire Arc Additive Manufacturing (WAAM)
  - Innovation in materials
    - Creation and use of recycled metal powder

- Using showcases to prove usability and applicability of new technique



Consortium overview

New techniques/materials

opiliones 3D

New low-cost metal 3DP using new MIM granulate method

mmb

Mechanical engineering specialist for automation technology. Automates Opiliones 3DP system

headmade materials

The sinter based ColdMetalFusion-technology takes serial production of metal parts to a new level

element22

Manufacturer of titanium and metal components, service provider and specialist in debinding and sintering

Use case

addcat

Innovative combination of 3D metal printing and catalytic oxidation for air purification

VALCUN

The game changer in molten aluminum AM for sustainable serial production

Repair and maintenance

FENICE

We provide metal powder made from 100% recycled source.

TRENTINOSVILUPPO
IMPRESA INNOVAZIONE MARKETING TERRITORIALE

[Pro]M
MECHATRONICS PROTOTYPING FACILITY

ProM Facility (TS) has a technological infrastructure that combines 3DP and CNC machining with advanced physical and virtual prototyping systems, testing and pre-qualification.

Guaranteed

Repairing/rebuilding large (meter-sized) slow-moving components beyond conventional techniques (WAAM)

Use case

valland

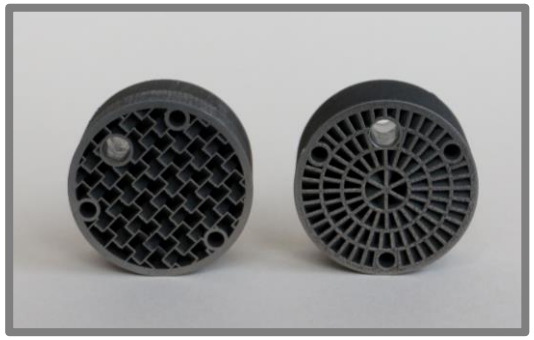
Manufacturer of high quality and tailor-made ball-, gate- and check valves.

Possibilities for engagement

- Developments lead to new 3DP techniques useable by companies

- Reach out to use if you want:
  - To make use of the powerful possibilities of 3D printing, improve performance of your parts and systems without increasing costs
  - Save cost by repairing your high value industrial parts
  - Recycle scrap parts into new material

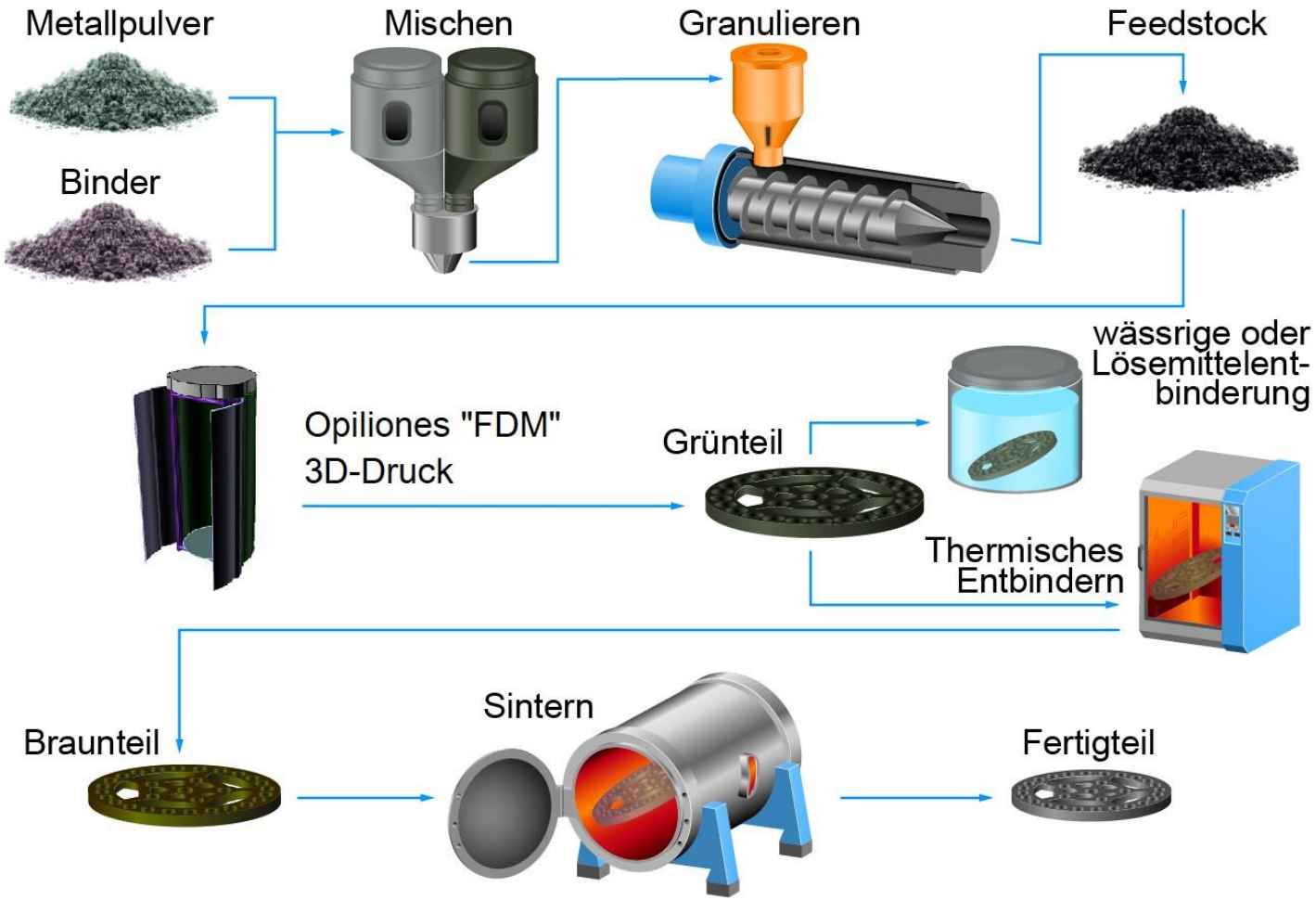
- Use cases and testing applications are more than welcome



WP2 partners in 3D metal printing

MakeitMetal by Opiliones 3D

Introducing a FDM metal 3D-printing concept, using the standard MIM-feedstock.



opiliones 3D

MakeitMetal

Make it easy

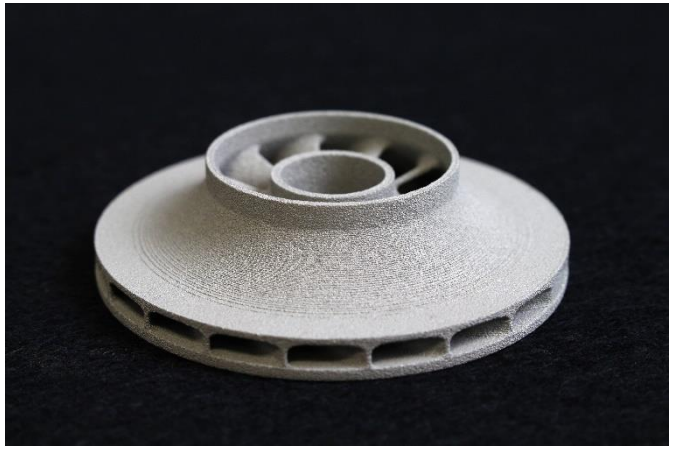
Introducing Ti48Al2Cr2Nb for ColdMetalFusion!

Exciting News: Introducing Ti48Al2Cr2Nb for ColdMetalFusion!

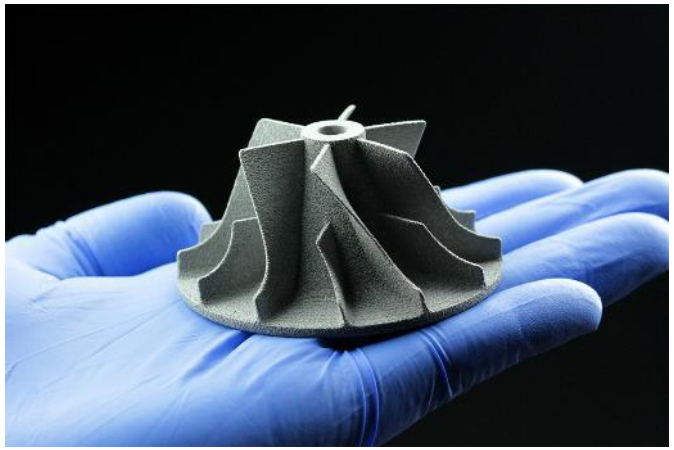
Key highlights of TiAl4822 alloy:

- Lightweight
- High-temperature strength
- Excellent oxidation and corrosion resistance
- Low density for fuel efficiency
- Creep resistance for structural integrity
- Ideal for advanced aerospace and innovative manufacturing

Discover the future of additive manufacturing with us!
Contact us for more info.



TiAl4822



Ti6Al4V

visit us at booth #12 E12

visit us at booth #11.1 D58

Turning metal scrap into the sustainable future of Additive Manufacturing

Disqualified powder from 3D printing

Scrap from the supply chain

Obsolete parts from inventory

Decommissioned industry components

Metal Scrap

Sustainable feedstock by f3nice

PRODUCT CERTIFICATE

Printed Parts

Original Equipment Manufacturer (OEM)

3rd Party Printer Service

Digital Inventory solution

f3nice Ecosystem

End Users

f3nice.com

Guaranteed
An Innovative Scale-Up

Contact Details:
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General Manager
+32 473 30 19 28
Joachim.antonissen@guaranteed.be

- A spin-off company created by OCAS, Finindus and ArcelorMittal Belgium
- Creating value for our customers by repairing & refurbishing large metal parts to allow lifetime extension or downtime reduction of their industrial equipment
- Born from Innovation to guarantee first time right
- Raised in Industry to guarantee one-stop-shop reliability

Steel · Mining · Maritime · Oil & Gas

Transport · Energy · Aero · Chemicals

- Worldwide Unique XXL metal 3D printing & repair (WAAM)
  - Size: 10 x 6 x 5 meters
  - Weight: up to 20 tons
- One stop shop ➔ Guaranteed lead time
- Software & Monitoring ➔ Guaranteed properties
- Cost efficient, Safe & Certified Sustainable

➢ **Main activities in 3DoP EU funded project:**

- Damaged part portfolio construction and repair or recycle strategy identification;
- Repair of damaged parts and recycling of unrepairable parts to AM powder feedstock;
- Validation, repaired parts testing and certification of results.

Experiment objective:

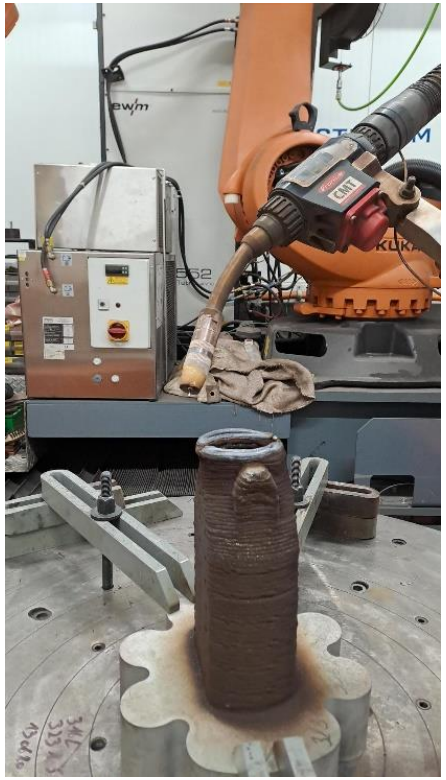
- Disrupt hydrogen industry supply chain towards cost - time efficient and sustainable logistic process innovating valves components with Wire Arc Additive Manufacturing (WAAM).

Technical results:

- Customization of the component;
- Topological optimization;
- Realization of complex geometries close to the final dimensions;
- No need to design a dedicated mold as required in casting techniques;
- Possibility of reusing the component (Design for Recycling/Circularity approach).

Conventional Manufacturing 3D model

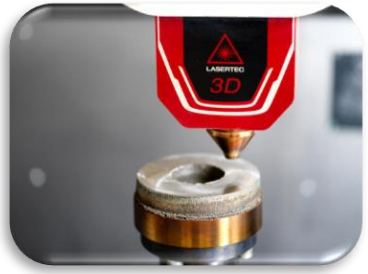
WAAM Optimized 3D model

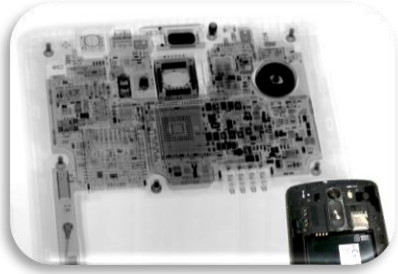


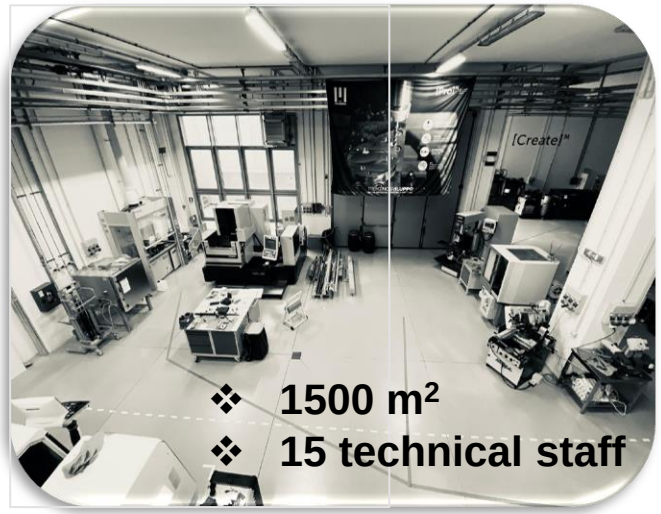
[Pro]M: Prototyping Facility for Mechatronics

> 7 M€ EU-ESRF fund for Infrastructure:

- ❖ AM: SLM, DLD, SLA, M-Jet Fusion, DED
- ❖ Milling, turning, laser cutting, EDM
- ❖ X-ray CT, CMM, 3D laser scanning
- ❖ Mechanical testing, climate chamber
- ❖ PCB design & prototyping
- ❖ HPC, GPU HPC, cloud







- ❖ **1500 m²**
- ❖ **15 technical staff**

3DOP WP2 Activities:

- ❖ 3D shape analysis and repairing of damaged parts with DED combined with CNC
- ❖ Non-destructive set of tests to evaluate the reparation quality process
- ❖ 3D scanning, X-ray tomography and metrology
- ❖ Certification of the results at industrial standards

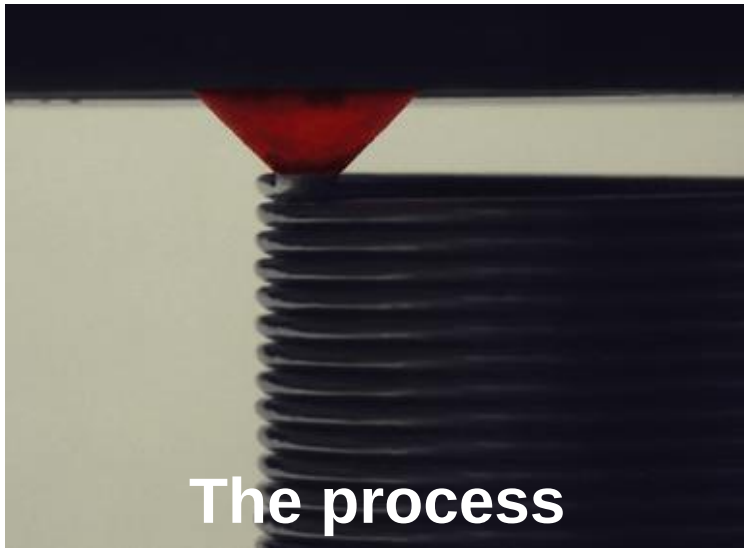
POLO MECCATRONICA

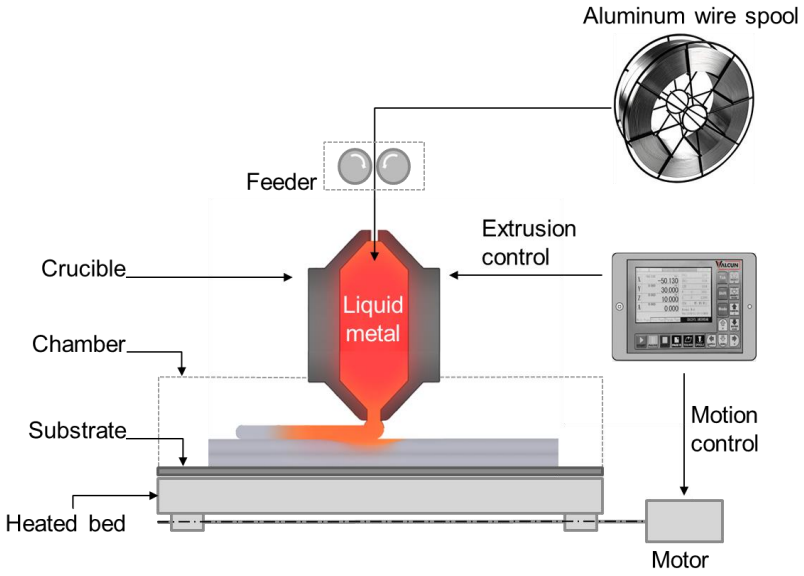
[Pro]M MECHATRONICS PROTOTYPING FACILITY

TRENTINOSVILUPPO IMPRESA INNOVAZIONE MARKETING TERRITORIALE

www promfacility.eu

Aluminum AM for serial production





Objectives

Demonstration of mass production of aluminium additive manufactured parts with AddCat's catalytic reactors as business case

Approach

Track 1

Development of a printer that allows industrial production

Meet the real machine booth 12.0 E32

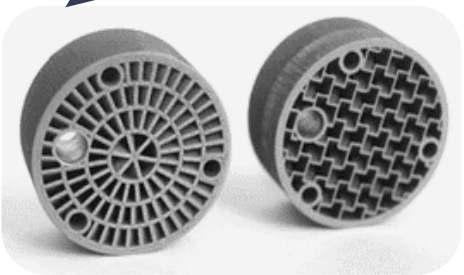
Track 2

Demonstration of printing industrial application (Addcat)

Progress to date

addcat

Expectation by Q4 2024

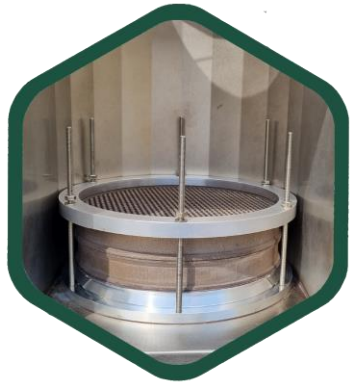


Next generation industrial air purification

3DP Catalysis

addcat

- **3D metal printing:** free-form design for optimal performance.
- **Energy efficient:** excellent thermal properties.
- **Easy maintenance:** modular, adaptable and compact reactors.



- **Performant:** High air purification rates (>95%).
- **Best in class catalysts:** Low oxidation temperature.
- **Cost efficient:** Long lifetime and optimal operational temperature.

Visit us

www.3dop.eu

3D printing
Optimised
Production

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