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Centre Tecnològic de Catalunya

Jornada Hispano-Alemana sobre Fabricación Aditiva y Movilidad

"innovant amb les empreses"

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Eurecat, Capacidades y Tecnología Diferencial en Fabricación Additiva

"innovant amb les empreses"

What is Eurecat?

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1
The main technology center in Catalonia and one of the largest private research and technology organizations in southern Europe.

2
We work together with companies of all sizes and sectors in the different phases of R&D&I.

3
We accelerate innovation, reduce the cost of scientific and technological infrastructure, reduce risks and provide specialized knowledge tailored to business needs.

4
Our multi-sectoral and multi-technological approach enables us to tackle complex challenges and meet major challenges in areas such as technology, the environment and energy.

5
We have highly advanced infrastructures and laboratories in water technology, medical devices, personalized nutrition, integrated electronics, artificial intelligence in industrial environments, lightweight materials and cognitive robotics, among other fields.

6
Our capillarity allows us to be close to our clients: with offices all over Catalonia and presence in Madrid, Malaga and Chile.

Applied research, technological development and innovation with market impact

Quite a challenge! …
which opens great opportunities

Interdisciplinary integration

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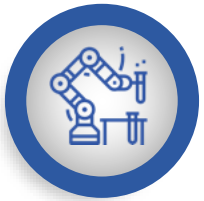

Industrial Area

1. Advanced materials and new manufacturing processes
2. Functional printing and embedded devices
3. Collaborative and cognitive robotics
4. Functional textiles
5. Chemicals
6. Product innovation and multiphysics simulation

Digital Area

1. Sensor systems and IoT
2. Quantum computing
3. Data science and analytics
4. Artificial intelligence
5. Cybersecurity
6. Multimedia technologies
7. Digital Health

Biotechnology Area

1. Nutrition and health
2. Omic sciences
3. Biotechnology

Sustainability Area

1. Water
2. Soil
3. Air
4. Energy
5. Waste
6. Environmental impact
7. Batteries
8. Climate change

Our standout value:

Our interdisciplinary capabilities enable us to address complex challenges.

Differential offer

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Together with the company we create and/or improve products, services and processes, from the idea to industrialization.

Applied research and technological development

- R&D&I units set up with the company
- R&D projects
- Minimum viable product

Advanced technology services

- Scientific and technological assessment
- Audits
- Testing and analysis
- Proofs of concept
- Approvals

Technology consultancy

- Innovation strategy and management
- Technology watch
- Trend analysis and feasibility studies
- Project management and funding

Specialised training

- Masters and postgraduate programmes
- Bespoke corporate training
- Continuous learning
- Soft and hard skills training

Value building

- Industrial and intellectual property protection and transfer
- Evaluation and support in building value from technological assets
- Advice and participation in setting up NTBFs
- Technological asset due diligence

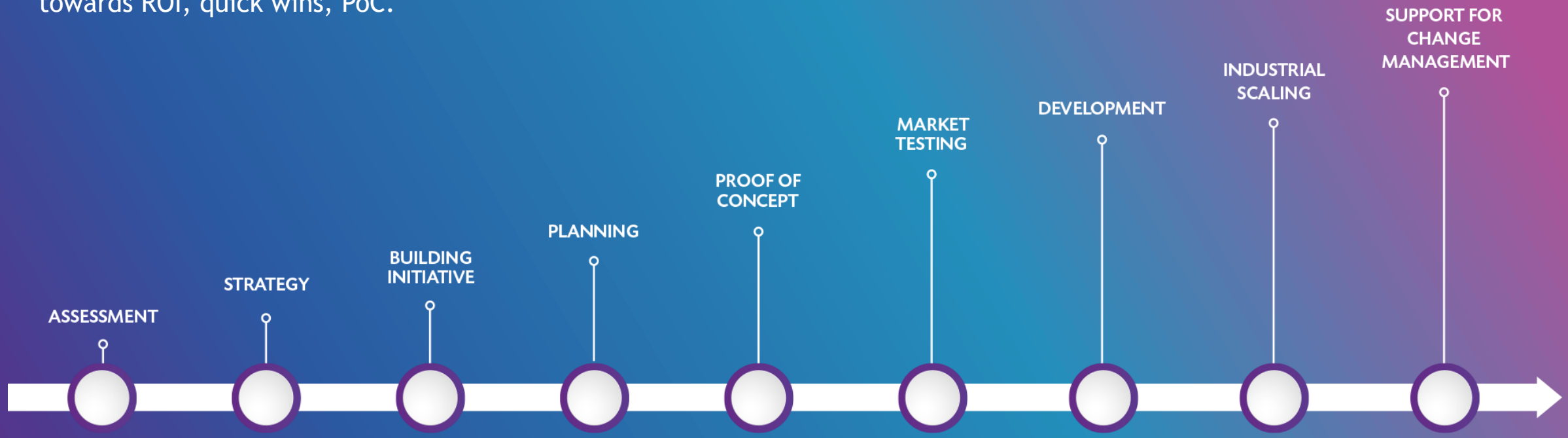
Knowledge sharing

- Promotion actions
- Knowledge sharing and transfer actions

Results-Oriented

We mentor businesses from innovation design to pre-commercial scaling.

We use agile methodologies to monitor projects. Targeted towards ROI, quick wins, PoC.



Alliances and territorial presence

Proximity and trust

We promote alliances with universities and research centers to bring knowledge sources closer to companies. We are committed to **being close to our clients and their challenges.**

Madrid
Barcelona
Malaga

1
Eurecat Latam Foundation Office

Eurecat 2024 in figures

Sustained growth since 2015, to increase the competitiveness of Catalan companies and the welfare of society through R&D&I.

71%
Of our activity is with
SMEs

69M€ Income in 2024

2.000 Client companies

230 Patents

Eurecat's differential value according to our clients:

- ✓ Expertise
- ✓ Multidisciplinarity
- ✓ Quality
- ✓ Proximity
- ✓ Impact

Customer satisfaction index: **8,65 /10**

We help companies to discover new opportunities and participate in the creation and improvement of products, services, processes and business models with an impact on their competitiveness and social welfare.

Leaders in attracting competitive R&D&I funds:

Scale and impact

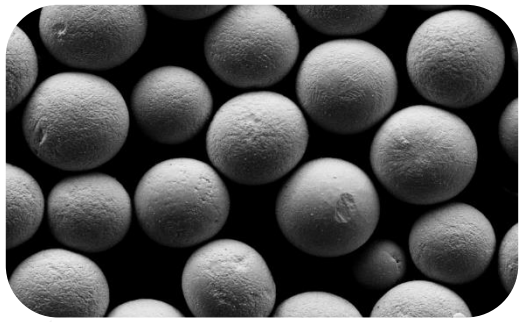
Leaders in attracting competitive R&D&I funds:

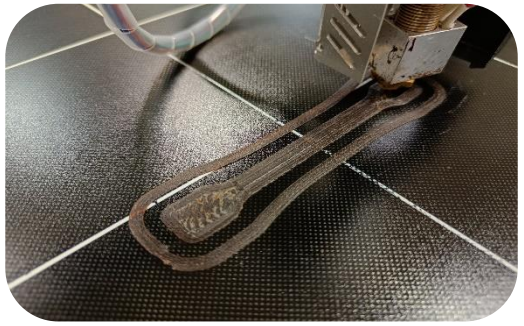
- 25.4 MEUR in 2024 in competitive funds
- First Catalan private organization in Net EU Contribution obtained from Horizon 2020 and fourth in Spain.
- Eurecat is the research and technology centre with the most participations in Digital Innovation Hubs funded by the H2020 programme in Spain.
- Spain is the 2nd country with the highest highest EU funds obtained in water, circular economy and climate. Eurecat is the 2nd entity at national level.

2nd
Technology Centre of the Spanish State in return of H2020

+ 200	H2020 and Horizon Europe projects (2014-2024)
+ 40	Coordinated H2020 and Horizon Europe projects (2014-2024)
+ 150	Spanish companies in projects with Eurecat participation in 2024
+ 250	Large consortium R+D+I projects
+100	MEUR of return in H2020 and Horizon Europe (2014-2024)
3.432	Citations of our scientific publications by company researchers

Additive Manufacturing Capabilities



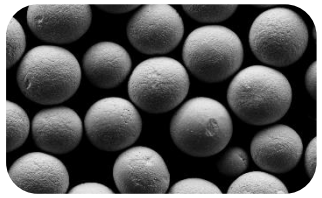


MATERIAL PROCESS PRODUCT

ACADEMIC TRAINING

STRATEGY AND TECHNOLOGY CONSULTANCY

Additive Manufacturing Capabilities

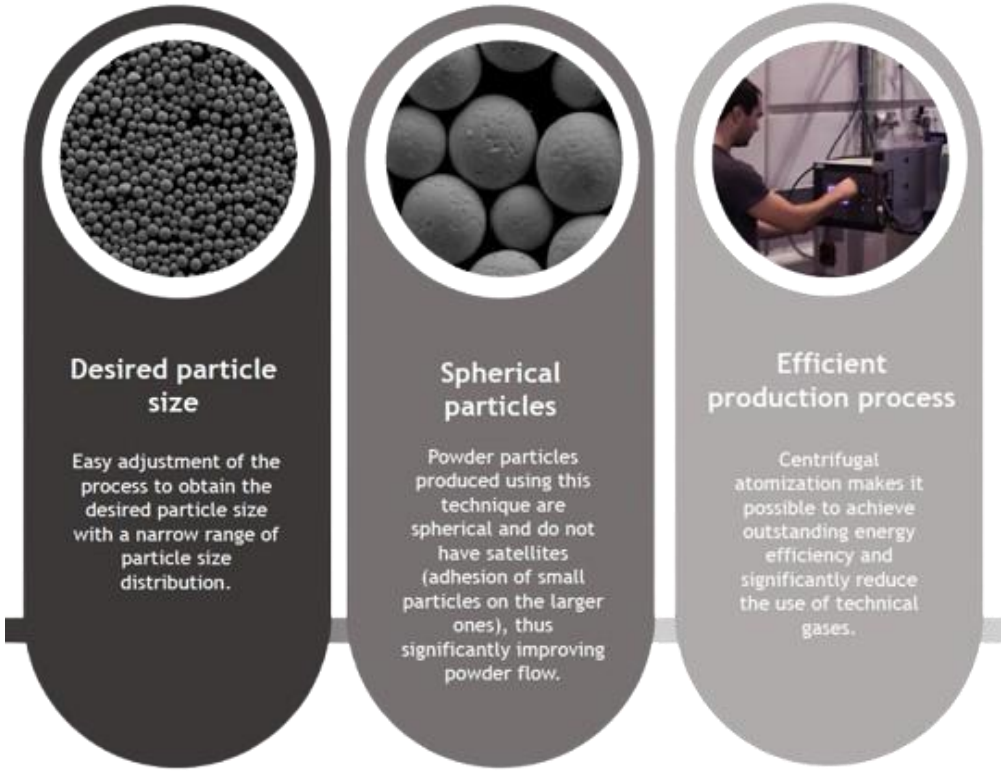


Materials: Metallic Powder Manufacturing

Small quantities of high added value powder with a precise chemical composition and spherical morphology.

Service delivery methodology

1. **Powder specifications.** Alloy and particle size range selection (150 µm and 20 µm)
2. Feasibility analysis for powder manufacturing and fine-tuning the production process.
3. **Batch production for** customer validation (500 g to 2 kg batch)



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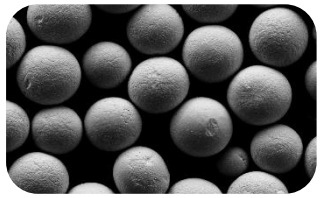
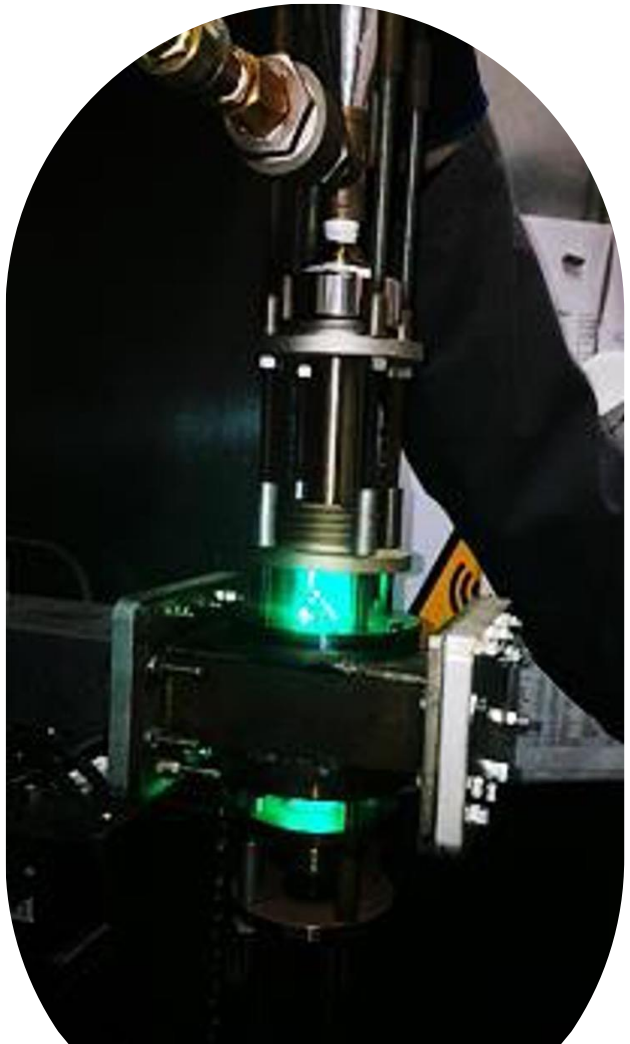
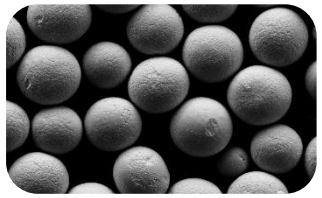


Materials: Metallic Powder Manufacturing



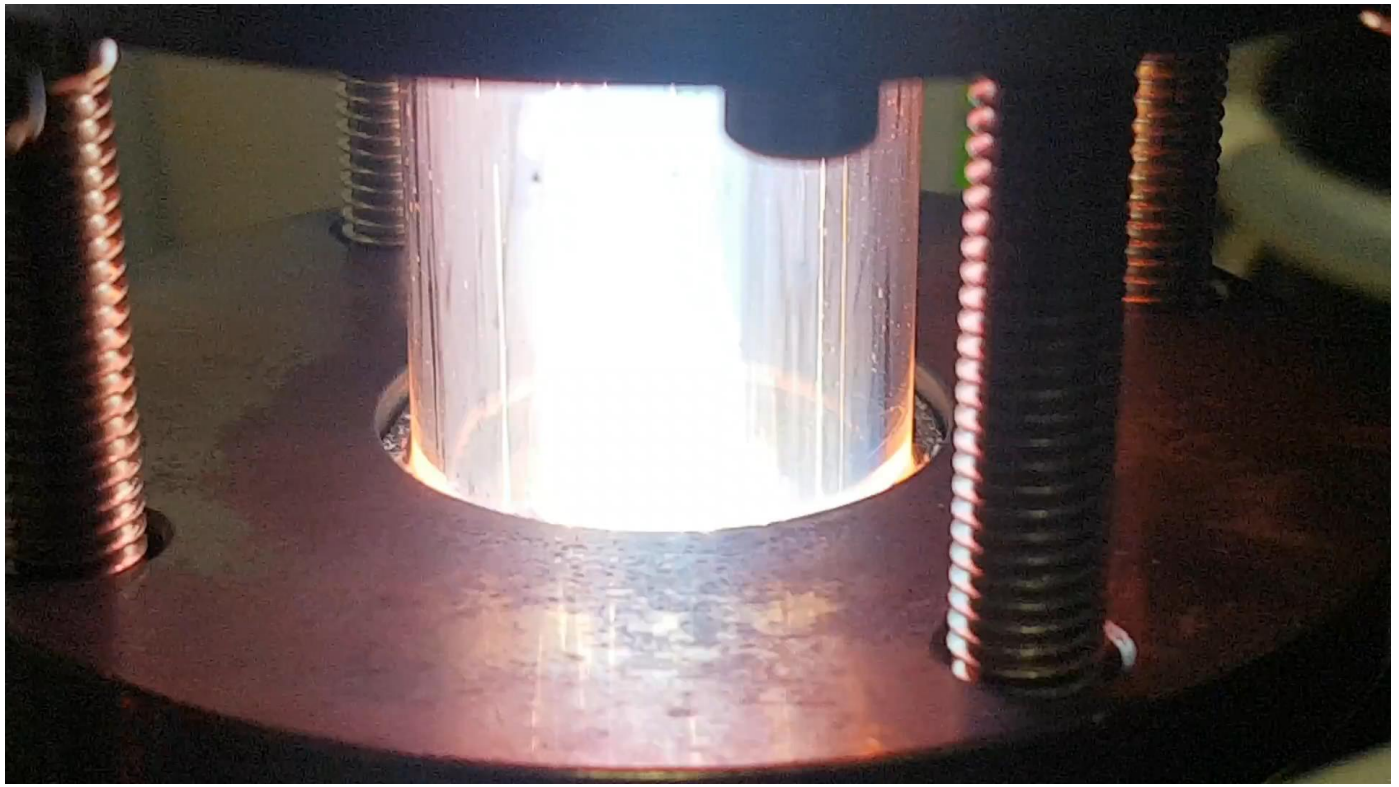
- **Microwave-induced plasma (MIP)** requalifies high-value scrap or waste powders into powder for Additive Manufacturing (AM).
- Homogeneous spheric particles at a high production rate from polygonal metallic and ceramic particles coming from scrap or waste.
- Materials such as titanium, aluminium, copper, stainless steel and tungsten carbide can be reintroduced as feedstock for AM processes such as LPBF.

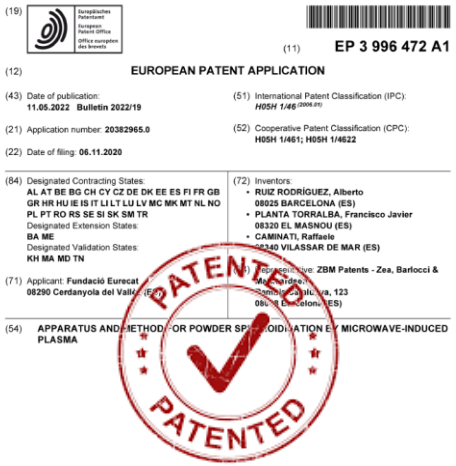
Additive Manufacturing Capabilities



Materials: Metallic Powder Manufacturing

Microwave-induced plasma (MIP)





(19) Europäisches Patentamt European Patent Office Office européen des brevets

(11) EP 3 996 472 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication: 11.05.2022 Bulletin 2022/19

(51) International Patent Classification (IPC): H05H 1/46 (2006.01)

(21) Application number: 20382965.0

(52) Cooperative Patent Classification (CPC): H05H 1/461; H05H 1/4622

(22) Date of filing: 06.11.2020

(84) Designated Contracting States: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States: BA ME
Designated Validation States: KH MA MD TN

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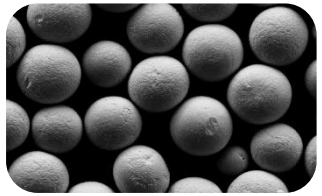
(54) APPARATUS AND METHOD FOR POWDER SPHEROIDIZATION BY MICROWAVE-INDUCED PLASMA

PATENTED PATENTED



Materials: Tailored Polymer Solutions for AM

- Custom polymer formulation for AM
- Material compounding and extrusion
- Recycled polymer development
- Fiber-reinforced polymer systems
- Rheology and processability optimization
- Material characterization for processing

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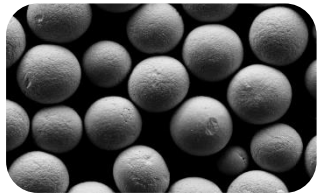
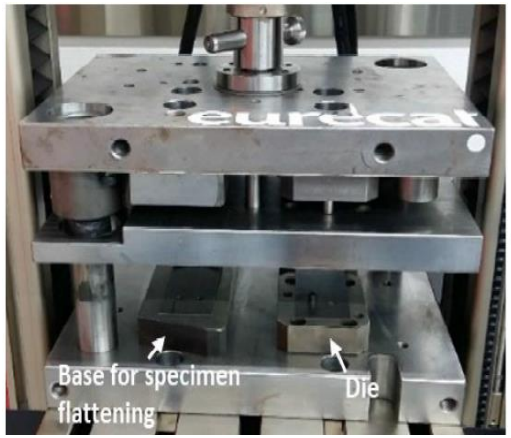
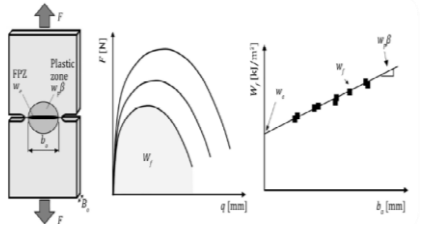


Materials: Characterization and testing

Fast-Crack (TEF): Fast fracture toughness test





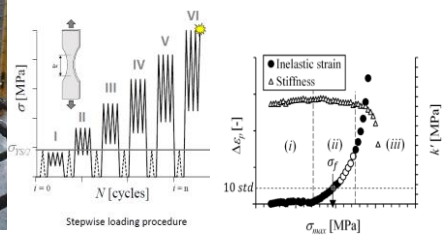
Patented Tool: Generates notches on thin metal sheets.

Principle: Energy required to propagate a crack determines the fracture toughness.

Better prediction and optimization of material performance in structural applications.

	Traditional method	Fast-Crack
Time	4-5 days	5-10 minutes
Precision	Moderate	Very high

Fast-Fatigue (TAF): Accelerated Fatigue Test



Principle: Apply traction forces in cycle blocks with incrementally increasing amplitude.

Goal: Quantity fatigue resistance by a calculation method developed at Eurecat

Faster and more efficient fatigue testing.

	Traditional method	Fast-Fatigue
Time	5-10 days	8 hours
Specimens	13	3

Additive Manufacturing Capabilities

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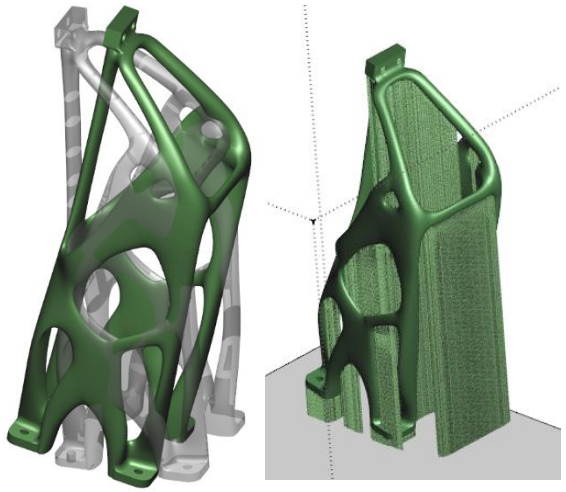
Product: Design for Additive Manufacturing (DfAM)

- Generative Design
- Topology optimization
- Computational Design based on data
- Multi-scale structures (Lattices)
- Multiphysics simulation (FEM/CFD)
- AM process simulation: Material Anisotropy, Printing Orientation, supports generation and powder extraction.



Optimization of the orientation and supports

SLM process simulation

Moldex3D TOSCA esi ProCAST
ANSYS INSPIRE solidThinking SIMULIA ABAQUS CATIA
Altair HyperWorks SOLIDWORKS grasshopper GENERATIVE MODELING FOR RHINO

Additive Manufacturing Capabilities

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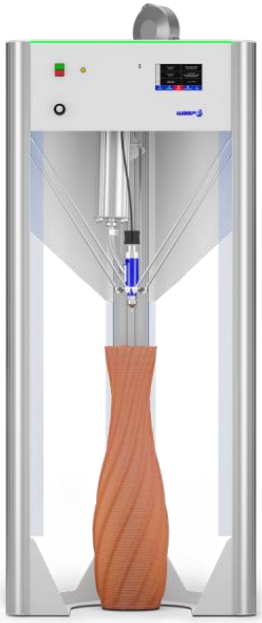
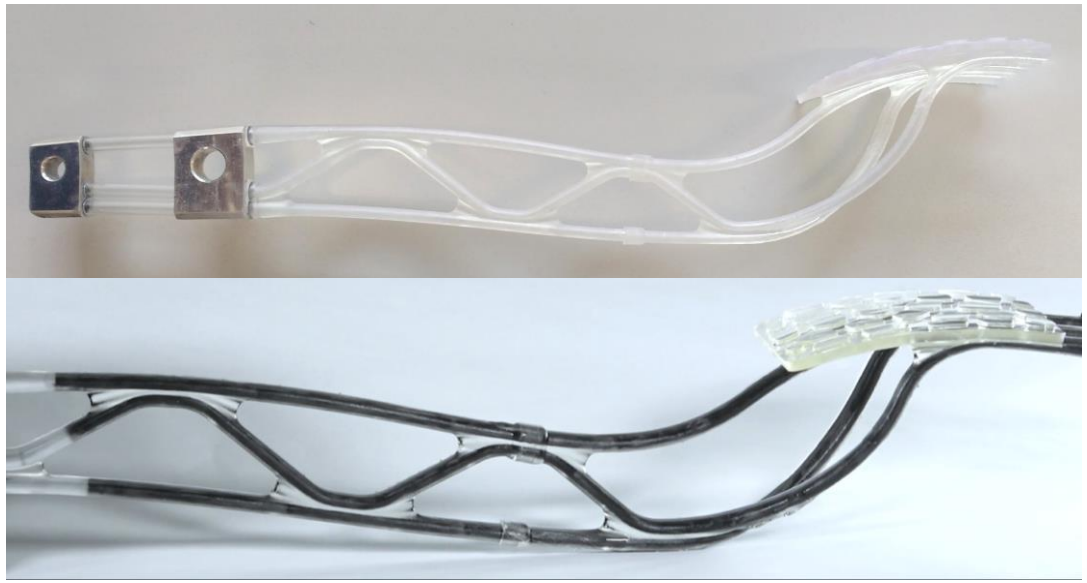
Process: AM Technologies



Additive Manufacturing Capabilities

Process: Technology Development

- UDM (Ultrasonic Deposition Moulding)
- Silicone Additive Manufacturing Technology
- ESID Technology for continuous textile printing
- ST3NT: Additive Manufacturing Technology for tubular prothesis
- CFIP: Continuous Fiber Injection Process
- MIP: Microwave Induced Plasma for powder requalification
- Hybrid technology for 3D printing & part machining



Eurecat's AM Collaboration Ecosystem

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Metal Digital Manufacturing

Joint Research Unit powered by
RMIT UNIVERSITY eurecat

3DML

3DIGITAL MANUFACTURING LAB
eurecat | Universitat de Girona

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