EMPOWERMET
Electric & Mechanical Power for Metal Manufacturing

Circular titanium for Europe

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A new value chain based on secondary resources

Co-funded by the European Union

Why Europe needs circular titanium



Supply vulnerability

Dependence on imports exposes European industry to supply risks.

High energy demand

Conventional production and remelting require substantial energy.

Material losses

Valuable swarf and end-of-life titanium remain underused.

The opportunity: retain titanium value within a European circular supply chain.

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Project objectives



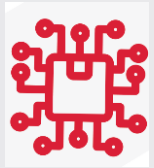
Recycle and scale

Scale FAST and CONFORM™ routes for titanium swarf and end-of-life parts.



Build and demonstrate

Integrate forming, waDED and local heat treatment in three industrial use cases.



Trace and verify

Deploy a Digital Product Passport and benchmark environmental and economic performance.



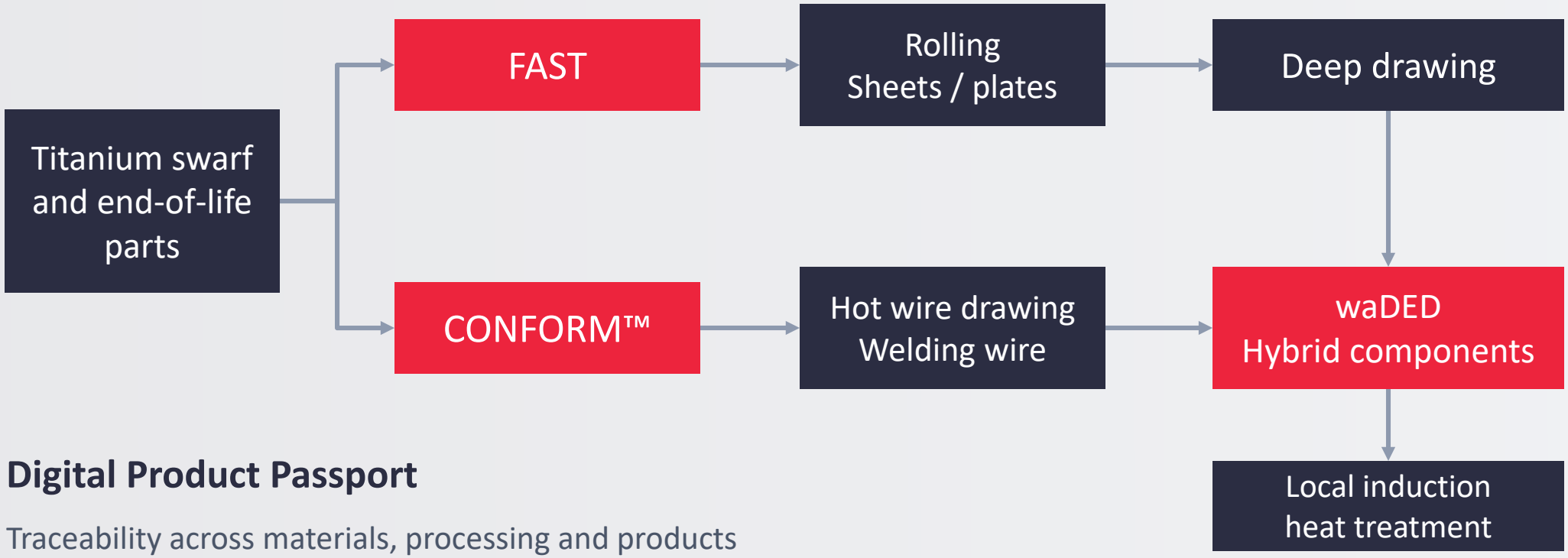
Enable adoption

Develop circular logistics, skills, standards and exploitation pathways.

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The process concept

Solid-state recycling connects two material routes in one hybrid manufacturing chain



Digital Product Passport

Traceability across materials, processing and products

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Three industrial demonstrators

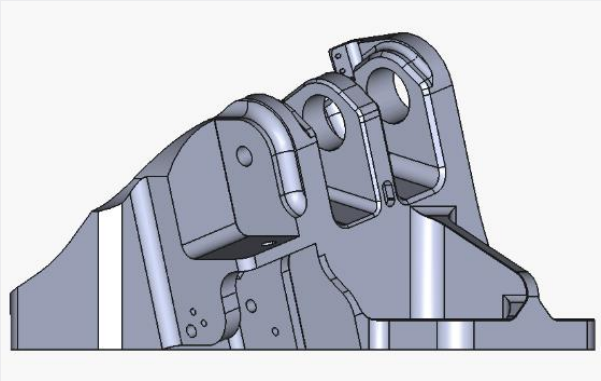
Validation target: TRL7, using recycled Ti-64 and high-performance Ti-5553



Application reference

Fire protective helmet

Deep-drawn titanium sheet with local waDED features.



Concept geometry

Space Rider landing gear structures

FAST substrate with waDED for structural components.



Application icon

Aeroplane service port

Formed sheet with local reinforcements and features.

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15 partners
7 European countries

Research, technology and industry
Coordinator: AIT LKR (Austria)

AIT Austrian Institute of Technology
University of Sheffield
FCT Systeme GmbH
COMTES FHT
camex spol. s r.o.
KIESELSTEIN wire solutions
voestalpine ONE STEP AHEAD.
böhler welding by voestalpine
inovaLab
Frentech Aerospace member of Czech Aerospace Systems
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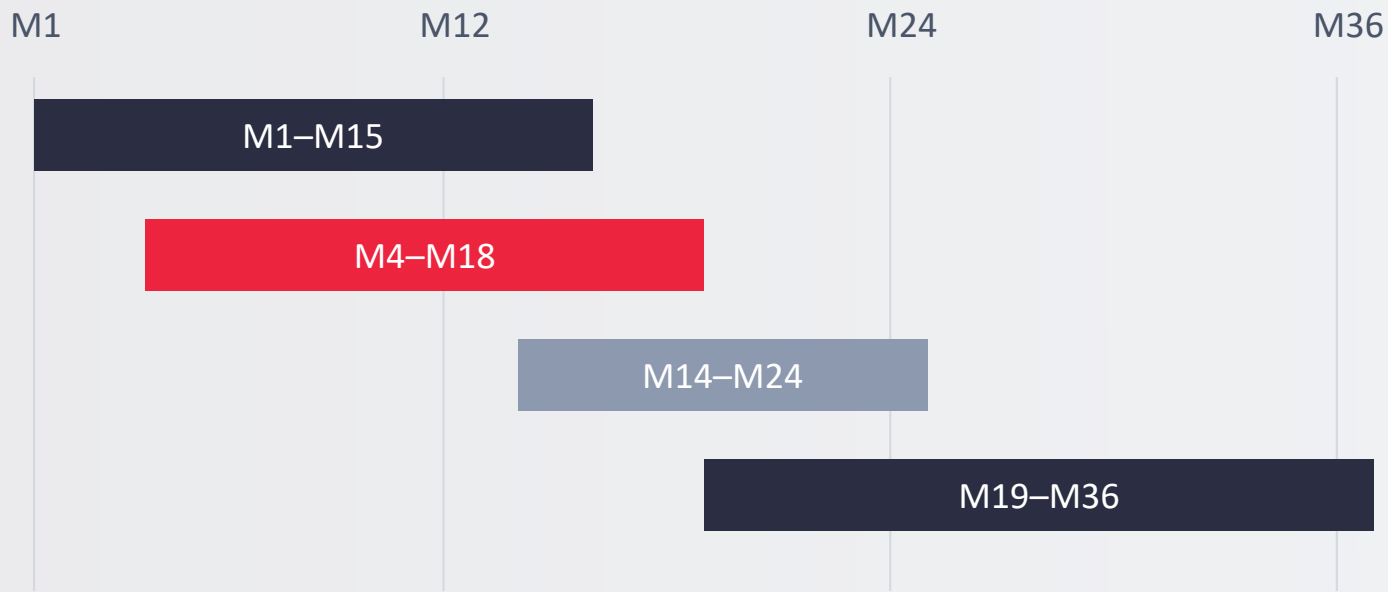
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Implementation over 36 months

Overlapping work packages connect requirements, scale-up and industrial validation



Cross-cutting work

WP1 Coordination (M1–M36)
WP6 Benchmarking and DPP (M3–M36)
WP7 Communication, skills and exploitation (M1–M36)

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Expected impact

Targets for a more resource-efficient and resilient titanium value chain

100%

Secondary titanium
in demonstrators

≥75%

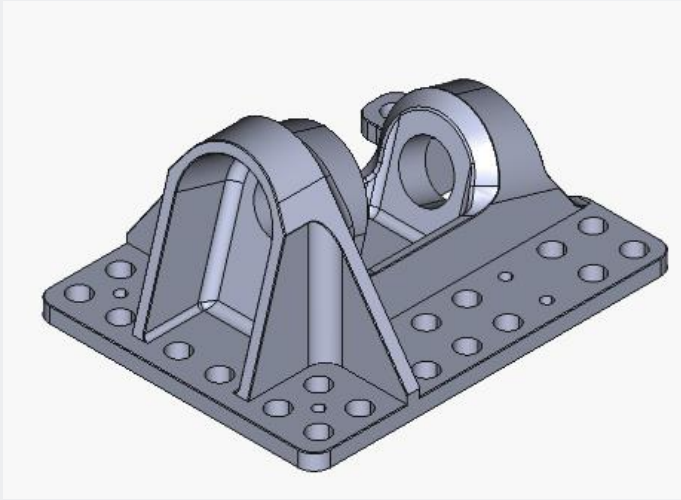
Energy savings in recycling
vs conventional routes

≤1.5

Buy-to-fly ratio for
hybrid components

≥25%

CO_2e impact reduction
for the three use cases



Keeping titanium value in Europe

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Thank You!

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