Business Plan, Exploitation, Dissemination and Communication

OPENHYBRID

FINAL EVENT

18th September 2019

Location:

MTC - Ansty Park, Coventry CV7 9JU

Work Package 9

www.openhybrid.eu

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 723917

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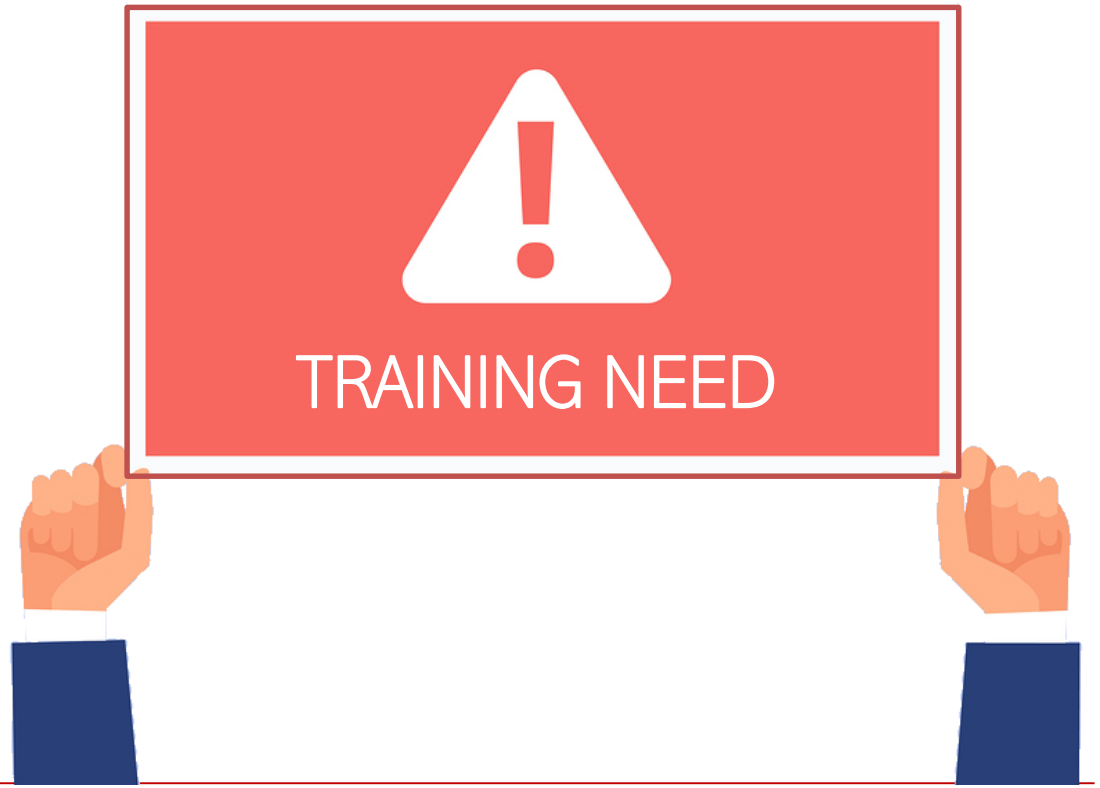
WHY TRAINING?

New technologies

+

No qualified personnel!



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TRAINING

EWF

European/International Directed Energy Deposition – Laser Beam Personnel (DED-LB)

Qualification: European / International Operator (E/IO DED-LB)

EWF

European/International Directed Energy Deposition – Laser Beam Personnel (DED-LB)

Qualification: European / International Process Engineer (E/IPE DED-LB)

Available at: www.ewf.be/additive-manufacturing

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STANDARDS

HOW TO COLLABORATE WITH **STANDARDISATION** BODIES?

Mapping of AM standardisation developments

Engagement with ISO/ASTM in AM Scope

Participation in ISO TC 261 Meetings as *Liaison Member*

Participation in ASTM Meetings

Participation in ISO TC 261 relevant ballots as *P-Member*

Vote in ballots

Identification of **standardisation** GAPS

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STANDARDS

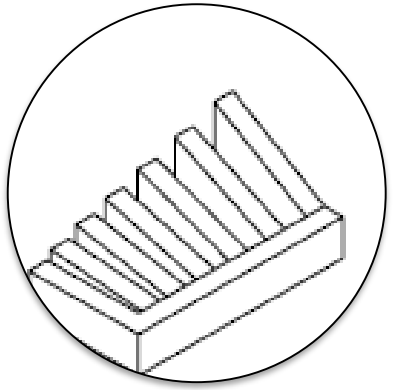
OpenHybrid Support to ISO/CEN/ASTM/BSI Standards

ISO/TC 261 – Additive Manufacturing

- 25 under development
- 22 start their developments

Personnel Qualifications in AM

Design for AM



Test methods and quality specifications in AM

In collaboration with:

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CONTENTS

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CONTENTS

Training

Standardisation

Commercialisation

WHAT CAN YOU BUY?

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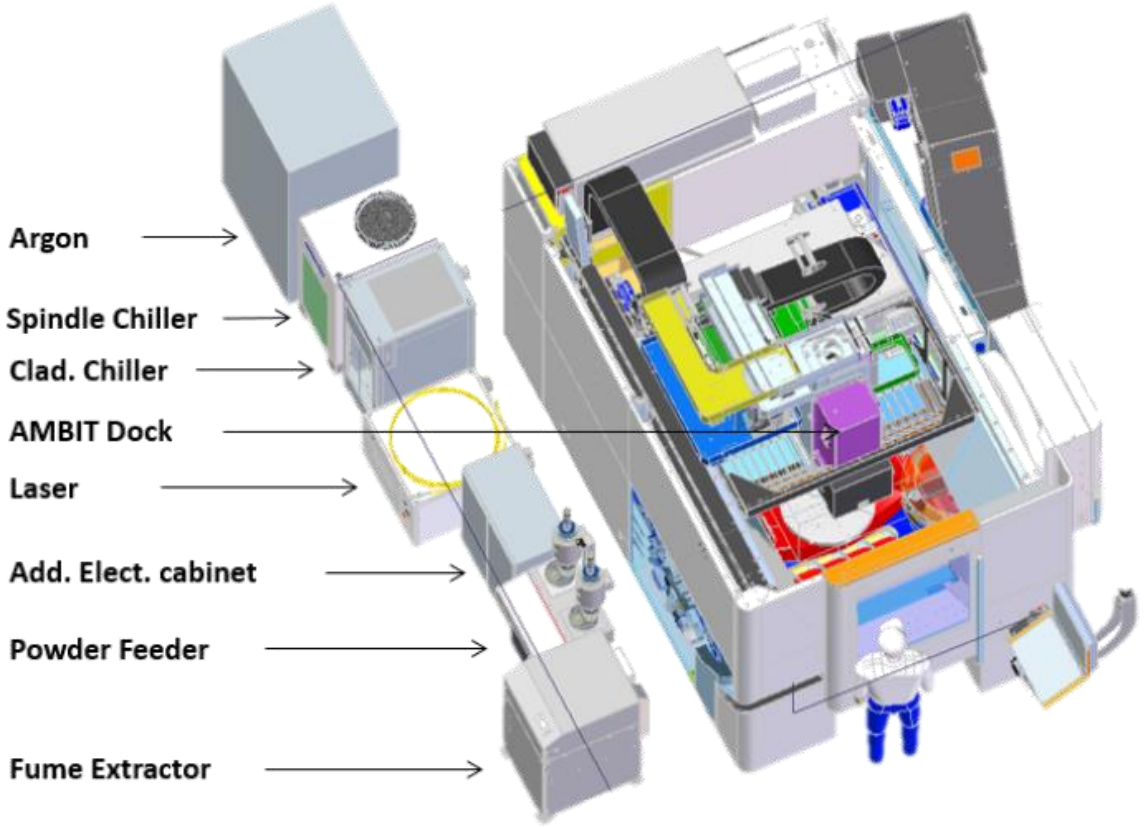
COMMERCIALISATION

Hybrid AM System and Product Innovations

Portfolio for Hybrid 5X Milling / DED platform for parts <1m3 (GFMS)



The hybrid machine offers:

- 5-axis simultaneous milling and cladding
- Compact machine design
- Full capability of the standard machine tool's working volume maintained
- Milling and cladding processes controlled from the Siemens 840D controller
- On board tool storage for both milling and cladding tools
- Electrical power supply of the AMBIT

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COMMERCIALISATION

Hybrid AM System and Product Innovations

Smart Cladding Head (HMT)

- ✓ More robust process
- ✓ Higher productivity
- ✓ Less down-time for the equipment
- ✓ Lower scrap levels
- ✓ Reduced maintenance costs
- ✓ Reduced risk and high confidence for users
- ✓ Reduce the need for highly skilled operators
- ✓ Opens the potential for autonomous operation

WHY TO USE A SMART CLADDING HEAD?

Combined high power laser scanning head with high power pulsed laser – enables unrivalled flexibility in terms of process operations, particularly for part finishing. This combined approach goes beyond the simple ability to add or remove material but offers novel approaches to modifying the surface topography and microstructure both in-process and post-deposition.

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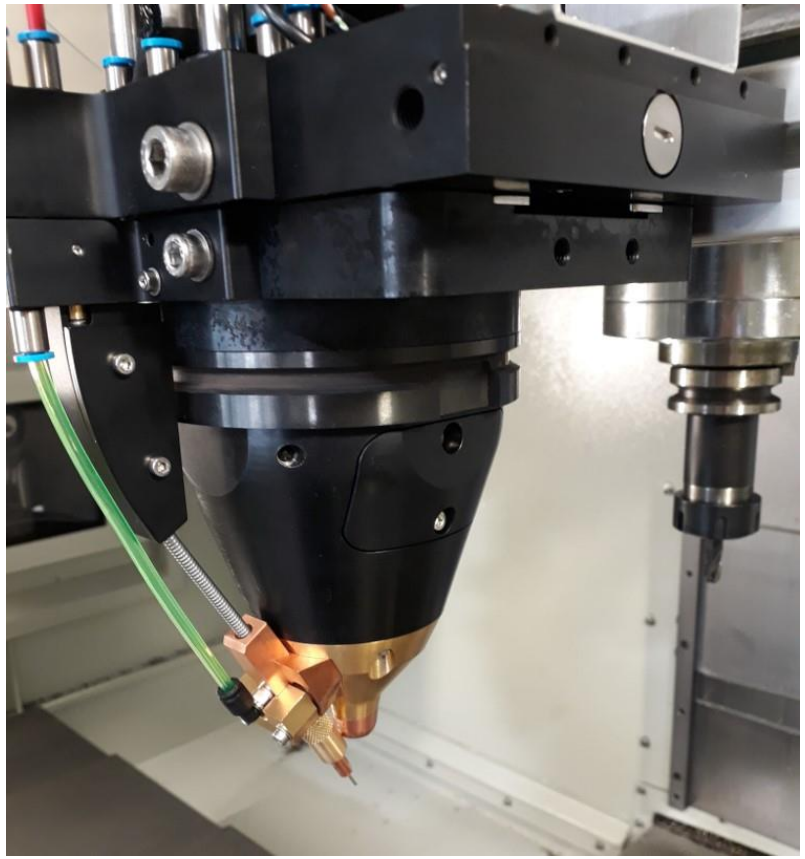
COMMERCIALISATION

Hybrid AM System and Product Innovations

Wire Feed Head (IPT/HMT)



WHY WIRE?

- ✓ Generally lower cost than powder feedstock (~50%)
- ✓ Easier to control wire quality
- ✓ High levels of deposition efficiency
- ✓ Easier feedstock management
- ✓ Lower HSE risks

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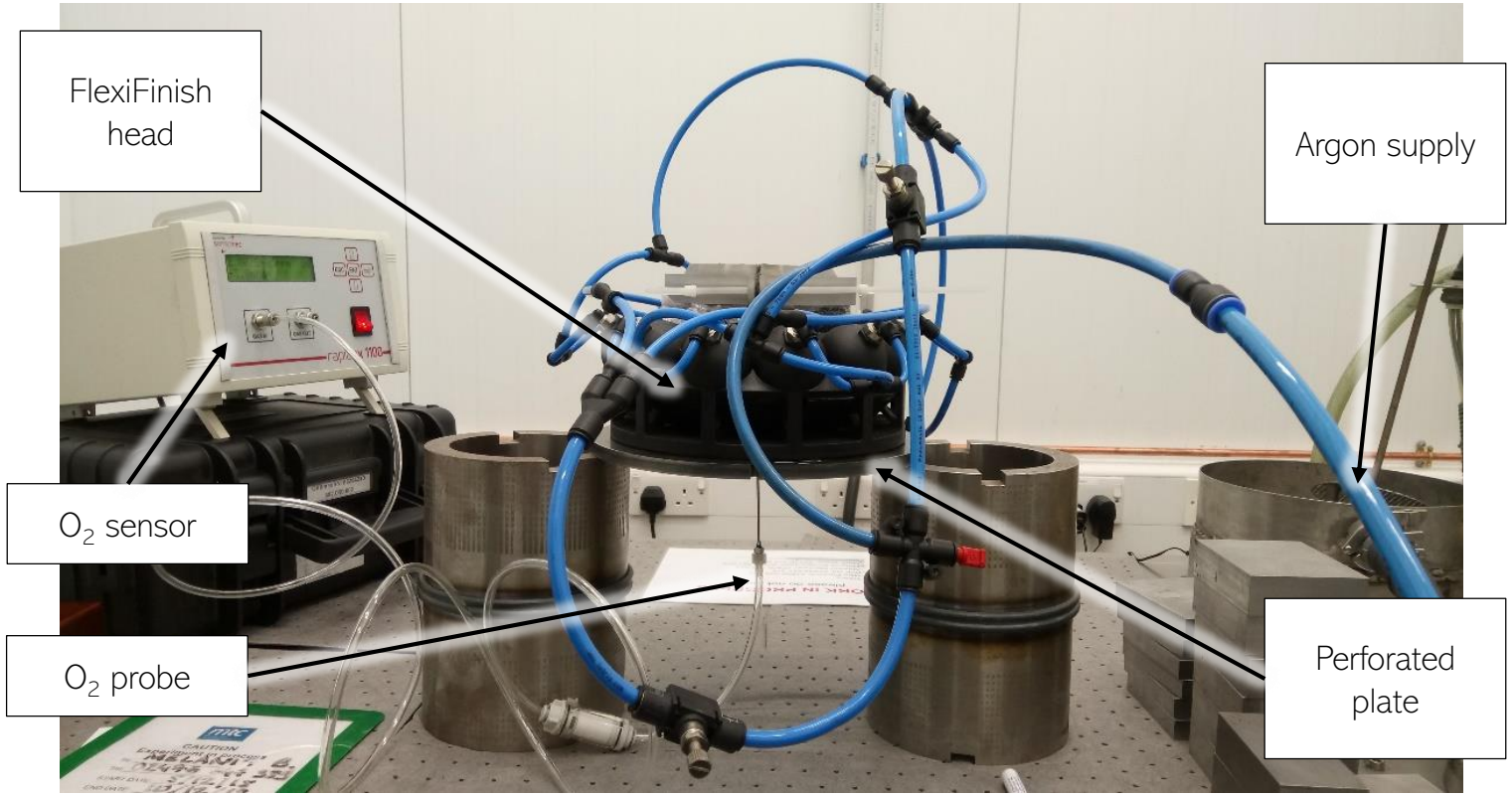
COMMERCIALISATION

Hybrid AM System and Product Innovations

Enhanced Gas Shielding System (TWI)



- ✓ Precise gas control to **reduce gas** use
- ✓ Significantly **reduced** processing costs
- ✓ **Easier** feedstock management
- ✓ Much **lower** HSE concerns
- ✓ More **flexible**
- ✓ **Increase the efficiency** of the process

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COMMERCIALISATION

Hybrid AM System and Product Innovations

Scanning Head (HMT)

- ✓ More robust process
- ✓ Higher productivity
- ✓ Lower scrap levels
- ✓ Reduced material waste (less overspray)
- ✓ Less risk and high confidence for users
- ✓ Reduce the need for highly skilled operators
- ✓ Opens up the potential for autonomous operation

LOOKING FORWARD FOR MORE DETAILS?

HYBRID™ MANUFACTURING TECHNOLOGIES

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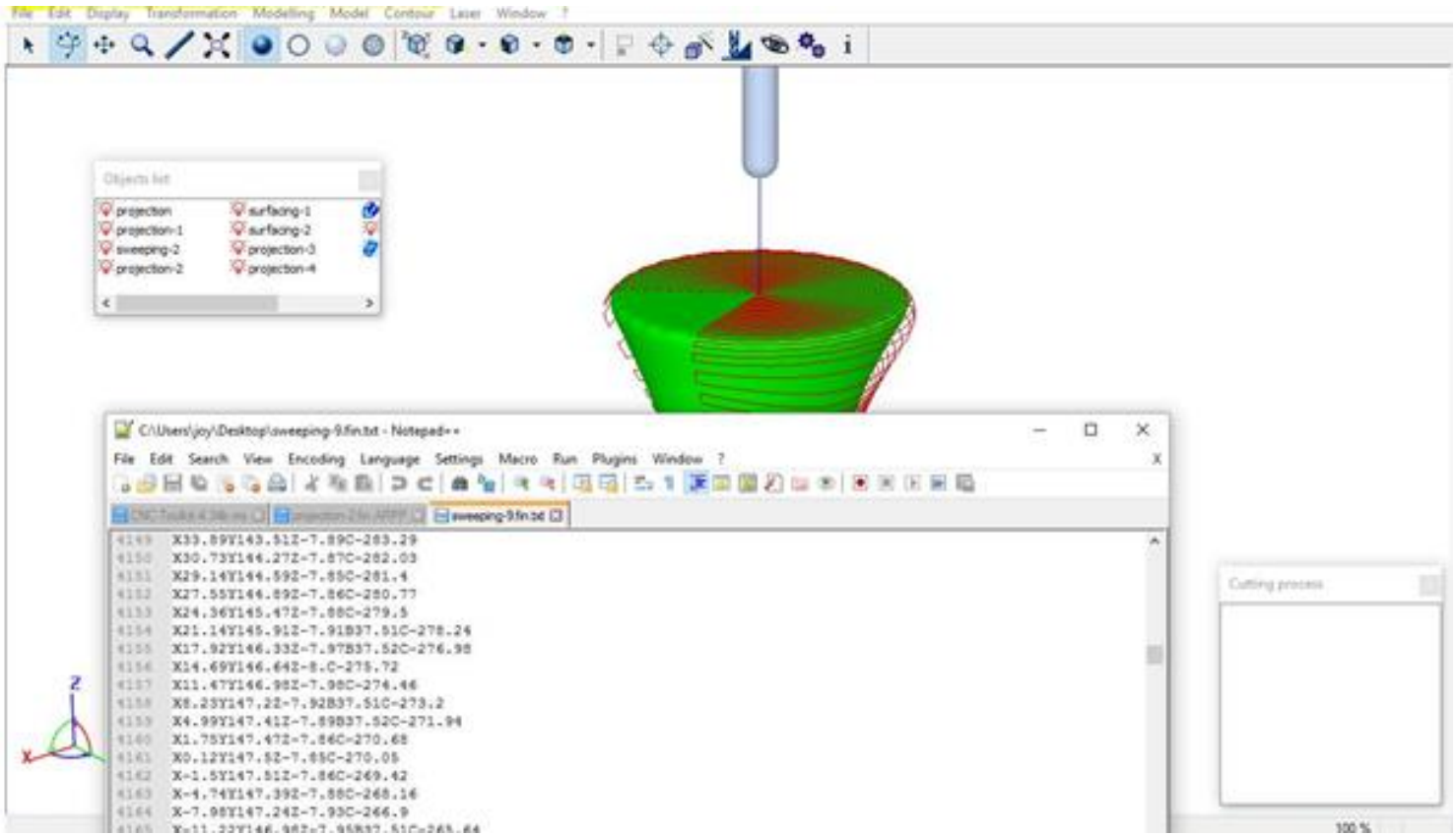
COMMERCIALISATION

Hybrid AM System and Product Innovations

Non-adaptive CAM Software (PIC)



LOW COST

Easy to use software

↓

Lower training costs

↓

Lower skill level required

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COMMERCIALISATION

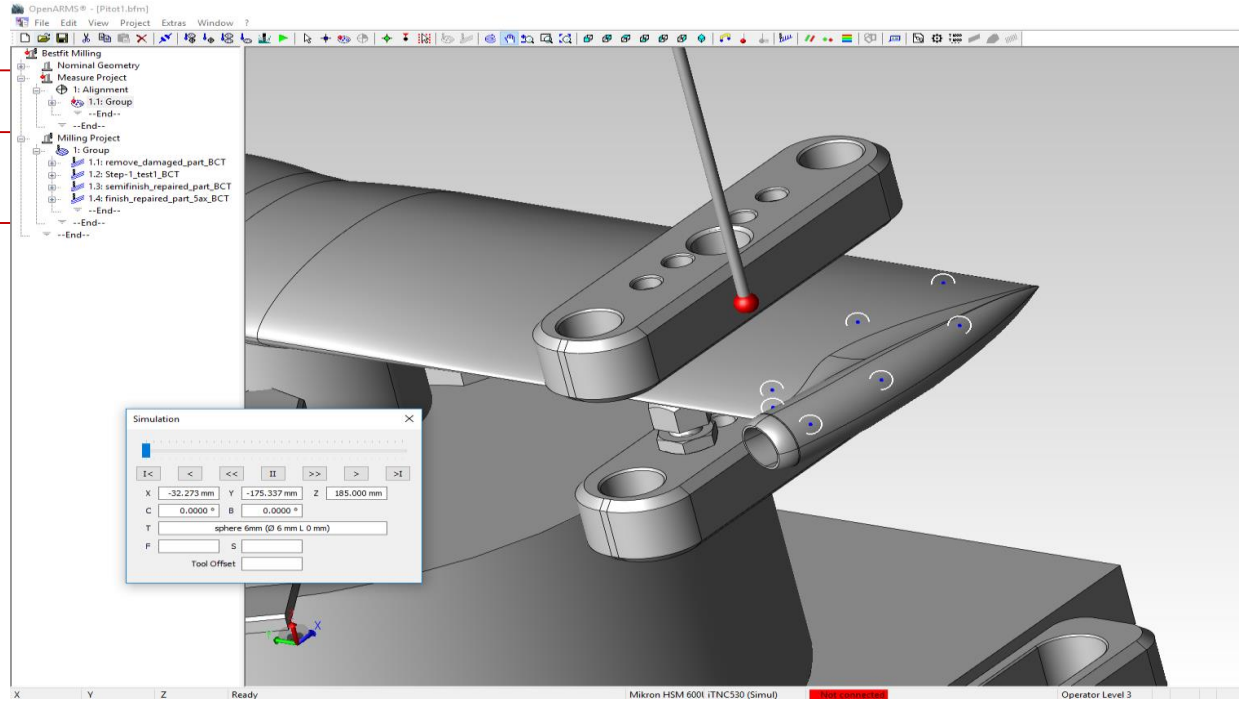
Hybrid AM System and Product Innovations

Adaptive CAM Software supporting hybrid processing (BCT)

CAD/CAM

Measurement

Adaptation/
NC processing



Simplifies the hybrid repair process!

All included!

Measuring
+
Handle information
+
User interface: check/edit
+
Processing
+
Interface to: Hybrid machine

BCT.

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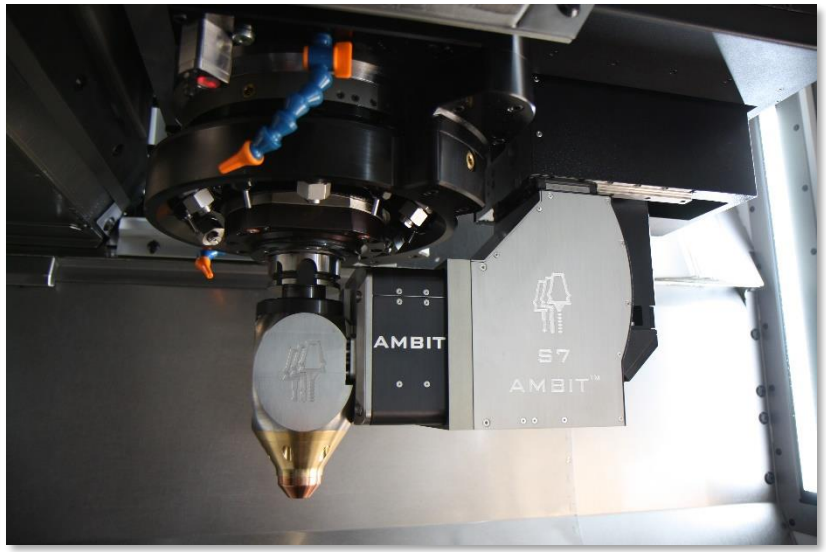
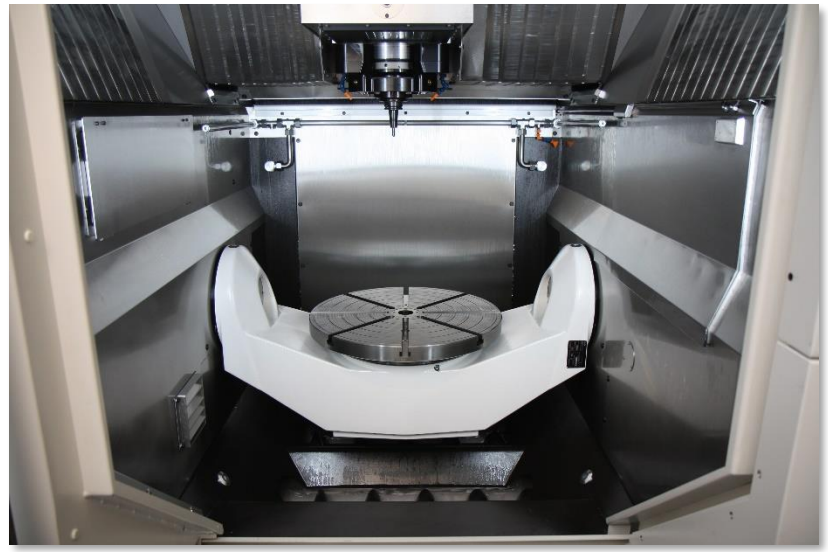
COMMERCIALISATION

Machine Producer's Route to Market

Exploitable product or service	Commercialized by	Sales price (€*1000)	Route to market
All-in-one hybrid AM system for parts Ø 800 x 500 mm up to 800kg	+GF+	1'500	Dedicated direct sales





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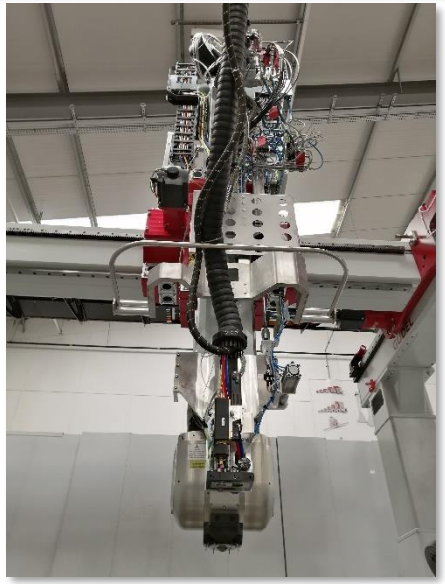
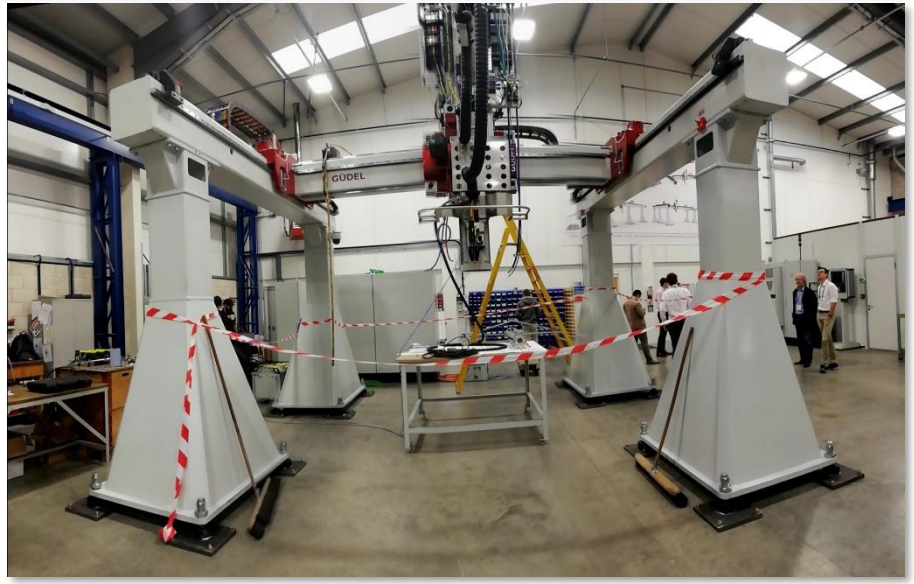
COMMERCIALISATION

Machine Producer's Route to Market

Exploitable product or service	Commercialized by	Sales price (€*1000)	Route to market
Gantry – 5m x 5m (Other sizes available)	GÜDEL	On request	Direct sales





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COMMERCIALISATION

Component Suppliers' Route to Market

Exploitable product		Commercialized by	Sales price (€*1000)	Route to market
DED AM Components	Smart cladding head		By quotation starting from 50K	HMT will sell the units either as an integrated system with platform companies (GUD, GFMS) within the OpenHybrid project (and beyond) Retrofitting onto existing machine tools by HMT MTC can provide process development support to users if required.
	Wire feed head			
	Enhanced Gas shielding system			
	High speed line scanning head			
	Powder flow monitoring			
	Docking system with smart sensors & auto-alignment			
	Realtime in-line process monitoring			
	In process NDT			

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COMMERCIALISATION

Component Suppliers' Route to Market

Exploitable Product or Service		Commercialized by	Sales price (€*1000)	Route to market
Additive Plug In	Simple to use additive CAM toolpath generator	PicaSoft	10	Direct and indirect sales
Adaptive CAM software	Price depending on the complexity of the solution	BCT.	55 – 85	Direct and indirect sales
Cladding Simulation Module	Extension to ESI Additive Manufacturing	esi get it right®	20	Direct and indirect sales

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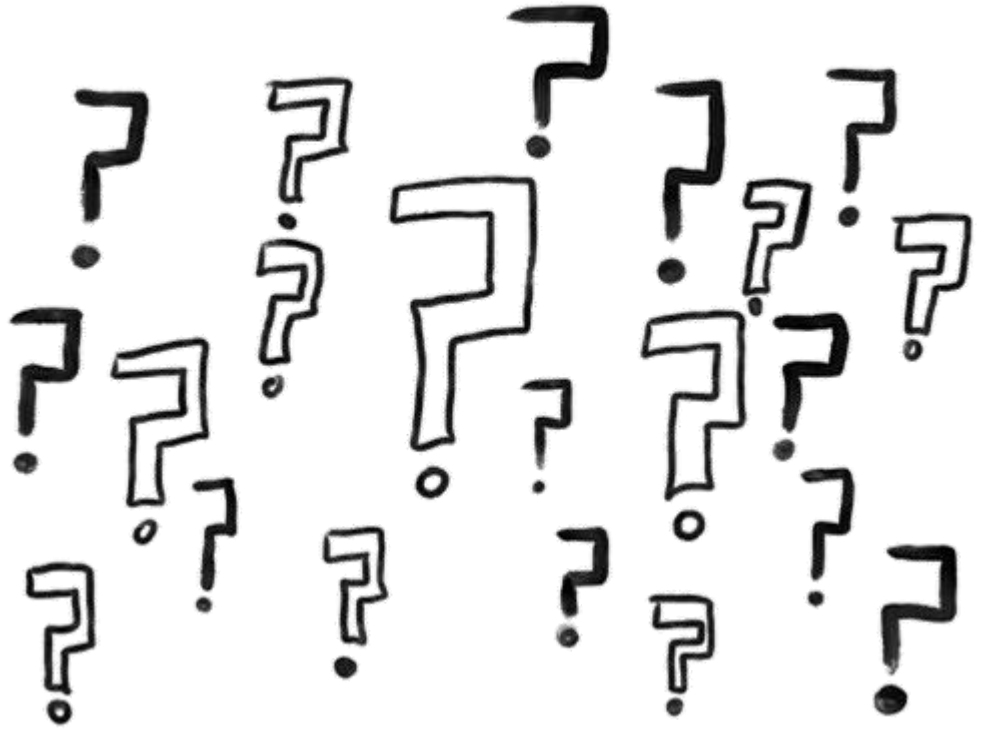
Questions



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Thank you

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