



Binder Jetting for Medical Device Manufacture

Project Outline



ORGANISATION PROFILE



Digitisation

Help Industry to gain value and competitive advantage from data through extraction and transformation to action

IOT, Data Analytics, Human Factors, AR/VR, Software Development + Domain expertise

- Inline analytics (QA/QC, image analytics, bin picking)
- Machine health monitoring (vibration analysis, predictive maintenance)
- Scheduling
- Supply-chain data



Automation and Control

Help Industry to develop and deploy automation and control technologies and strategies

Robotics and Automation, Process Automation, Simulation, Controls Engineering

- Labour Optimisation
- Quality and repeatability
- Lights-out manufacturing

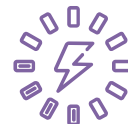


Design for Manufacturing

Help Industry to design and manufacture complex products and processes on emerging technologies

AM, Machining, Automation, Mech Eng., Materials Scientist

- Traditional to Additive
- Lightweighting and product customisation
- Simulation based part qualification
- New Material and Process Development



Sustainable Manufacturing

Help Industry maximise energy efficiency, minimise environmental impact and create value

IOT, Data Analytics, SW dev, Domain Expertise, Materials Eng.

- Circular supply chains
- Energy Efficient Design
- Energy Efficient Operations
- Demand Side Management
- Plant Optimisation

PROPOSAL INTRODUCTION (I)

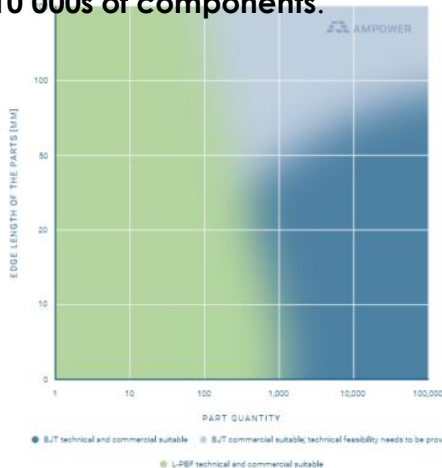
VISION

Increase the **adoption of high-volume additive manufacturing** processes like Binder Jetting within the Medical Device sector, supporting greater **design freedom** and **production flexibility**



Motivation

With **reduced time for design and manufacturing cycles** in the medical device sector, there is growing need to be able to rapidly support fast turn around and agile production of components on the **order of magnitude of 1000's to 10'000s of components.**



Content

- Develop improved **design** for binder jetting and sinter-based additive knowhow and rulesets
- Demonstrate the capability for sinter based additive to meet **medical device requirements**
- Improve **post processing** routes for sinter based additive technologies, de-powdering, heat treatment, surface finishing
- Improve **sintering simulation** topics to reduce repeated build and sinter cycles to dial in processes

PROPOSAL INTRODUCTION (II)

Expected outcome:

- Pathway for “**Right First Time**” sinter based additive manufacturing components
- Established **design ruleset** for sinter-based additive to ensure success
- **Sinter based simulation** process to ensure final product tolerances
- **Performance data** to demonstrate suitability of process and products for medical device sector

Impacts:

- Reduced timeline from design concept to production
- Reduced timeline for product changeover

Schedule:

- 2 Year Program, Submission in Feb 2026 SMART Eureka Call

PARTNERS

Current Consortium: list of partners already involved in the project

No consortium formed

Partner search: type of partner searched and countries of origin (if necessary).

- Medical Device OEM + Sub-Contract Manufactures
- RPO's with AM / Metallurgy Expertise
- Simulation Providers
- Test and Certification Facilitators



CONTACT INFO

Contact info: of the person coordinating the project proposal

- Mark Hartnett
- Irish Manufacturing Research
- Senior Technologist – Additive Manufacturing
- Mark.Hartnett@imr.ie
- 00 353 87 194 7912





www.smarteureka.com