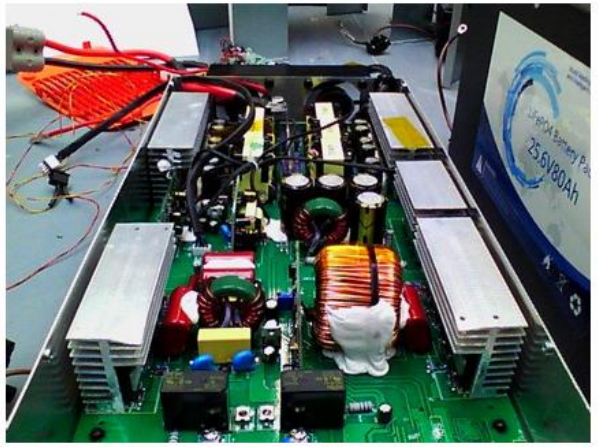
Problem

Advanced materials offer the potential to solve growing thermal-management and waste-heat challenges and deliver major performance gains however manufacturing limitations prevent them being translated into functional devices.

- **AI / data centres:** rising compute density creates increasingly difficult cooling requirements.
- **Power electronics / electrification:** higher power density increases heat flux and thermal-management demands.
- **Waste heat:** valuable energy is lost because current materials and device architectures do not efficiently recover or reuse it.

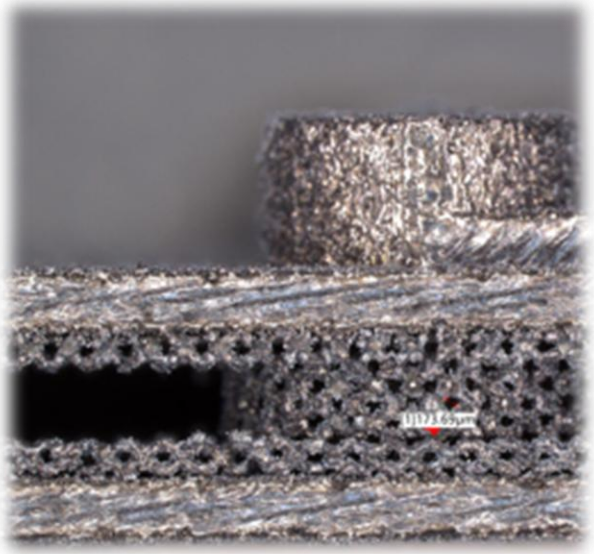


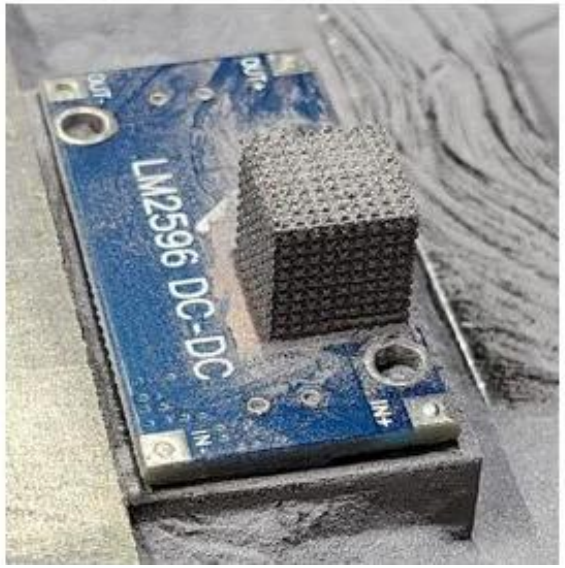


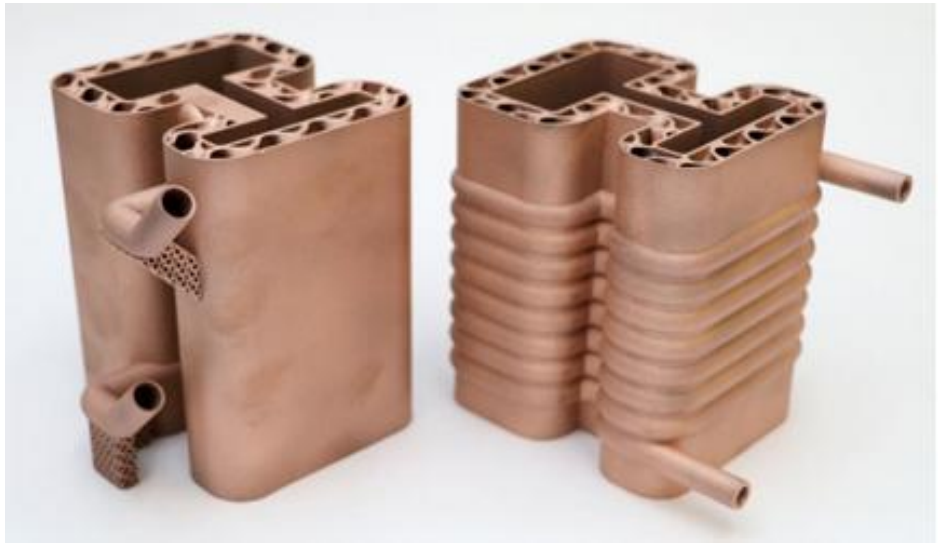
Solution - Additive Analytics

Enabling the direct manufacture of next-generation functional devices

Additive Analytics combines advanced electronic, thermoelectric and thermal materials with proprietary manufacturing know-how to enable next-generation functional devices for demanding energy, electronics and thermal-management applications.







Technology

Material + process inputs

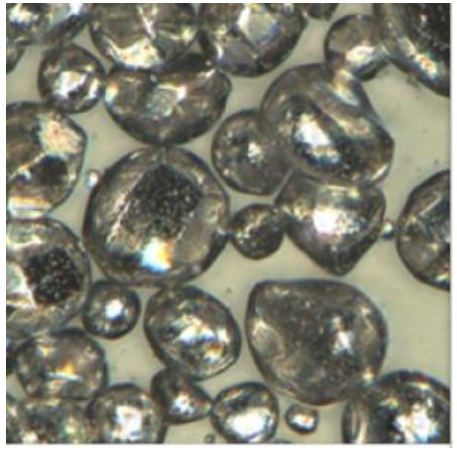
Systematic manufacturing experiments

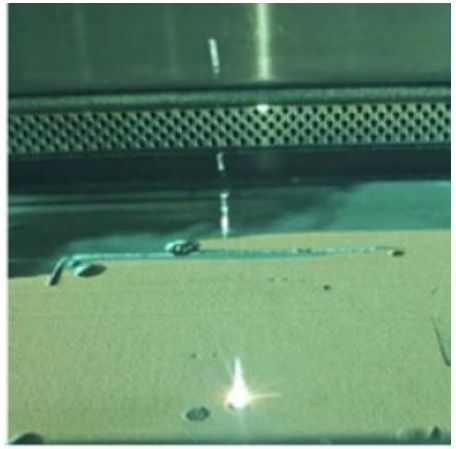
Characterisation + functional testing

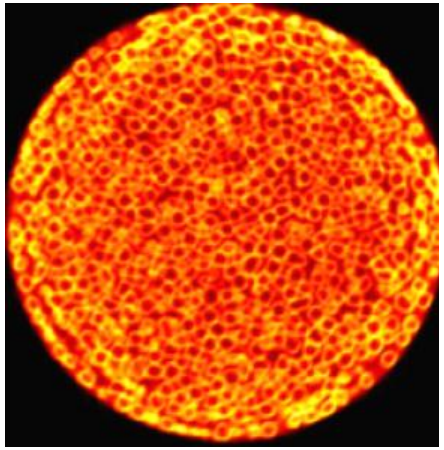
Proprietary dataset

Predictive modelling, ML, AI

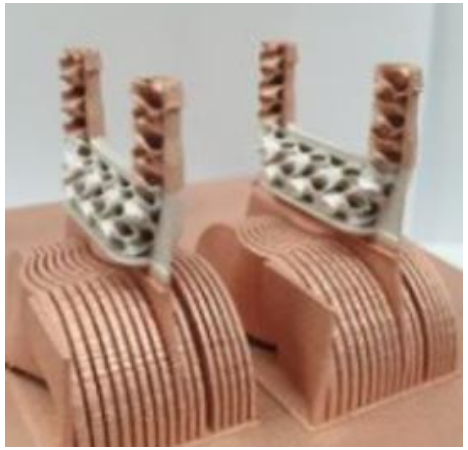
Viable manufacturing window / device design







$$\begin{cases} Minimise\ t_w = f_1(h_d, S_s, L_p) \\ Minimise\ p_x = f_2(h_d, S_s, L_p) \\ Minimise\ p_y = f_3(h_d, S_s, L_p) \\ s.t \quad 0.14 \le h_d \le 1 \\ s.t \quad 250 \le S_s \le 500 \\ s.t \quad 320 \le L_p \le 370 \end{cases}$$



Ecosystem

Additive Analytics bridges advanced materials and technologies and functional-device markets

SCHAEFFLER

DIAMOND HARD SURFACES

Dyndrite

nLIGHT

ADDITIVE ANALYTICS



spire

JLR

OVERCLOCKERS UK

Technology ecosystem

- Advanced materials
- Laser / beam-shaping technology
- AM equipment
- Manufacturing software
- University / research capability

Manufacturing translation layer

- Material and process development
- Proprietary manufacturing datasets
- Predictive modelling
- Functional device development

Application ecosystem

- AI / data centres
- Electronics
- Defence
- Space
- Automotive

Value Chain



Define performance requirement and material/process challenge

Each project expands AA's reusable manufacturing datasets

Repeat manufacture
Parameter packages
Licensing
Royalties

Thermal management
Electronics
Advanced materials

Manufacture, test and optimise

Validate performance in the customer application