

PHOTOCENTRIC

A new approach to low-cost ceramic and metal 3D printing

THE CHALLENGE >

Photocentric manufactures light-curable resins and 3D printers. It was looking to expand its range to include ceramic and metal printing.

Its technology adds ceramic or metal particles to a light-curable resin, with which 'green' parts are printed using an LCD screen to cure each layer. The green part can then be fired in a kiln to remove the carrier resin and sinter the particles into a finished ceramic or metal part.

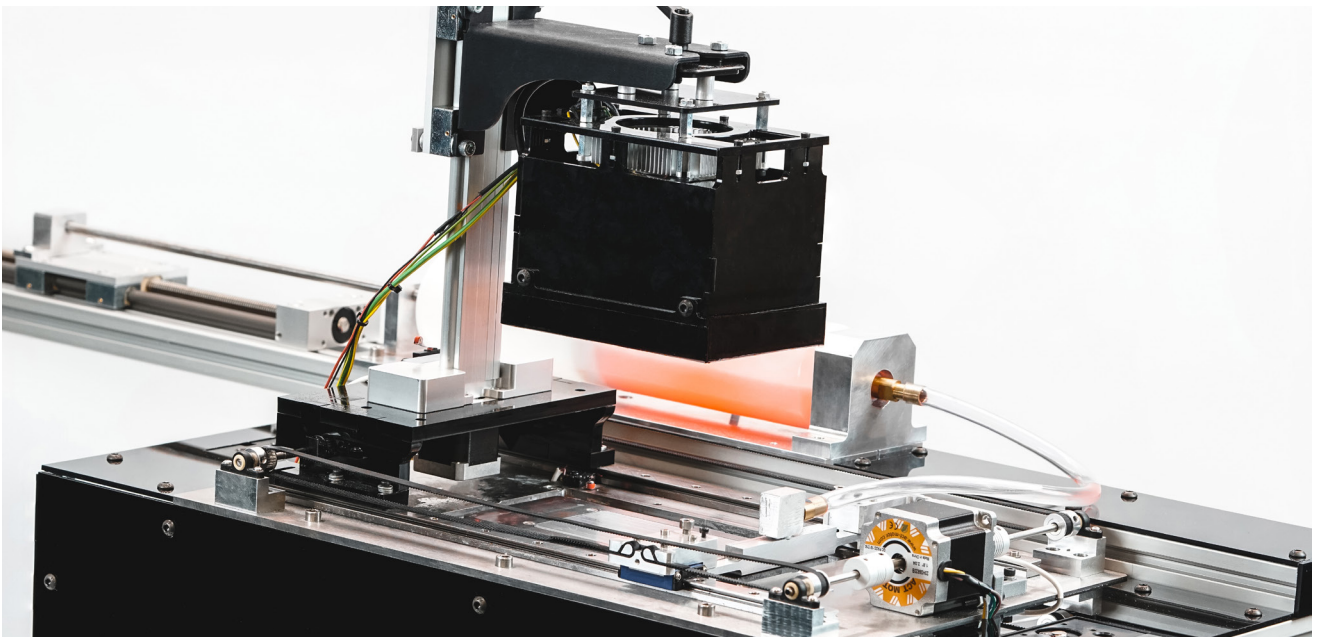
The challenge was how to prepare each new build layer for the printing process, given that the particle loading makes a very viscous, paste-like, resin and the weight of the added materials makes very heavy printed parts, compared with plastic technologies.

THE SOLUTION >

We started by helping Photocentric generate potential printer concepts. Experiments with early resin formulations identified the key challenges that would have to be overcome in handling these materials.

A key design decision was to use a disposable cartridge to handle and meter the resin, and further development with a test rig was used to iterate the resin and spreading system to create even, reproducible build layers.

Working in close partnership with the client's development team allowed optimisation of the resin formulation and printer mechanics together. The outcome was a printer test rig (pictured) installed at Photocentric to enable the next stage of development.



BENEFIT TO CLIENT >

We enabled the Photocentric materials science team to accelerate its development programme and focus on resin chemistry – knowing that we would deliver a working solution for the printer concept.

With the 3D printer sector developing rapidly, it was vital for Photocentric that product innovation was delivered as quickly as possible.

