WILLIAM COOK
CAST PRODUCTS

CASE STUDY

CAST METALS FEDERATION
CAST METALS FEDERATION COMPONENT OF THE YEAR 2016

This valve cage used to be considered 'uncastable' due to its intricate design and prohibitive tooling costs.

William Cook's combined 3D printing and investment casting process permitted complete freedom of design and cut tooling costs to zero. Casting the component allowed the use of an advanced corrosion-resistant cobalt alloy, while also saving the customer hundreds of hours of welding and machining time.

Integrated 3D-printing and casting technology

William Cook has pioneered the integration of industrial 3D printing and investment casting technologies. The process offers all the advantages of additive manufacturing alongside the material strength and integrity of a traditional cast metal component.

William Cook has successfully used this process to make components up to 250kg.

ACCREDITATIONS AND APPROVALS

- ✓ ISO 14001
- ✓ ISO 45001
- ✓ ISO 9001
- ✓ NORSOK M650 (4A, 5A, 6A)
- ✓ EU Pressure Equipment Directive (PED)
- ✓ Fit4Nuclear

- **Rapid manufacture**
  straight from concept to finished component
- **Zero fixed costs**
  no expensive tooling necessary
- **Design flexibility**
  no need to invest in tooling until the design is fixed
- **Complete freedom of design**
  design for function not for manufacture
- **Identical material properties**
  to a traditional cast metal component

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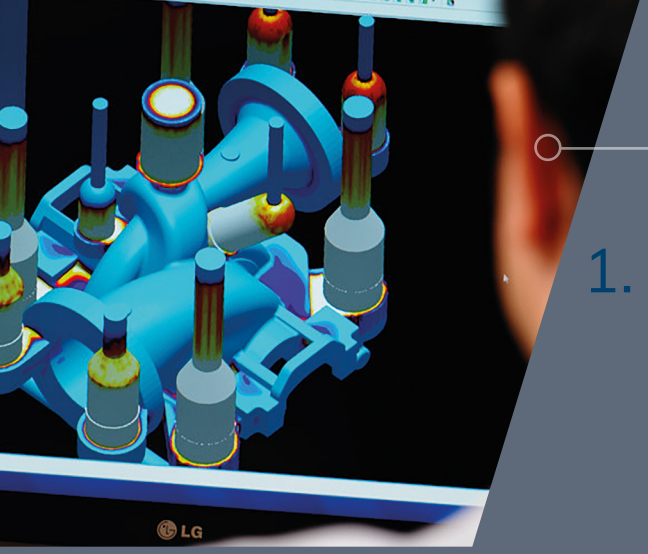

1. **CAD model created by customer or William Cook designers.**

Polymethylmethacrylate (PMMA) pattern printed overnight. 2.

3. **PMMA pattern coated by robots to create mould.**

Molten metal cast into mould and left to cool. 4.

5. **Component heat treated, finished, inspected and despatched.**

Components can be reverse engineered by 3D scanning to create a CAD model, which can then be sent straight to the printer.

Sand moulds and cores can also be printed, offering all the advantages of 3D printing for castings even heavier than 250kg.

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