

INCREASING THE LIFETIME OF 3D PRINTED TOOLING

Johnson Matthey Battery Systems - 3D printing in industrial plants

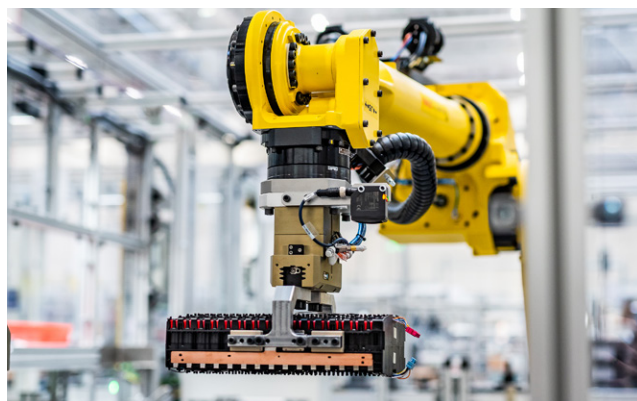
Solution powered by



3DGENCE



For over 200 years, Johnson Matthey used advanced metals chemistry to tackle the world's biggest challenges. Nowadays, Johnson Matthey Battery Systems is a world leader in designing and manufacturing li-ion batteries for various applications - from e-bikes and energy tools up to energy storage and healthcare.



USER REQUIREMENTS



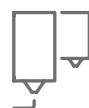
LARGE - COMPLEX COMPONENTS

Need to serially deliver large-sized modular trays with complex geometric shapes



ESD STANDARDS

Used materials have to comply with the standards of manufacturing electronic equipment



DIMENSIONAL ACCURACY

Parts have to be 3D printed in desired strict tolerance, and the results had to be repeatable



COST REDUCTION

Replace the desktop printers with an alternative industry technological solution that would decrease production costs



Initially, we prepared prototypes on a desktop 3D printer. However, with this class of machine, we couldn't guarantee the dimensions' stability of the prints and geometry limitations. We chose milling instead, but the costs of tooling increased and the delivery time was too long.

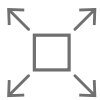
After engineering calculations, the only sensible solution was to implement an industrial 3D printer.

Jakub Szafranski

*Test & Validation Team Leader
at Johnson Matthey Battery Systems*



THE CHALLENGE



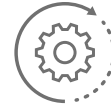
PRINT SIZE

Needed to print large-size parts



DURABILITY AND SAFETY

Required high quality parts. Needed materials with increased mechanical strength, high temperatures resistance and ESD standards



PRODUCTION FLEXIBILITY

Faster prototyping and reduced line downtime due to waiting for spare parts

DEVELOPMENT CONSTRAINTS

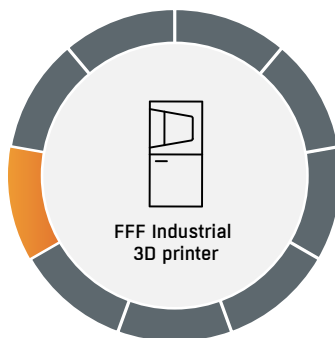
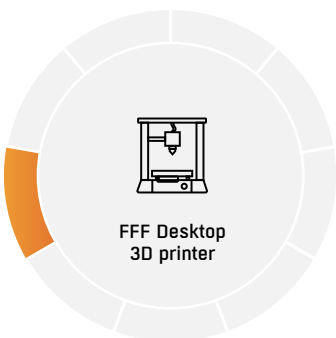


PAYBACK TIME



PROJECT TIMING

COMPARISON OF DESKTOP AND INDUSTRIAL 3D PRINTER



- High-temperature printing chamber
- PEEK and PEKK 3D printing
- Soluble materials
- High-quality components
- Safety
- Dimensional stability of the models
- Large Build Volume
- High print speed
- Commodity material 3d printing

Findings - on the way to clarify the choice

Desktop printer limitations and dimensional stability:

- Inadequate for large-size prints.
- Short lifespan of parts.
- Utilized milling technology initially.

Drawback of milling technology:

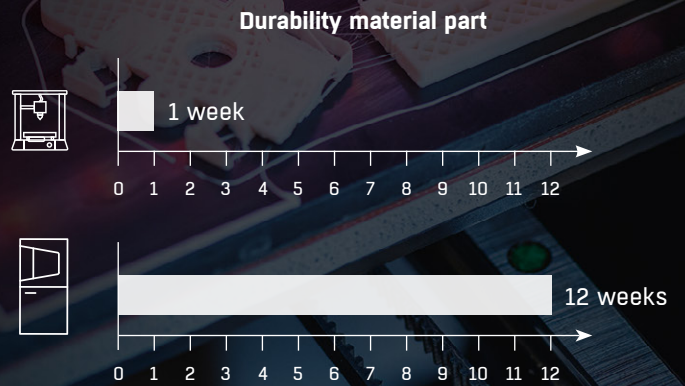
- Not cost-effective in the long run.

Preferred solution:

- Adopted an industrial 3D printer.

Enhancements for material longevity:

- Implemented an ecosystem, including a Material Management System.



CUSTOMER EVOLUTON



UPGRADE TO HIGH-TEMPERATURE MATERIALS

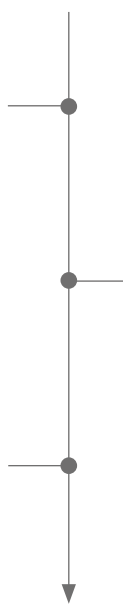
Problems with the stability of the prints and dimensional limitations



INVEST IN INDUSTRIAL 3D PRINTER

Return production costs in 12 months

Start



Finish



EVOLUTIONARY TRANSITION TO INDUSTRIAL 3D PRINTER

The cost of milling tripled, which was no longer cost-effective



CONNECTION WITH MATERIAL MANAGEMENT SYSTEM

Ensuring the highest quality materials and traceability



After the first month of use, we raised the technical parameters by 100%. The mechanical parameters are excellent (nothing rubs off the parts). 3DGence industrial solution reduced the cost of maintenance and warehouse (less spare parts). INDUSTRY F421 provided a high dimensional accuracy and repeatability of printing detail.

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WHY INDUSTRIAL 3D PRINTING



4 times longer
lifetime of tooling

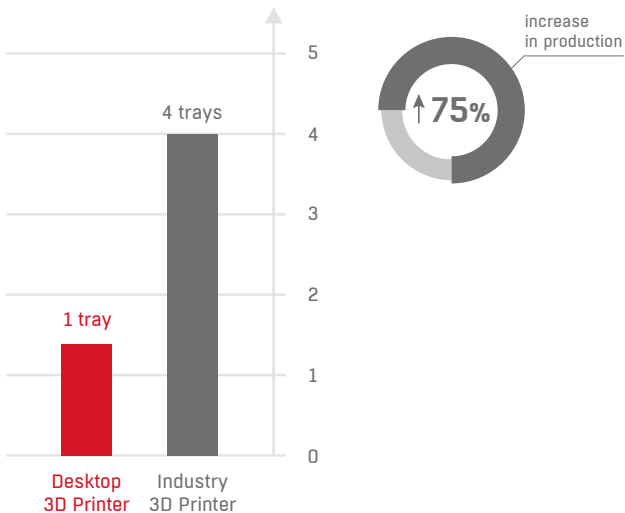


Required dimensional accuracy,
repeatability and quality of parts

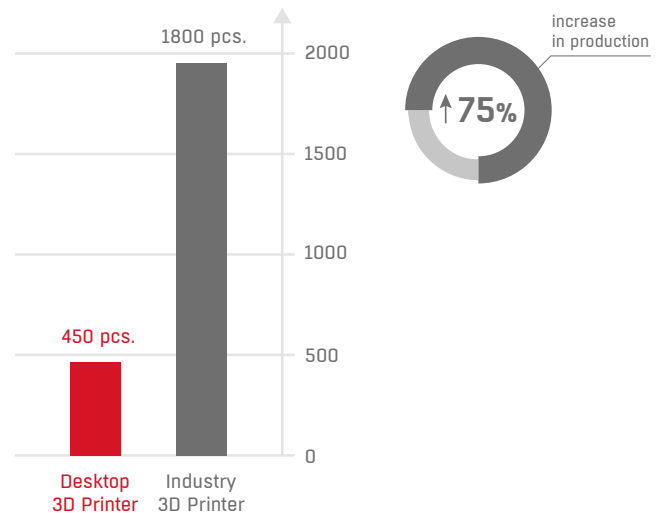


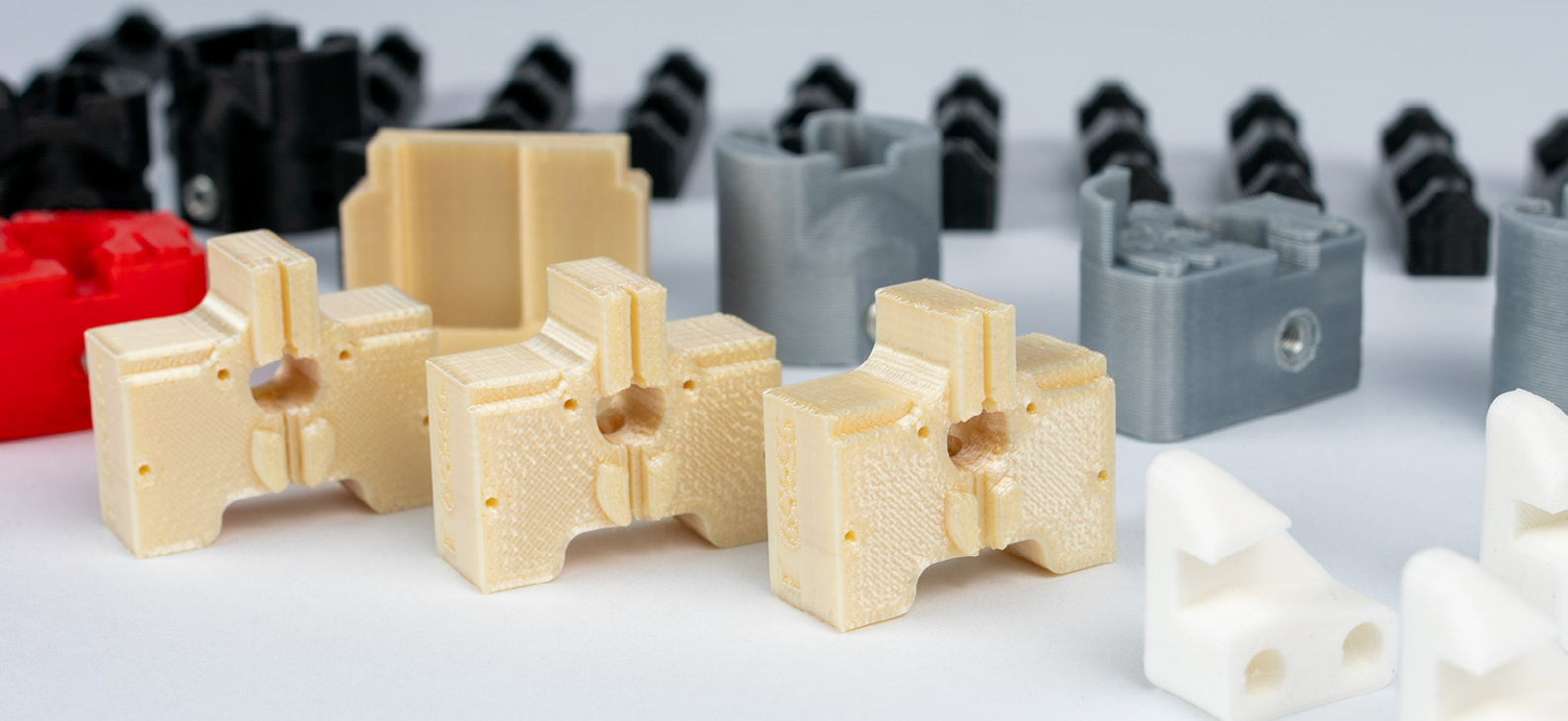
Lower
maintenance cost

Number of modular trays printed during 72h



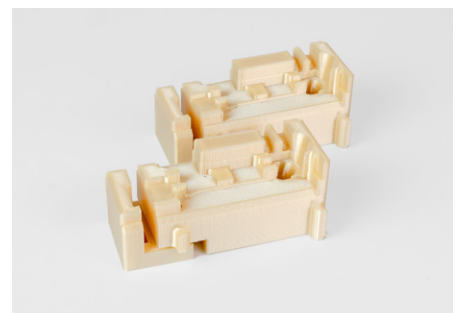
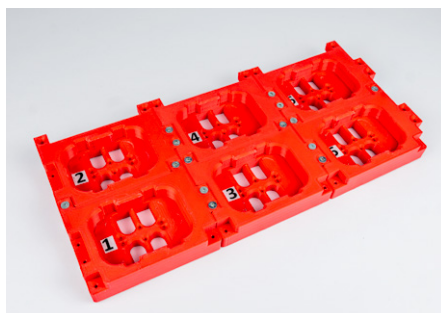
Number of jigs printed during 72h





New possibilities for 3DGence user

- | | |
|---|---|
| <p>01 Printing from temperature-resistant materials - applicable in welding and soldering process</p> | <p>04 Reducing the number of printed and milled components ordered outsourcing</p> |
| <p>02 Use of higher strength materials like ULTEM™ and glass and carbon fiber reinforced materials</p> | <p>05 Printing trays and other of large components</p> |
| <p>03 Printing from ESD materials - use wherever there are PCB's and electronic devices</p> | |





Built for Production / Robust & Reliable / Endurance Proven

Best Performance & Features to Price Ratio in Industry

First Automated Material Management System for optimal print results

Open Material Base with Engineered Ready-to-Use Print Profiles

Flexible and Fully Customizable for Specific User Requirements

On-Call Lifetime Customer Support

3 Year Warranty

Trusted by:



WÜRTH



SAAB



Baker Hughes

THALES

OSRAM

ZENITH

HUTCHINSON

Microsoft

blum

prodnue

GSK

MAGNA

UNIVERSITY OF EXETER

BIC

SCHUNK

hama

Smithsonian

NAVAL GROUP

ALSTOM

BALLUFF

Miele

SIEMENS

POLARIS

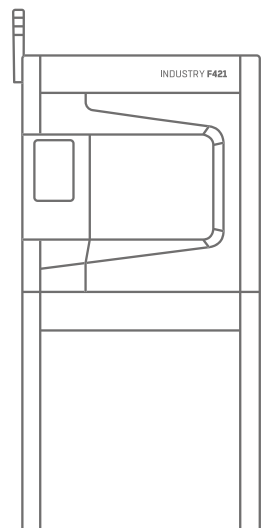
STELLANTIS

AKBOND

HWA RACELAB

PLANSEE

Tefal





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