

IMAPS-UK/Barclays Eagle Labs Workshop – Is the Future of Electronics Packaging in 3D Printing?

Barclays Eagle Labs, Cherry Hinton Road, Cambridge

4 October 2016

The application of 3D printing to the manufacture of electronics was the subject of the IMAPS-UK/Barclays Eagle Labs workshop on “Is the Future of Electronics Packaging in 3D printing”, where 25 people attended to discuss the issues surrounding this potentially disruptive technology and view the Barclays Eagle Labs Maker Space facility.



An introduction to IMAPS-UK (International Microelectronics Assembly and Packaging Society) was made by Andy Longford describing the purpose of the society to assist in learning, networking and sourcing in the field of microelectronics assembly. The society supports the advancement and growth of microelectronics and electronics packaging technologies through networking events, conferences, workshops and professional development courses.

An overview of the current equipment options for 3D printing of electronics and some of the technical and commercial challenges was provided by Steve Riches of Tribus-D Ltd and IMAPS-UK Committee Member, as an introduction to the workshop session. The attendees then considered and reported back on the following questions:

What are the key opportunities for electronics packaging using 3D printing?

The benefits of 3D printing in rapid prototyping and proof of concept product development were recognised along with the design flexibility to customise components, create novel shapes, cavities and introduce local cooling. Design optimisation through rapid prototyping iterations and reduction in tooling costs for prototypes were also highlighted. The potential use of 3D printing to repair electronic modules and produce spare parts to overcome obsolescence issues were also raised.

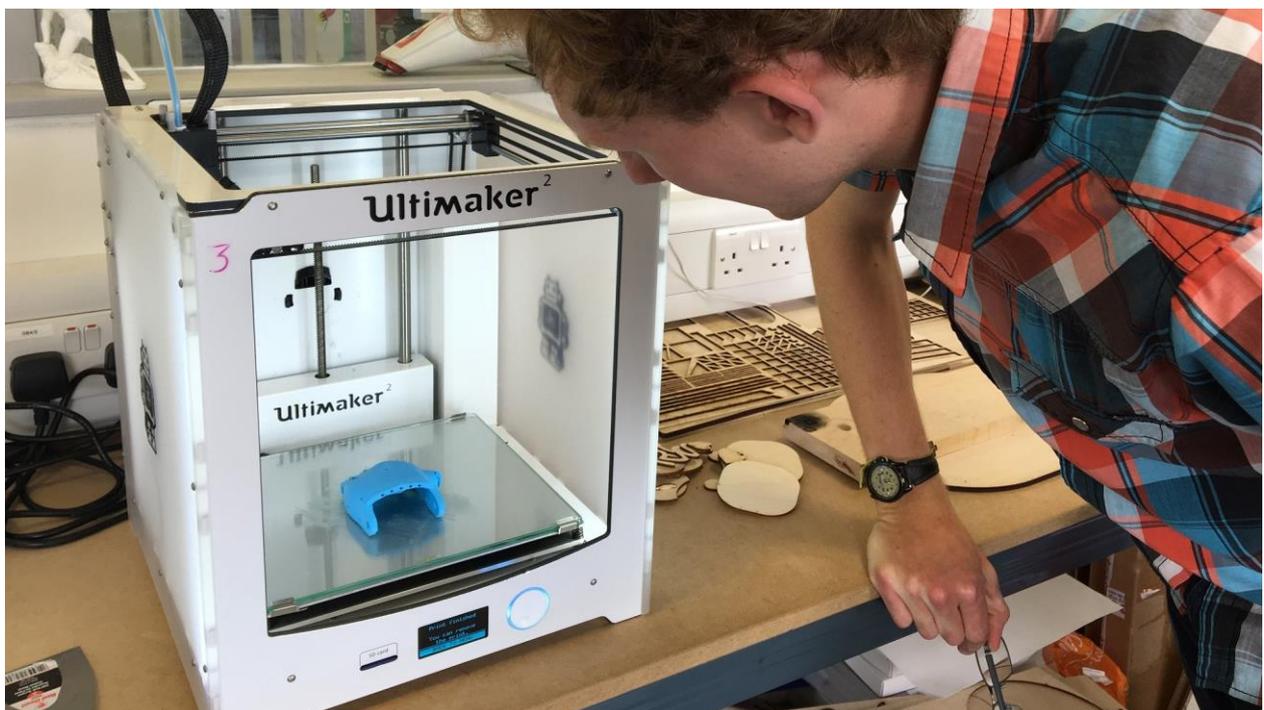


What are the major barriers to the uptake of electronics packaging using 3D printing?

One of the major issues preventing a more widespread uptake of 3D printing for electronics was that current 3D printed plastic materials (e.g. PLA) are not engineering grade and cannot be used for production parts. There was a belief that there is insufficient knowledge of material availability and properties, the various 3D printing processes, thermal issues during curing, connectivity of parts and how current industry metrology procedures can be applied to 3D printed parts. The lack of standards and procedures also hinders the adoption of the technology for production.

What needs to be done to create an infrastructure for electronic packaging using 3D printing?

With any potentially disruptive technology, one of the largest hurdles to overcome is the culture in manufacturing, where there is always resistance to change. This applies to 3D printed electronics and training/education of people currently in industry was seen as a major challenge to provide design skills, process and materials knowledge throughout the supply chain and clarity over IP/Copyright/Warranty. An agency of open source 3D printer capabilities with details of printers and design software options was also suggested. The link between designing a 3D object in .STL and manufacturing on a 3D printer in G-code also needs to be strengthened, to provide designers with a sanity check of what the manufactured part will look like, before printing.



What can IMAPS-UK and Barclays Eagle Labs do to support electronic packaging using 3D printing?

The main outcome of the workshop was to reinforce the need for training and education of the current and future workforce in the benefits of 3D printing for electronics. This needs the development and transfer of specific design, materials and process knowledge to industry and education. For IMAPS-UK, the creation of on-line content and specific training courses/workshops should be considered. For Barclays Eagle Labs, as the facilities become more widespread in the UK, more information on materials and processes should be incorporated into the training materials.



A tour of the Barclays Eagle Labs – Maker Space facility including 3D printing equipment and laser cutting was made by Paul Freakley, Lab Engineer, where the process of designing objects through to the printing was described.

IMAPS-UK would like to thank Katie Doyle and Paul Freakley of Barclays Eagle Labs – Maker Space Cambridge for all their assistance in providing the venue and hosting the workshop.

Further Information

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