



Stencil Manufacture



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Advanced stencil manufacture to meet consumer demand for tomorrow's gadgets

There is an ongoing consumer demand for small, lightweight portable electronic devices, which require increasingly advanced electronic packaging solutions. To address these industry needs requires low cost electronic packages with finer pitch sizes.

Stencil printing has significant commercial prospects in this sector and is capable of displacing traditional semiconductor manufacturing processes with a lower cost alternative. This technology, alongside inkjet printing technology also addresses the requirements of flexible electronics manufacturing and has been defined as the third electronics revolution.

Prof Marc Desmulliez at the James Watt Institute for High Value Manufacturing undertook a project with the aim of creating a low cost, low risk and low temperature bonding technology for Microsystems. Manufacture of new stencils using the UV-LIGA technique began, and an electroplating technique was developed that allowed the manufacture of world-leading electroformed stencils.

The end result is a superior electroformed stencil, in terms of surface quality and fine pitch with unparalleled product developed. The technology breakthrough permitted the creation of a spin-out company, MicroStencil Ltd from Heriot-Watt University. MicroStencil Ltd is a technology based manufacturing company focused on the production of precision electroformed components, addressing markets such as Electronics, MEMS and Life Sciences. The company created a new manufacturing facility in Scotland and received significant funding to commercialise the technology.

MicroStencil has recently moved to Singapore to be closer to its customer base and entered a partnership with DEK Printing Machines Ltd, a world leading stencil printing equipment manufacturer, to produce a new brand of stencils. In January last year, MicroStencil developed a new double layer stencil which has been used with great success by the Photovoltaic Industry.

Moreover, the research persuaded Merlin Circuit Technology Ltd (manufacturers of flex, flexi-rigid, PTH and multilayer printed circuit boards) to invest heavily into advanced electroplating lines

and manufacture enhanced Printed Circuit Boards for the high-end market. The results of this work also provided significant benefit to a number of other industrial partners who covered the remainder of the supply chain: Alfa-Fry Technologies (CSPM), Hewlett Packard and Celestica.

"Without the joint multidisciplinary collaboration from academia and industry such a novel solution to next generation electronic packaging and assembly requirements would probably not have been developed."

Dr Robert Kay, CTO, MicroStencil Ltd.

Further information

Marc Desmulliez
e: m.desmulliez@hw.ac.uk
t: +44 0 131 451 3340
misc.eps.hw.ac.uk/

