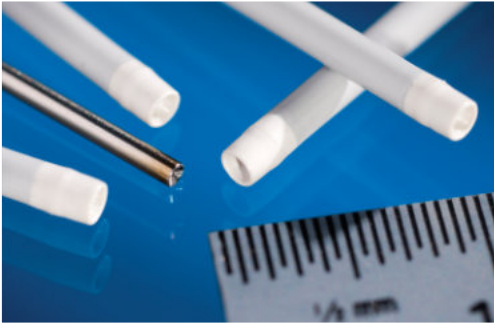


micro precision . . .



# micro precision . . .



## Manufacture of Ultra Precision Injection Moulds

Microsystems specialises in the design, manufacture and validation of ultra precision injection moulds for the medical, pharmaceutical and optical markets.

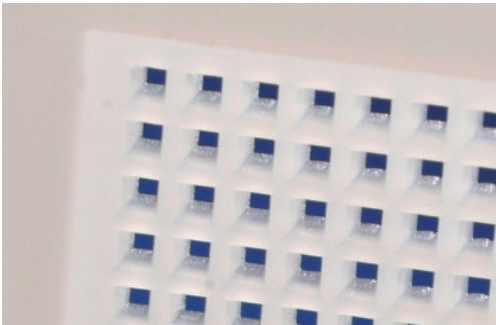
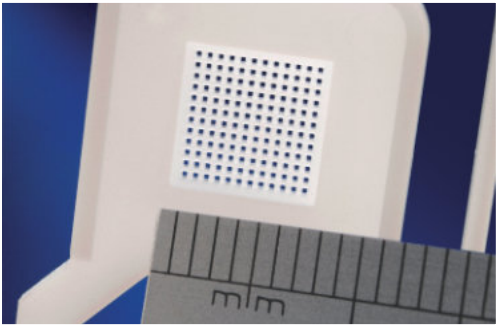
We utilise many ground breaking techniques to solve complex manufacturing problems, and we have already made significant progress in moving from micro to nano manufacturing.

The Microsystems design team are regularly approached to undertake technically challenging projects and we are always willing to work closely with our customers to turn their vision into reality.



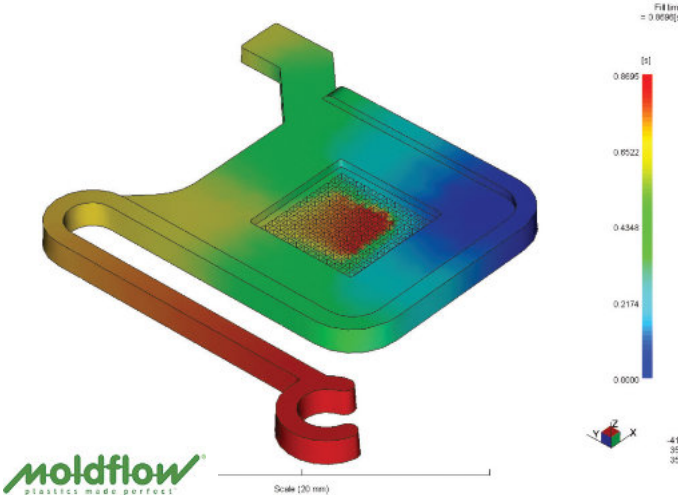
**We work closely with our customers to turn their vision into reality.**





## Mould Design and Simulation

Our designers carry out the design work with Unigraphics 3D solid modelling software. In addition to this, we have the full 3D moldflow analysis package. This has filling, warpage and shrinkage modules which enables us to accurately predict final part quality.







**Microsystems has 800 square metres of clean manufacturing area with temperature control.**





## Micro EDM

### Electro Discharge Machining

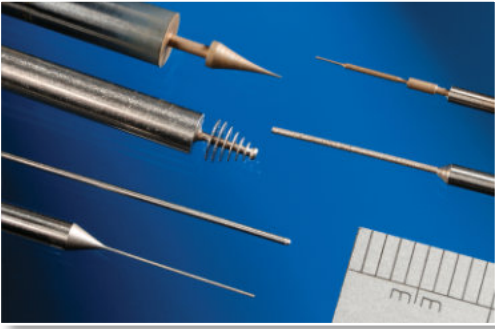
Our micro EDM machine has enabled us to offer services usually only available in research facilities.

It is capable of eroding extremely small three dimensional features and holes as small as **50 microns** (0.002") directly into hardened steel.

This machine has automatic re-dressing of electrodes to compensate for wear during the EDM process.







## Micro Machining

Microsystems' micro machining capabilities are probably unique, with the latest generation machines for micro milling, micro grinding, **micro EDM and wire EDM** in temperature controlled clean facilities. We can machine parts with the smallest features that you can imagine.

## Optical Inserts

In addition to micro machining, Microsystems can supply optical inserts for conventional and micro moulds. In certain applications, it is possible to supply hardened stainless mould steel inserts, directly machined, without the need to carry out any manual polishing operations.



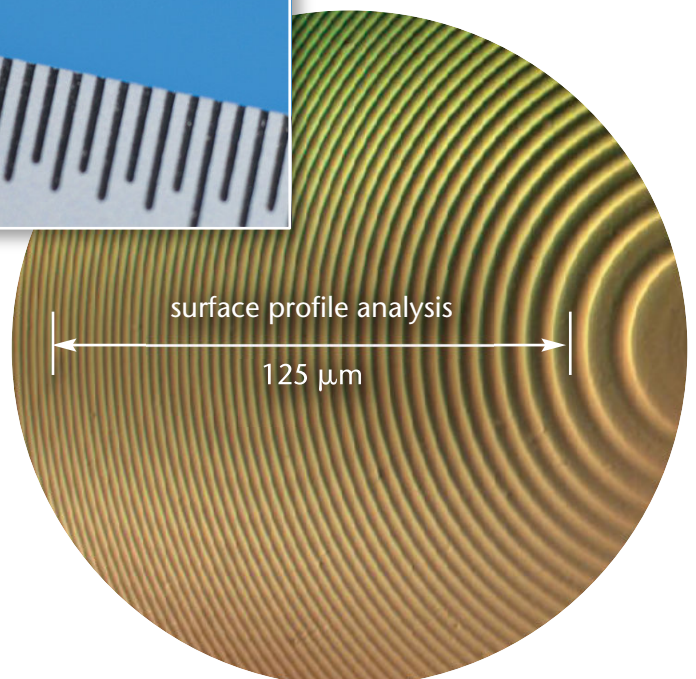
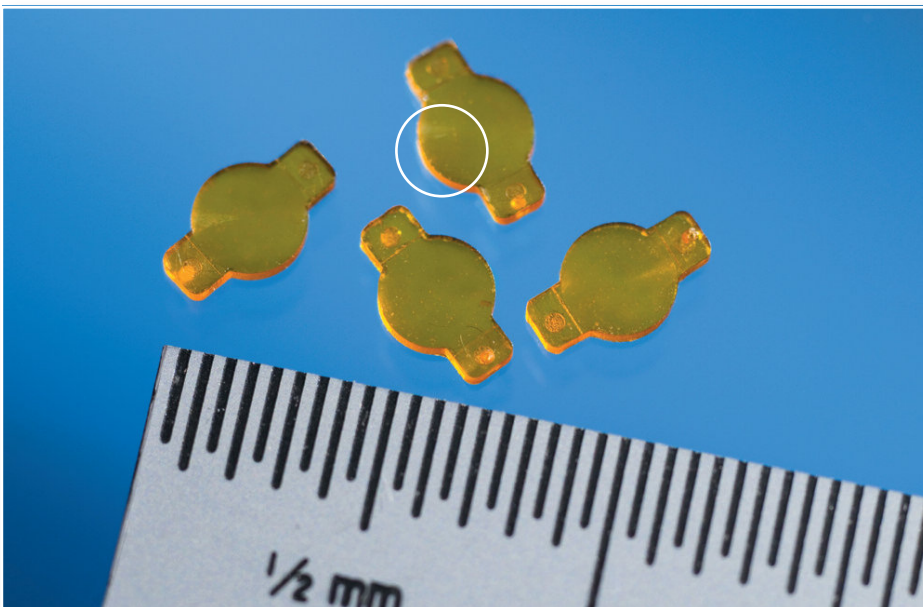
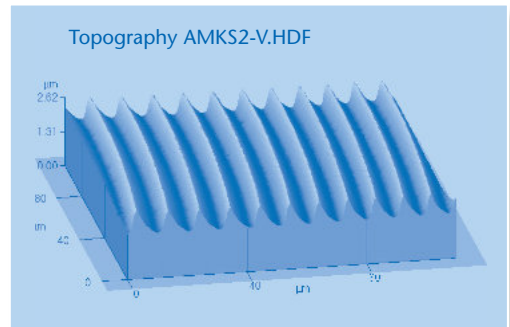
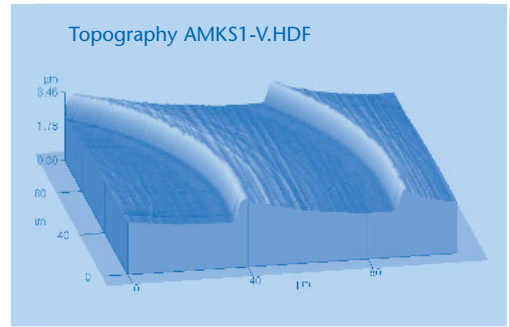
## Polymer Optics

This is perhaps the most challenging area of our business. Microsystems provides solutions ranging from **multi-cavity optical moulds with demanding toricity tolerances and high volume, to single cavity micro fresnel lenses with nanometer scale features.**

## Micro Fresnel Lens

The micro Fresnel lens gives you a true indication of Microsystems' capabilities. The 4 cavity mould, produces a micro Fresnel lens with a diameter of 2.5 mm and will run fully automatically at a 6.5 second cycle time with auto de-gating.

The surface features on the lens surface are between 450 nanometres and 910 nanometres deep. Much smaller features are possible, so just ask and we will be delighted to work with you on such demanding projects.







KERN PyramId Nano

KERN

KERN



## Micro WEDM

### Wire Electro Discharge Machining

Microsystems is the first in the UK to take delivery of this latest generation WEDM machine. With this machine we can cut through hardened steel with a wire diameter of 30 microns (0.0013") and a positional accuracy of 0.001mm (0.00004").



## KERN Pyramid Nano

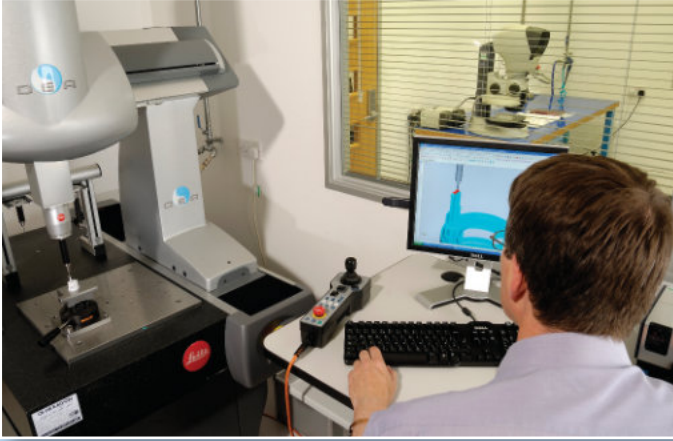
### 5-Axis Micro Milling

The positional accuracy of the ultra precision 5-axis micro Kern milling machine is 0.0005 mm (0.00002").

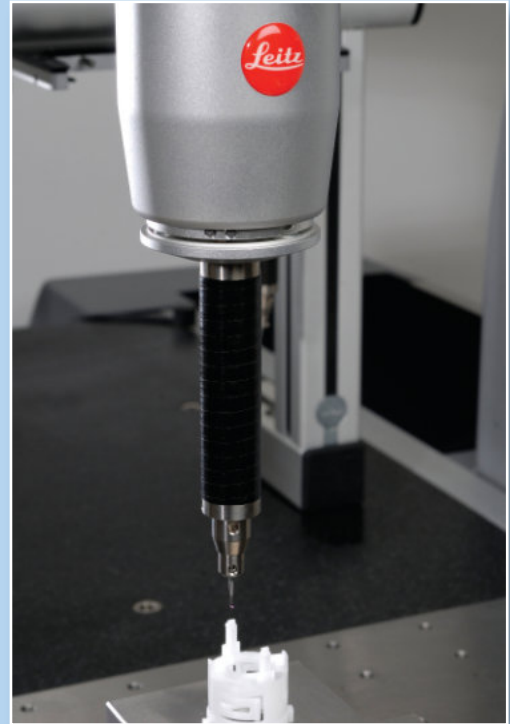
With a spindle speed of 55000 RPM, it is possible to machine fully hardened steel using cutters as small as 50 microns in diameter (0.002").

## Quality Assurance

We have installed a state of the art inspection facility with CNC touch probe CMM and vision systems up to 400x magnification, all calibrated to UKAS standards in a temperature controlled environment.



Our latest Leitz **probing CMM system** has a stated accuracy of  $1 + L/400$  microns, in accordance with ISO 10360-2 and ISO 10360-4. As an example, if we take a linear measurement of 10 mm, this would be accurate to 1.02 microns.



*Quality Management with ISO 9001 and ISO 13485 accreditation.*

## Mould Validation

Microsystems works with many of the leading blue chip companies on both conventional and micro moulds. We have developed fully closed loop multi-cavity moulds which monitor and adjust melt temperatures in each cavity. This has significant benefits in terms of the part quality and the consistency.



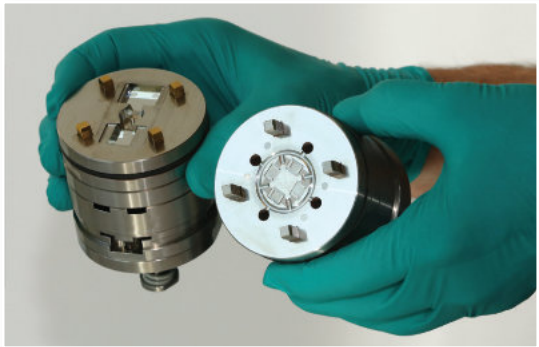
*micro mould validation*



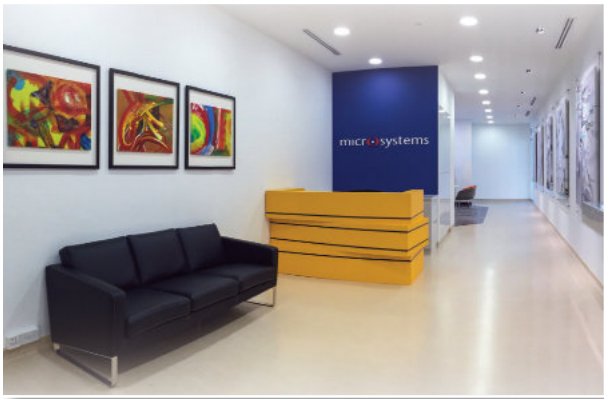


## Mould Testing, Validation, Production Micro Moulding

A dedicated clean room micro moulding area equipped with the latest generation of micro moulding machines and inspection equipment.







## Microsystems Singapore





## Servicing businesses in South East Asia

Located at MedTech Hub, Singapore, this facility has a dual purpose. It enables us to service customers operating in South East Asia, and it also acts as a mirror to our UK mold design and manufacturing facility. This allows us to transfer production between the sites if circumstances dictate, as we have duplicated the key software and machinery to match that which is used in our UK manufacturing site.

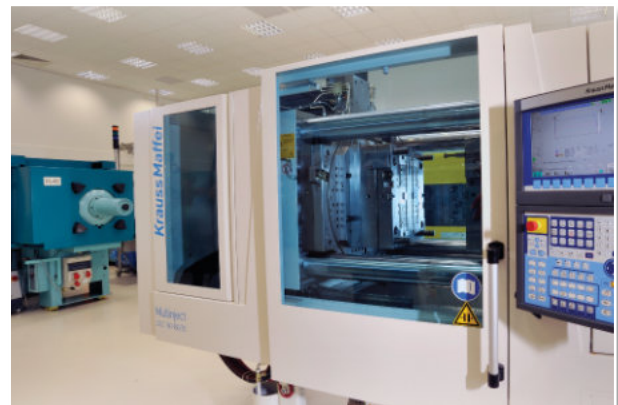






## Mould Testing and Validation, Production Moulding

With our Optimold facility, we are able to provide mould testing and offer many other production options, including 'two material' moulding. The site operates a QA system with ISO 13485 accreditation, allowing us to manufacture medical device components. These can be supplied in any quantity, from a few thousand to many millions.





Micro Systems (UK) Limited  
 101 Golborne Enterprise Park  
 Golborne, Warrington, WA3 3GR, UK

T + 44 (0) 1942 290 960  
 E info@microsystems.uk.com

Micro Systems (UK) Limited  
 Calle Ruiz Belvis #2, Edificio David Questel, Suite A  
 Santa Isabel, PR 00757, Puerto Rico

M + 1 787 209 7758  
 E puertorico@microsystems.uk.com



Micro Systems Engineering Solutions Pte Ltd  
 MedTech Hub, 2 Tukang Innovation Grove  
 #05-02, Singapore 618305

T + 65 97 94 47 00  
 E singapore@microsystems.uk.com



Quality Management Accreditation



ISO 9001: 2008  
 Certificate No LRQ 4005921/A

ISO 13485:2003  
 Certificate No LRQ 4005921/B



micro engineering solutions

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