



Concept to manufacture services of micro-engineered MEMS devices

Let us take your device from concept to manufacture in a seamlessly structured process.

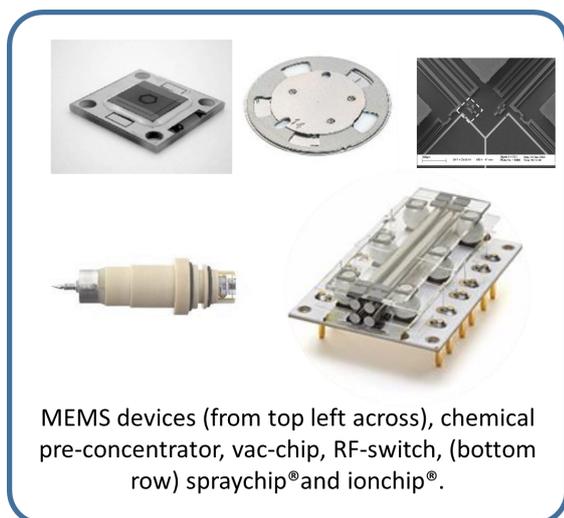
Challenges facing early-stage MEMS R&D

Making a prototype micro-engineered MEMS device is only the start of a product development project. Initially, non-optimised processes will be used to make the device meaning it is hard to make repeat and manufacturable units. To take a prototype and scale-up manufacture is a massive challenge for any organisation. Typically, a company may be able to make a prototype in a small (often university) non-controlled cleanroom facility, but have trouble transferring it to manufacture. Some reasons for failure to scale-up include:

- Incompatible processes and/or materials with manufacturer's MEMS foundry.
- Uneconomic due to unrealistic specifications of the device.
- Lack of in-house transfer-to-manufacture expertise.

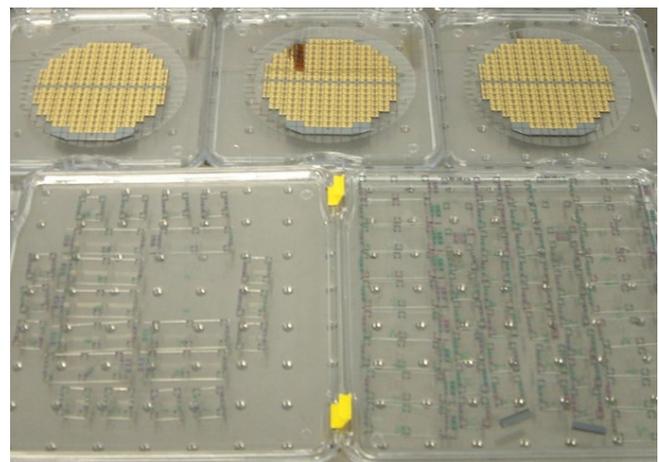
Our solution

We have developed a holistic methodology to take a paper design of a MEMS device, fabricate a prototype, develop it to meet the needs of the product, and finally transfer it to a foundry house for high-volume manufacture. To do this we developed our own standard operating processes to suit the requirements of both the device and the typical requirements of foundry houses. Electrical, mechanical and fluidic simulations were carried out to better understand the device. These activities allowed us to identify and eliminate weaknesses in the device early in development. This enabled us to rapidly generate reliable prototypes in an academic's cleanroom and de-risk the transfer to manufacture by using inappropriate materials or processes. We were then able to transfer to different world-class manufacturers using our in-house experts.



MEMS devices (from top left across), chemical pre-concentrator, vac-chip, RF-switch, (bottom row) spraychip® and ionchip®.

Examples of MEMS devices prototyped and developed by Microsaic.



Some of Microsaic's devices manufactured by different MEMS foundries. Top-spraychip die and bottom-ionchip die from 4-inch silicon/glass wafers.

The benefits of being our partner

We have successfully outsourced production of several devices we have prototyped and developed from a shared academic's cleanroom facility to different high-volume MEMS foundries in Europe. The benefits we received included a reliable, scalable and profitable supply of devices. In addition, we have a network of and industry specialists in MEMS design and manufacturing from foundries around the world.