

How can we establish the benefits and drawbacks of 'make' versus 'buy' manufacturing?



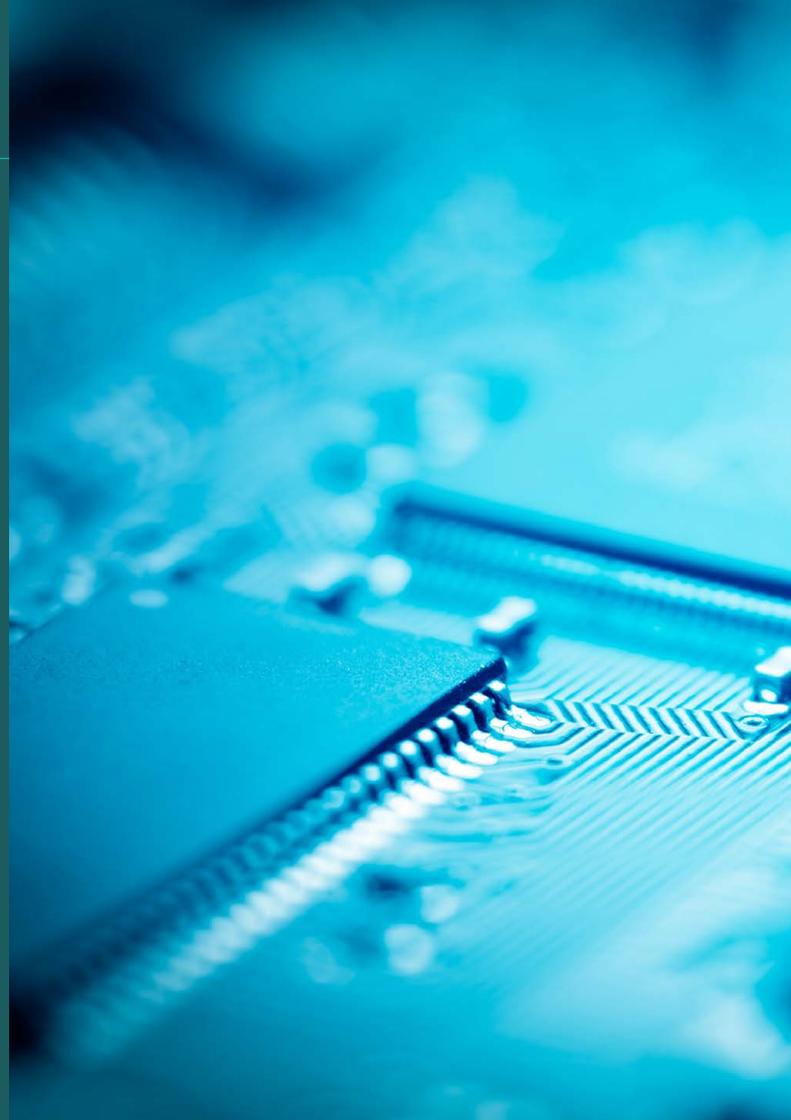
**We helped our client to develop a cost model to be used as a tool supporting their decision-making about future manufacturing options under both a 'pilot' ( or low volume) production scenario, as well as a 'high-volume' alternative.**

**Technologies**

- MEMS (micro electromechanical systems) sensor
- Dry etch and wet etch
- Reactive ion etching (RIE)
- Inductively Coupled Plasma (ICP) etching
- Photolithography

**Domain expertise**

- Cost model
- Make vs buy comparison
- Supplier interviews
- Production scale up (pilot and high volume production)



### **Our client asked:**

Our client was developing a Micro Electromechanical Systems (MEMS) sensor device – currently at the prototype phase – and wanted to start scaling up production using in-house resource, rather than a third-party manufacturer.

Understanding the economics of such a decision – in particular, which machines would be most cost-effective for producing different volumes of devices – was vital.

Our client also wanted to understand the capital and operating costs of the required machines, and the levels of output which diverse types of machines could deliver.

### **The project story:**

We started the project by holding a workshop with the client to understand their requirements.

We then developed a cost model in Excel based on these requirements, populated with data derived from a variety of sources – including supplier interviews, third party data sources and in-house experience from our sister company Frontier Smart Technologies.

We focused on two scenarios in the model. Scenario 1 was a 'pilot' scenario, producing 500 wafers per week, while Scenario 2 involved 'high-volume' production of 5,000 wafers per week.

### **Results: deliverables and outcomes**

Our client was able to understand the costs associated with a range of MEMS manufacturing options – 'make', 'buy', and a hybrid of 'buy' and 'make' – as they began to scale up production.

The key output from this work was a cost model – which we handed over to the client – that could be used as a tool to support decision making about its future manufacturing options.

This deliverable was designed to help our client understand how the choice of manufacturing process – and associated costs – evolve as different volume thresholds are achieved, using both 'pilot' and 'high-volume' production.

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