CASE STUDY

Cochlear

From Australian invention to global industry: lessons for the next semiconductor-based industry

Cochlear's growth from university research to a globally successful medical device company shows what strong R&D, a mix of semiconductor technology, and domestic manufacturing can achieve. It also highlights the policy settings, skills and supply chain capability needed to support more high-value manufacturing success stories in Australia.

About 1 in 5 Australians are living with hearing loss. In the year ahead, Cochlear expects to deliver its one millionth hearing implant. The device was invented, commercialised and is still largely manufactured in Australia. It has helped hundreds of thousands of people connect with family, work, study and the sounds around them.

Cochlear describes its product as a system rather than a single implant. Semiconductors help enable sound to be captured and processed externally, transmitted wirelessly through the skin, and converted into electrical signals that stimulate the auditory nerve so the user can perceive sound.

"Without semiconductors, we just would not be able to do that," said Greg Bodkin, Senior Vice President, Global Supply Chain at Cochlear.

The company uses a combination of off-the-shelf and custom-designed parts that give more control over the system's size, which matters for a device sitting between bone and skin. Thirty years ago, the processor clipped to a belt like a Walkman. Today, it can sit discreetly behind the ear or be concealed in hair.

Cochlear's success needed more than just a good invention. Professor Graeme Clark, who invented the device, needed to persist against initial resistance from academia and industry.

A combination of university research, private equity and government funding then helped turn the invention into a commercial product. Being first to market and investing in meaningful innovation also mattered, leading to the company now holding around 60% of the global market for such devices, earning more revenue than every competitor combined.

Cochlear now employs more than 5,500 people, makes about 50,000 implants a year, and exports more than 90% of its product overseas. Three of Cochlear's six manufacturing sites are in Australia, with roughly 1,000 people working on factory lines in Sydney and Brisbane. "Cochlear implants began life in Australia, and continue to be designed, developed and manufactured here," Mr Bodkin said.

As demand grows, Cochlear has expanded global capacity to strengthen supply chains and serve local markets. While other countries offer deep manufacturing ecosystems, particularly in high-volume electronics, Australia's opportunity is in high-value, innovation-led manufacturing.

The lesson for Australia's next semiconductor-enabled industries is clear: success will depend on strong R&D, specialised supply chains, and the judgement to know when off-the-shelf technology is enough and when custom design creates advantage.

Mr Bodkin concluded that Australia's opportunity lies in specialised, high-value technologies built on innovation and advanced manufacturing.

"We still have a great opportunity to be manufacturers on a world stage," said Mr Bodkin.

Cochlear Nucleus Nexa System
Image courtesy of Cochlear Limited