

Facing industrial decline, Wales dreams of Silicon Valley

22 December 2019

Wales is better known for its factory closures than high-tech achievements. But in Newport, a former bastion of the coal industry, a handful of semiconductor manufacturers dream of a new Silicon Valley.

"We want to be this technology centre like Silicon Valley, where we can attract whatever the big names of tomorrow are," said Chris Meadows, corporate systems manager at British firm IQE.

"Hopefully it will be whatever the 2030 version of Google is or a Facebook."

IQE is one of a small group of local companies, also including SPTS or Newport Wafer Fab, which have formed an alliance with universities to create a compound semiconductor "cluster" in south Wales.

Meadows said his firm and SPTS began working together after they discovered they had the same customer in Taiwan, using them at different points in their supply chain.

"We realised we can offer a better service if we partner," he said.

Silicon semiconductors are used extensively in [electronic circuits](#), but new innovations require new enabling technology.

Made from a combination of materials such as silicon and carbon (silicon carbide) or arsenic and gallium (gallium arsenide), compound semiconductors offer superior properties in terms of power, heat and shock resistance.

They are more complex and more expensive than silicon chips, but are more suitable for electric vehicles, laser devices or 5G telephony.

Secret recipe

In the sterile offices of IQE, the machines silently cut slices of semiconductors—"wafers"—as a few technicians in overalls and masks come by occasionally to check the screens.

"That's where the magic happens. It's like with cooking—everybody can have an oven and a recipe but not everyone is a five-star chef," said Meadows.

"Our know-how, our edge comes from that particular way of working out and assembling wafers. It's our secret recipe."

Working together, firms in the Newport "cluster" can offer custom-made products for chips used in devices by clients such as Philips or Raytheon, and maintain control over the production line.

"America, Europe, we've all kind of stepped back from manufacturing almost as if it is a dirty thing," Meadows said, noting that this has benefited Asia.

But now "it's more about machinery and intellectual property"—and that brings high-skilled, well-paid jobs to a region that has suffered industrial decline.

Around 1,400 people work for the cluster, but it hopes to have 5,000 by 2023 thanks to the growth of a global market that last year was worth \$77 billion (70 billion euros).

The next step for Newport is to produce their own integrated circuits, and that will bring more jobs.

"We currently have three companies that we're working with, two in North America and one in China... they'll be assembling the electronic products using chips made within the cluster," Meadows said.

Example of collaboration

In the cluster, manufacturers delegate research and innovation to the universities of Cardiff or Swansea.

The prototypes are managed by government organisations that invest in new technologies, the so-called catapults.

Andy Sellars, chief business development officer at the [compound semiconductor](#) applications catapult, notes a project with McLaren worth around £20 million (around 23.5 million euros).

There is in total "about £300 million of investment in this region on the next generation of [semiconductor](#) material", he added.

The cluster is a long way away from replacing the thousands of jobs lost in Wales over the last few decades with the closure of a string of factories, including Ford at Bridgend.

"Is it enough to replace the lost jobs? No it's not," admitted Heather Myers, chief executive of the South Wales Chamber of Commerce.

"But it is an answer showing that when you collaborate you can make an impact."

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APA citation: Facing industrial decline, Wales dreams of Silicon Valley (2019, December 22) retrieved 1 December 2021 from <https://techxplore.com/news/2019-12-industrial-decline-wales-silicon-valley.html>

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