

# The Compound Semiconductor Cluster:

## A Key Training Collaboration in Action



**Our first 'Venturescape' feature of 2022 explores the core of collaborative learning that runs through one of CCR's keystone priority sectors: the Compound Semiconductor Cluster (CSC) that's grown from strength to strength as a world-leading producer of high-end silicon devices centred on a 20-mile radius around Newport, South Wales.**

A pioneering ecosystem built on the collective expertise of IQE plc, Newport Wafer Fab, SPTS Technologies and CSA Catapult, the CSC is a globally acknowledged centre of excellence, with a proud pedigree of creating many of the most innovative technological breakthroughs on the planet - from powering the next generation of mobile communications and delivering a new age in medical technology, to shaping the future of energy efficient lighting and driving the rapid evolution of electric cars.

As a world-renown innovation hub - and generator of the high-value employment that's a cornerstone of future-proofed prosperity - the CSC is a critical player in exponentially increasing our region's GVA across the supply chain; and in this feature we discover the talent pipeline being nurtured through the wide variety of bespoke learning programmes and training courses that are offered throughout Southeast Wales ...

## Multi-level learning programmes, to Apprenticeships and Beyond

Clusters by definition are built on partnerships - and the training programmes that underpin CCR's Compound Semiconductor Cluster have taken our innate collaborative spirit to new heights. Across the region, our FE and HE institutions have worked in close cooperation with the CSC's industrial constituents to design an ever-growing suite of courses - from BTEC to PhD level - capable of sustaining the cluster's hard-won position as the global leader in compound semiconductor technology.

Cardiff & Vale College offers a Level 3 Compound Semiconductor pathway to BTEC, EAL and A Level students, as well as a Level 4 HNC - and it's in good company, with Merthyr College also offering a Level 4 HNC entry point to this immensely rewarding career path. In many ways that is only the beginning of the Compound Semiconductor learning journey, with three of our local FE's - Bridgend College, Coleg Gwent and Coleg y Cymoedd - providing apprenticeship level entry opportunities at both Level 4 (HNC) and Level 5 (HND); and Open University Cymru further complementing these options by offering Level 5 (HND) and Level 6 (Degree Apprenticeship) programmes.

Each of these courses are carefully aligned to the needs of the CSC - and wherever possible, to the learning circumstances of the student, giving every learner the opportunity to fully maximise their potential. The results have been highly encouraging - and even game-changing - with the Level 6 Apprenticeship provided by University of South Wales (USW) taking this tailored approach to a new level, for both 'fresh talent' and people already employed in the CSC.

## The game-changing USW Graduate Apprenticeship - and mould-breaking Cardiff University MSc & PhD

USW has developed a bespoke Semiconductor Degree Apprenticeship that's become a key part of Newport Wafer Fab's skills and development strategy - building on the qualifications already held by NWF employees and harmonising with work responsibilities to enable learners to reach degree level in the optimum time. It's a win-win-win programme that upskills NWF's employees, maintains NWF's production capability - and empowers every stakeholder to continually innovate ahead of the curve.

That appetite for breaking boundaries has also seen Cardiff University's School of Engineering create a one-year MSc in Compound Semiconductor Electronics, in collaboration with the Institute for Compound Semiconductors. The ICS is a unique facility in the UK, focused on creating a global hub for compound semiconductor technology research, development and innovation. The Institute includes IQE plc, Newport Wafer Fab and SPTS Technologies - and aims to capitalise on the Cardiff University knowledge and expertise, moving academic research to a stage where it can be introduced reliably and quickly into the production environment.

This revolutionary MSc offers a flexible curriculum that includes the latest results and innovations - incorporating the most effective teaching and learning techniques - tailored to maximise the potential of the student and our cluster as a whole. It's a pioneering approach that's also seen Cardiff University establish the PhD in Compound Semiconductor Manufacturing (in partnership with the universities of Manchester, Sheffield and UCL) - fostering close links to the CSC and providing exceptional learning and career platforms for postgraduate students.

Our region's provision of such a wide range of compound semiconductor learning programmes is a mark of the maturity and world-class status of our CSC. It's a sector that's forecast to create over 5,000 high-quality jobs in the next five years - and it's a warming thought that we're skilling our native talent pool to fulfil these 'better jobs closer to home.'

**In our next Venturescape feature later this month, we'll look at our human capital provision for another priority sector that's fast-becoming recognised for its world standard - exploring how our region's training partnerships are creating a world-class Cybersecurity ecosystem in the CCR ...**