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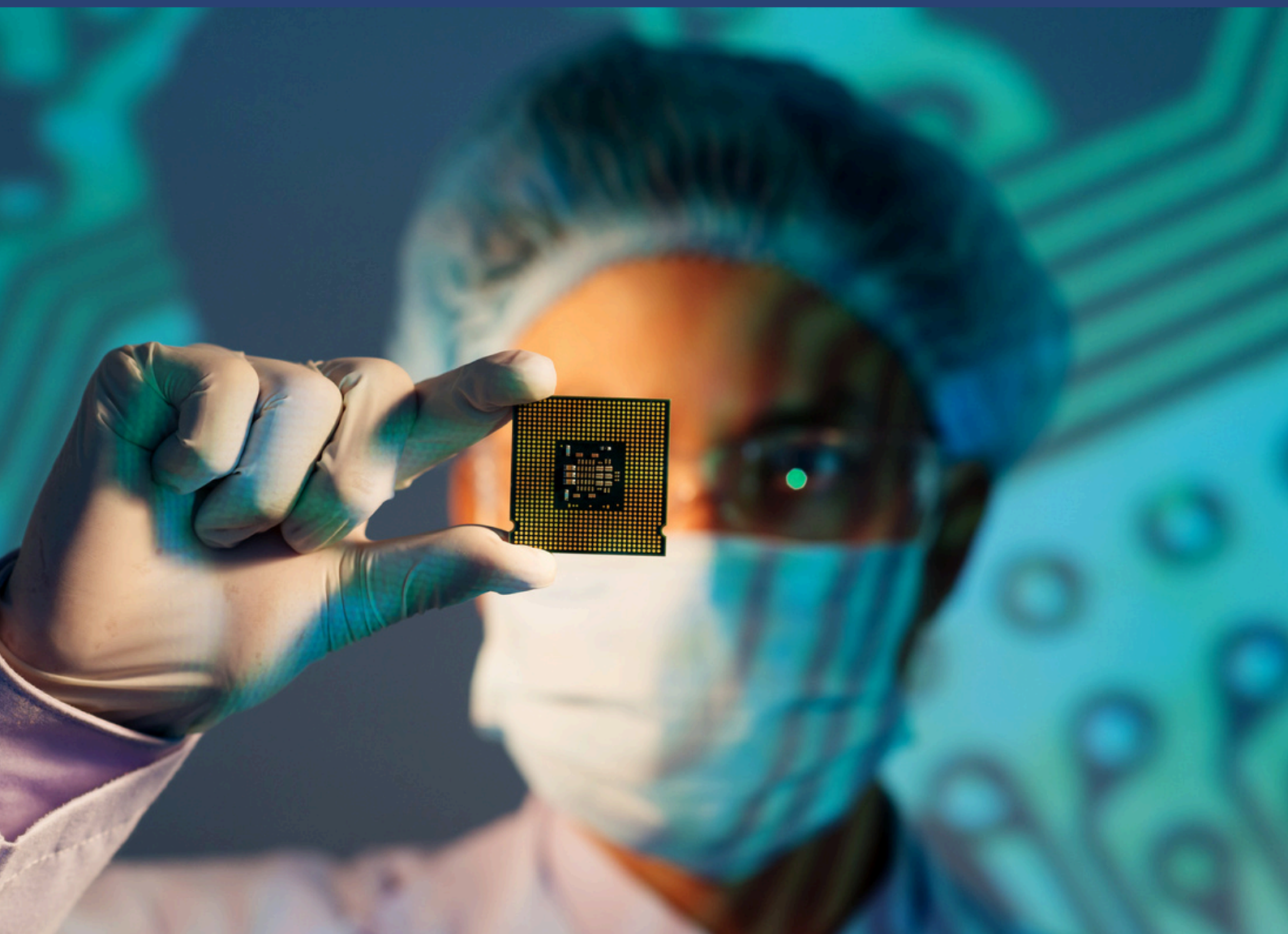
UK Electronics Skills Foundation

Semiconductors in the North East

Industry | Innovation | Careers | Opportunity

The North East is reinventing itself!
The same making spirit that shaped its industrial past is now carrying the region forward, turning clever ideas into real technology



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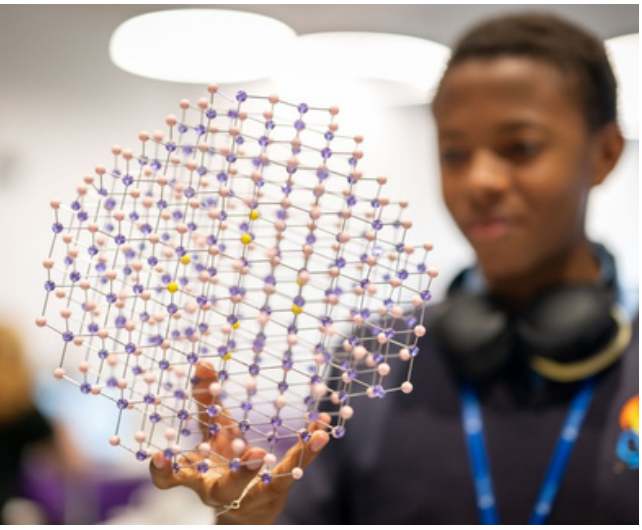
Change the world »

From coastal towns like Sunderland to the high-tech hubs of Newcastle and Durham, the North East is a place built on making things from scratch. What makes it special is its full innovation cycle where Discovery → Prototyping → Manufacturing often happens within just a few miles.



You can actually see this journey come to life.

Take, for example, the handheld radiation detectors currently used in medical imaging or security screening. These devices were made possible through research at Durham University and the work of nearby companies such as Kromek, showing how ideas that begin in academic physics labs can be transformed into real devices.

Thanks to strong links between universities, colleges, companies and organisations such as Filtronic, CPI's National Printable Electronics Centre, CSA Catapult and NEAME it is now easier than ever for everyone in the North East who wants to turn their curiosity into a career to get hands-on experience. Through these organisations, you are able to open the door and enter a growing industry that is expanding every year and offers roles in everything; from cleanroom manufacturing and chip testing to software, design, and next-generation Electronics.

Watch a company overview from Filtronic

When ideas meet action

If you're thinking about what to study next, the North East is an exciting place to start. If you arrange to take a walk through the NETPark science park in County Durham, you'll find cleanrooms, pilot manufacturing lines and labs. This is where engineers and researchers are creating all these flexible chips, photonics devices and advanced Electronics used around the world.

What makes this even more exciting is that your local universities such as Durham, Newcastle, Northumbria and Teesside, all offer courses that link directly to this line of work. Whether you're into physics, engineering, computing, design or materials science you can study subjects that connect straight to cleanroom projects and industry challenges.

And, if university isn't the route for you, colleges like New College Durham, Sunderland College, Middlesbrough College and Gateshead College offer practical courses that build the skills needed for technical roles! Many programmes also include lab time, placements or real project work. For example, CPI at NETPark regularly hosts student visits and early-career placements where you can gain experience in cleanrooms, materials labs and electronics development.

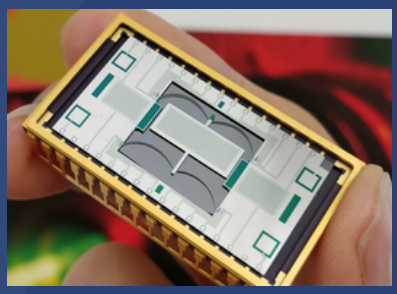


Image courtesy of the James Watt Nanofabrication Centre University of Glasgow

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Curious about studying Electronics Engineering? Explore local opportunities

- University of York
- University of Sunderland
- Teesside University
- Northumbria University
- Newcastle University
- Durham University
- NETPark Research Institute (Durham University)
- New College Durham
- Middlesbrough College
- Newcastle College
- Gateshead College
- Tyne Metropolitan College
- South Tyneside College
- Sunderland College

Local organisations

PRAGMATIC SEMICONDUCTOR

Meadowfield DH7 8RJ

Pragmatic Semiconductor is a company that specialises in making ultra-thin, flexible chips called FlexICs. Instead of using rigid silicon, they print these circuits onto bendable film, meaning that these chips are flexible and can become products such as medical patches, wearable tech or be used in everyday packaging. This technology allows Pragmatic to turn ordinary objects into smart objects that can sense, track or communicate, opening new possibilities in sustainability, healthcare and digital retail.

Students interested in Electronics, materials science or hands-on engineering can find opportunities in manufacturing, device testing and production. Pragmatic is an exciting place to work if you want to explore creative and practical careers in the semiconductor industry.

KROMEK

NETPark Sedgefield TS21 3FD

Kromek designs and makes advanced semiconductor detectors that sense different types of radiation like X-rays or gamma rays and turn it into useful for us humans signals. These tiny chips are now used in medical scanners, airport security, nuclear safety and some equipment designed to keep people safe. Also, their cadmium-zinc-telluride (CZT)-based detectors, help hospitals across the world to capture clearer images, keeps transport hubs secure.

If you enjoy physics, materials science or engineering, Kromek offers pathways into sensor design, cleanroom fabrication, testing and electronics, showing how semiconductor technology can make a real difference to healthcare and public safety.

Watch Peter Rhodes, Head of Algorithms at Kromek discuss his role.

Engineer stories

HI, MY NAME IS JACOB

I am a 'Graduate Process Engineer' at KLA Newport. KLA manufactures semiconductor wafer processing equipment - basically, machines that make computer parts.

Our customers want to make sure that our machines can make a certain product - so it is my job to ensure that they can do so, and to show them how to do it. I also look at long-term improvements to our machines.

A typical day would usually include some demo work, such as demonstrating that the machine can get certain results specified by the customer. I would need to gather results by measuring the wafers after they have been processed through our equipment. Then, I may need to formally write up my findings and present these to a customer.

KLA Newport manufactures lots of different machines, that each can be used to make a range of devices. This means that we are present in a massive number of industries. Our machines are used to make devices in cars, mobile phones, data centres, healthcare, lighting and so much more.

What I enjoy the most about working in the semiconductor industry is the variety. Every day is different, so it keeps you on your toes.

It is also very exciting to work right at the forefront of technology. I am also looking forward to start travelling with work soon, but right now the biggest benefit for me is knowing how widely used my work is. It is hard to find an industry now that is not reliant upon the semiconductor industry!

If you are curious about Electronics but not sure it's for you, watch YouTube videos on the semiconductor industry and wafer processing.

You could also attend some career fairs/conferences as a lot are free, especially if you are in university. But if you don't fancy university, there are also a lot of apprenticeships available too.

Engineer stories

HI, MY NAME IS DANI

My job title is “Manufacturing Excellence Assistant Engineer”. My responsibilities as an equipment engineer includes carrying out tasks such as preventative maintenance, fault diagnosis and testing on both mechanical and electrical equipment.

I am working on improving our Laser Anneal machine. We are unable to run this machine automatically due to the wafer edge not being detected, so it’s having to be run manually for now. This is not ideal, as it means an operator needs to stand at the machine, reducing productivity elsewhere in the fab. By resolving this challenge, it means more wafers will be processed throughout the fab, resulting in more devices being shipped out for use in renewable applications!

Something I am very proud of is achieving my HNC in Electrical Engineering and getting to where I am today as an Assistant Engineer. When I was younger, school wasn’t my strong point as I didn’t feel academically capable so to be where I am today is something I would have never imagined - I will always be proud of myself.

I like that everyday is different, we are a development fab so there are always challenges to improve current processes and our state-of-the-art machinery, this gives me opportunities to expand my knowledge through hands on experience and training.

At Clas-SiC, I have been able to gain a wide variety of experience by working alongside a very knowledgeable process, equipment and facility engineers who have guided and mentored me. I have also had the opportunity to travel to China to help set up Equipment for one of our customers.

Curiosity is the perfect place to start. You don’t need to know if Electronics is ‘for you’ yet, just try a small project and see how it feels.

Electronics is such a broad field that most people eventually find a part of it that sparks their interest, and even exploring it gives you valuable problem-solving skills!

Hands on science for all

The North East is full of places where technology and science become hands-on. A huge range of outreach programmes, workshops and festivals across the region help students, families and anyone interested to experience what the science behind Electronics, sensors and modern manufacturing is like.

At Newcastle University, outreach teams such as the Engineering Outreach team, regularly works with schools to introduce students to the kinds of problem-solving used in chip and device design. Celebrate Science at the Ogden Centre is a science and physics outreach session organised by Durham University once a year.

NUSTEM at Northumbria University brings STEM activities straight into the community, with workshops on coding and Electronics. Over at the Life Science Centre in Newcastle, hands-on exhibits let you play with materials, light and digital tech. And if you want to explore even further, groups like the Space North East England Outreach & Skills Group and STEM Hub run coding clubs, career events and engineering challenges that can stimulate your skills and creativity!

STEM in 10: Introducing an Electronic Revolution, Glasgow University

Everyday impact

Semiconductor technologies developed in the North East shape everyday life in ways you might not expect:

Healthcare

Semiconductor materials like cadmium-zinc-telluride (CZT) detect X-rays with high precision, giving medical scanners clearer images.

Smart Packaging

Ultra-thin, flexible chips created in the region power smart labels and tags that track products, monitor freshness and reduce waste.

Communications

Sensors designed by local companies support advanced imaging, medical monitoring, and diagnostic tools.

Automation

Semiconductor chips and sensors help robots move precisely, spot defects on production lines, and help factories running smoothly.

Safety

Semiconductor-based detectors placed in busy areas check for unusual radiation and send instant alerts if something's wrong.

Opportunity in action

Do you like building things, solving problems or figuring out how tech works?

If so, the North East has loads of opportunities waiting for you. Here, people work on everything from flexible chips and new semiconductor devices to testing components and developing photonics, radio-frequency (RF) systems and advanced manufacturing.

Want to explore local opportunities?

- PST Sensors Europe
- Evince Technology
- VIPER RF
- aXenic
- Filtronic
- INEX
- Isocom Components
- Kromek
- Pragmatic Semiconductor
- Coherent
- Octric Semiconductors
- NETPark
- CPI National Printable Electronics Centre

The North East is a place where your curiosity can grow into real skills and real careers. Could your ideas help shape the future of Electronics?

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The UK has a long heritage of technological innovation and has a world-class Electronics sector. It has the potential to grow and innovate to provide solutions to some of the biggest challenges facing society today.

It is our mission to inspire more young people to pursue rewarding careers in this important industry, and give them the skills to thrive.

We are an independent, UK based charity, and we work collaboratively employers, universities and schools to raise awareness of, and promote interest in, Electronics and Semiconductors.

Find out more about our educational resources for:
Aspiring engineers
Teachers

Get in touch
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