INSIDE SONY

How the Sony UK Technology Centre is leading the way with an innovative quality culture●

▲ Words: Amanda Pauley　　■ Photos: Chris Renton

T ucked away in Pencoed, South Wales, sits the Sony UK Technology Centre. The facility is the organisation's only UK manufacturing and customer service centre, and home to its manufacturing operation for professional and broadcast cameras outside of Japan. It also offers its expertise to third parties such as The Raspberry Pi Foundation, makers of the smash-hit miniature computer designed to teach schoolchildren the basics of how to program.

As *QW* is taken on a tour through the buzzing factory it's easy to see why the company has gained its reputation as a leader in the technology industry. The facility lives and breathes quality, with state-of-the-art Lean manufacturing techniques, stringent testing and a culture that has embedded collaboration and innovation into its DNA. It's also accredited to three ISO standards – ISO 9001 (quality management system), ISO 14001 (environmental management) and ISO 13485 (medical devices). The walls are literally lined with the organisation's seven core values and behaviours – passion, motivation, quality, innovation, knowledge, customer care, and winning spirit.

But how has the site set itself apart from its competitors? It's known for its unique understanding of quality and its use of methods such as *poka-yoke* (a Japanese term meaning 'mistake-proofing'). We went inside the Sony UK Technology Centre to get a fly-on-the-wall perspective of life at the site and speak to the three men embedding quality at every level.

Steve Dalton
OBE, Managing Director

Richard Wilkins
Senior Manager for Quality, Innovation and Environmental Health and Safety

Kevin Edwards
Head of Engineering

How does quality play a part in every aspect of the Sony UK Technology Centre?

Kevin Edwards (KE): The quality message is sold in many ways but one of the most effective is via our full factory review meetings, which take place twice a year. MD Steve Dalton, senior managers and various members of staff give presentations on the business' key performance indicators, such as finance and efficiency, and crucially, quality. Steve then sets the picture for what's expected from the site and every department will feed these goals into their teams via monthly, weekly and daily meetings. We also have an induction process for new staff where they are given an outline of what we do, our behaviours and a detailed history of the Sony UK Technology Centre.

Steve Dalton (SD): When the facility opened more than 40 years ago the majority of our senior management, product staff, and engineers were trained by our Japanese colleagues. They taught us about the techniques, philosophy and culture of quality, and what it means in terms of the process, service, parts, material, and people. We've embedded these methods into our skills and culture, and the facility in Pencoed has grown with that focus in mind.

How do you carry out stringent process testing on every product you manufacture?

KE: Our products are complex, powerful and small in size, and this increased functionality means more measures are being undertaken to
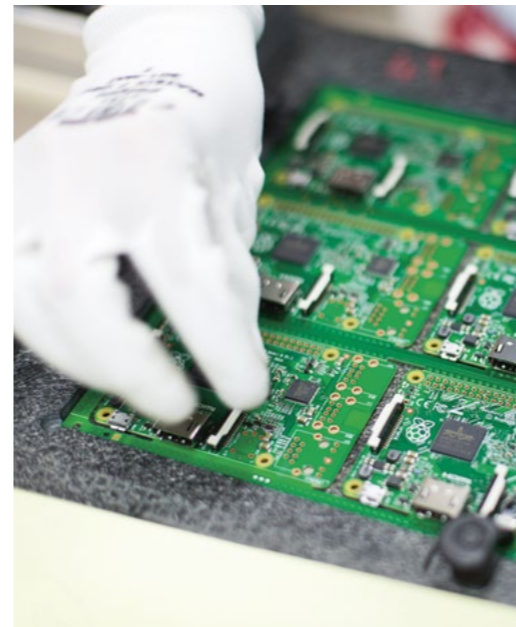
confirm the customer always gets what they require. Our broadcast cameras are high-value items, especially when they are shooting *that* Tiger Woods putt or recording an interview that only happens once. They have to be perfect.

It takes just under four hours to confirm the functionality of a broadcast camera. It involves ensuring customer specifications are met and that everything in the manual has been checked. We carry out this process with automation, as well as with people, and then the products are passed on to the quality control (QC) team. The QC team will treat the products a little more roughly, flicking the switches and making sure it all feels like it should. We simulate various conditions during our testing to ensure our products meet the quality standard our customers have come to rely on. There are two sides to the process: one where we vigorously test to every standard and composition, and the other where we make sure it feels like a high-quality Sony product.

Richard Wilkins (RW): We also carry out tests on the components themselves. For example, if we have a new component/product or a new supplier, we will carry out various specification tests, stress tests, heat tests, cold tests and vibration tests. We want to make sure that each and every part of the final product passes our strict quality requirements.

SD: When we start to make the first run for a product we have a gating process. It's a decision-making tool that helps us identify and implement decision points throughout the process. We have these at every stage of manufacture, from design, pre-production and first-stage production, to second-stage production and shipping. If we don't meet the criteria or the product doesn't (this also tests our manufacture process), then we won't move onto the next stage until the issue has been fixed.

The Sony UK Technology Centre by numbers

30,000 m² in size

350+ staff

42 years old

5 apprenticeships undertaken last year

54 number of Japanese processes in use

6 Sony and non-Sony products made on-site

Images, above and inset: The Raspberry Pi computer; and an employee working on a broadcast camera

How do you determine what the customer's expectations will be before you start manufacturing?

RW: We look at products from the customer's point of view – what are they likely to do with it? And then try to replicate it. We have a saying here where we 'try and make it fail'. It's good to confirm a product is working but what we want to know is under what conditions does it fail? If we understand that then we can plan for every eventuality and ensure the product is robust.

KE: Our broadcast cameras can be used in the desert one week and the Arctic the next, so we have the ability on-site to try and mimic those temperatures and atmospheric conditions. For example, we take a camera down to minus 30 degrees and see if everything still works.

How do you ensure *poka-yoke* assembly processes regardless of the quantity or complexity of the product?

KE: Fifteen years ago we began a project to put traceability into our operation and it evolved into a coding system we called 'Alchemy' – so named because we were trying to use the base metal of the material in the warehouse and turn it into a gold-standard product. The system was designed by our engineers and includes full serial numbers and adjustment values – everything you need to analyse trends and feed forwards or backwards to the customer. If a unit gets damaged in the market and comes back, we have full traceability.

Today, Alchemy has grown into a huge database system that prevents us moving a model or unit to its next process until the previous process has been completed satisfactorily – this even comes down to the packing of the unit. You can't print the barcode label or point-of-sale label onto the box unless all our processes have been ticked. Nothing leaves the factory unless it has been thoroughly processed and meets our strict quality standards.

How does your innovative use of quality tools set you apart from competitors?

KE: Quality is a key competitive differentiator for our business. It's about using everything in your quality toolkit – Six Sigma, 5S, *Kaizen* and *poka-yoke* – but only where you need them. It's not a 'one tool fits all' model – it takes the right mix of quality tools. You can teach anyone the tools but the important thing is we have the right people who know when to apply them and how to do it effectively.

RW: Our 'Sony Learning Academy' enables our staff to undertake external courses that expose them to Six Sigma, the DMAIC model (define, measure, analyse, improve, and control), problem solving and more. It's the toolbox everybody needs and embodies the common language we all speak. We also have 30-minute in-house training courses called 'Quality Knowledge' that explain the importance of 5S, production innovation and *Muda Dori* (an evolving process that aims to eliminate waste). By using techniques such as *Muda Dori*,

we try to categorise what processes and manufacturing techniques are wasteful and inefficient, or could be improved. Once identified, we try to think of new and innovative ways to remove them to allow what is valuable to emerge. In turn, it also makes the manufacturing process as efficient and effective as possible. Automotive manufacturer Toyota were the first to introduce this type of methodology.

SD: The principles of *Muda Dori* come from the basis of *Kaizen* theory which, when translated, means 'good change'. There are seven items of *Muda Dori* we're constantly addressing. They are: over-production, idle time, transportation, non value-added work, inventory, motion and defects. Our staff know to use Japanese techniques to get rid of non value-added work and waste inside their own process, production cell and office area. We constantly ask questions such as: "Where are you doing non value-added work in the office and the back-office support area?" It comes down to the fact that we want to be the best we can be.
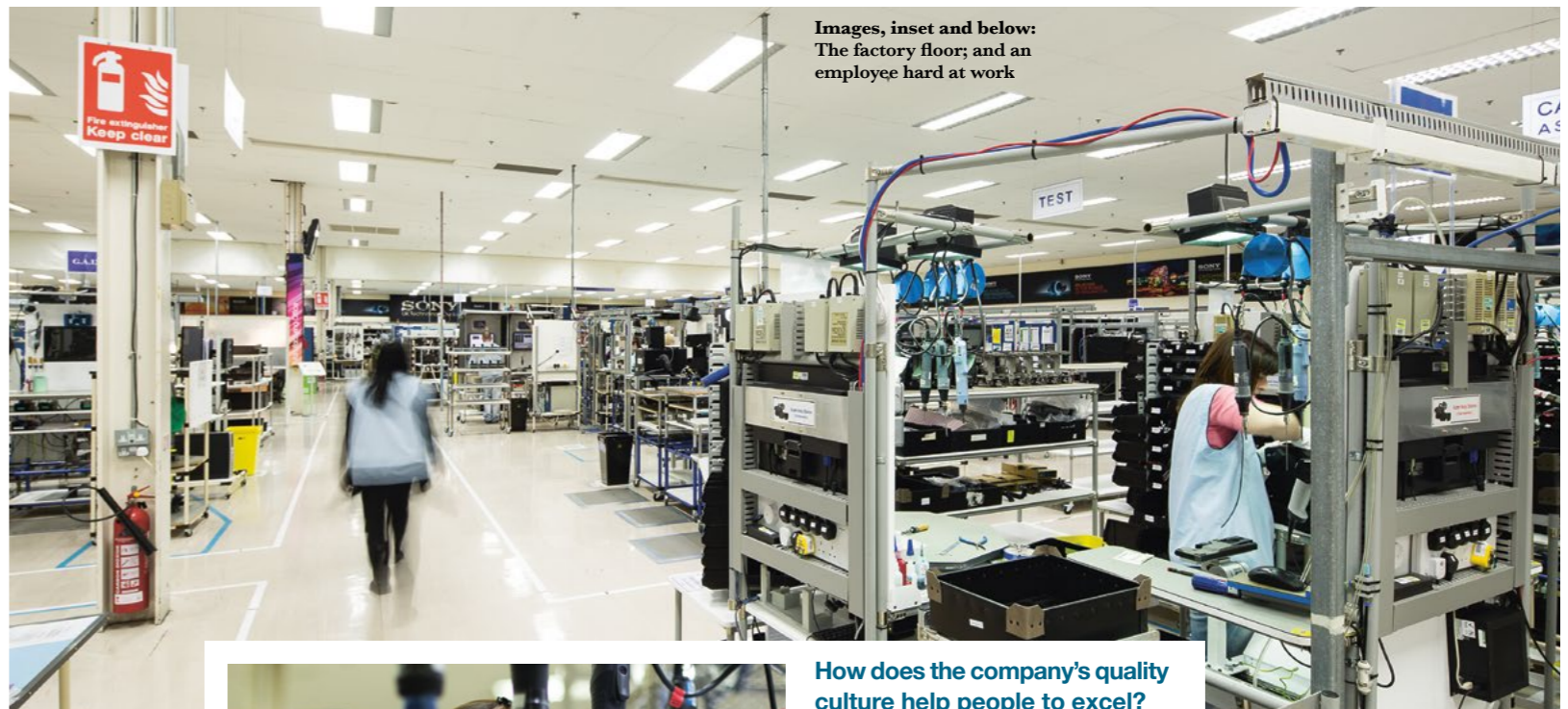
Images, inset and below: The factory floor; and an employee hard at work
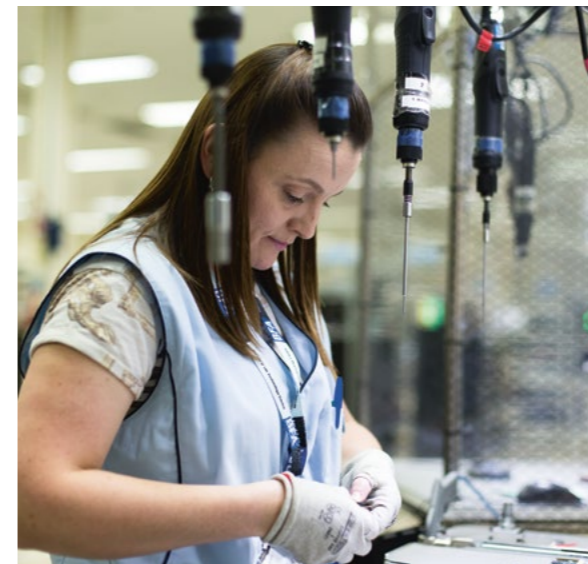
How does the company's quality culture help people to excel?

SD: We live by the mantra of 'doing something better today than yesterday'. We want our people to take it to the next level. To help bring this to life, we have an employee recognition scheme where staff can recognise their colleagues for activities they've done well and we'll reward them. We also reward those who put their hands up and admit they've made a mistake. Human error, to some extent, is inevitable. What we're trying to achieve with this 'putting your hands up culture' is minimisation of the human impact on our production runs. We value honesty because it's better

for us to capture a problem on-site than let it go out the door – there's no 1980s blame culture here.

What do you think is the secret to your success?

SD: Even though we're part of the Sony Corporation, we don't have the same production systems as other factories worldwide. We're given the freedom to design our own production systems to make our products. So, we might be making a camera for the European market similar to one our sister factory in Japan is making for the Japanese market, but the way we assemble it will be different.

KE: It's an exciting place to be an engineer because you can really design from scratch. We design our own test equipment on-site and there have been instances where we've shared best practice with Japan. It generates some very healthy competition and it's useful to have two different cultures developing solutions together. ∎

Watch it
See how a quality culture is embedded at the Sony UK Technology Centre in our exclusive video: **thecqi.org/qualityatsony**