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WELCOME TO HVM CATAPULT CONNECT

Your bi-monthly high value manufacturing update



Rosa Wilkinson
 HVM Catapult
 Communications
 Director

Welcome to the first edition of the High Value Manufacturing Catapult's Newsletter. As a relative new-comer to the Catapult myself, I know all too well that it can be hard to keep in touch with everything that's happening across our organisation. That's a pity, because since we came into being in 2011, the Catapult and its centres around the country have often been in the vanguard of innovations which will shape our futures: the battery technologies that will help us reduce carbon emissions, the use of sensor technologies that mean we can spot problems before they happen, the development and application of 3D printing, the use of composite materials that reduce weight while increasing durability and design freedom and so much more.

In these pages, I want to bring you the latest news of what we – and some of our illustrious partners – are up to, especially where that might help you to achieve your goals. You will read about the work our 7 centres are doing to turn the UK's brilliant research output into the commercially successful goods that make us all more prosperous. You will hear how we are developing our service offering to meet the needs of companies of every shape and size right across the manufacturing sector waterfront. You will learn about our future plans and how you can help guide them and you will also hear what others are doing to make sure that innovation hungry manufacturers in the UK can thrive. It promises to be a rich mix. My ambition is to make the newsletter interesting and useful. If there are themes you would like us to cover – or ways we can make the newsletter better for you, email me at info@hvm.catapult.org.uk.

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high-value-manufacturing-catapult/](https://www.linkedin.com/company/high-value-manufacturing-catapult/)

hvm.catapult.org.uk



High Value Manufacturing Catapult appoints new Chair

The High Value Manufacturing (HVM) Catapult, which stimulates and supports the commercial application of new technologies through the development of innovative manufacturing processes, has appointed Allan Cook CBE as its new Chair. He succeeds Bob Gilbert CBE, who retired from the role in March 2018.

Allan brings an impressive catalogue of experience to the Catapult. A chartered engineer with more than 40 years' international experience in the automotive, aerospace and defence industries, his CV includes senior roles at some of the world's best known and most innovative manufacturing businesses and their representative organisations, as well as experience at the interface between Government and business. Welcoming the appointment, Dick Elsy, Chief Executive of the HVM Catapult said: "I am delighted that Allan has agreed to take on the role of HVM Catapult Chair. His insight and experience will help us as we work to help UK manufacturers improve their productivity and performance through innovation".

Cook himself is eager to begin. "I am looking forward to working with fellow board members and the executive to continue the excellent progress achieved under the leadership of my predecessor, Bob Gilbert CBE. Together we will continue to inspire the Catapult's first-class team to help UK manufacturers translate the excellence of our research base into products and processes that will improve our competitiveness and increase the UK's share of global markets".

For more information on the HVM Catapult's Supervisory Board [click here](#). ■

The MTC creates 100 new jobs and 3-fold increase in apprenticeships by 2020



The Manufacturing Technology Centre (MTC), a key part of the HVM Catapult network based in Coventry, is continuing its strong growth after seeing its workforce grow by more than 20 per cent in the past year. The growth looks set to continue through 2018 with the announcement of the creation of 100 new jobs and plans to triple apprenticeship places by 2020.

The MTC is currently expanding its existing facilities with a new dedicated base for its Business Launch Centre, which will allow it to strengthen its support for manufacturing SMEs and start-ups.

In addition, it is enhancing the National Additive Manufacturing Centre, which is

overseeing a £14m government-backed project to increase the use of additive manufacturing in the aerospace industry supply chain. This has increased the need to bring in engineers to deliver a vast range of projects to develop and deliver technology for leading names such as Rolls-Royce, Panasonic and Amey, as well as SMEs – the lifeblood of British manufacturing.

The industry-leading MTC is also planning to provide training to 300 high-quality apprentices per year by 2020. The news comes as The Department of Education confirmed that the MTC has now been approved to become a provider and included in the Register of Apprenticeship Training Providers (RoATP), a major accolade for the Centre. ■

A question of Supply

With all of the words that populate every newspaper column and news broadcast, it's clear that businesses are concerned about the final shape of the UK's EU exit deal and what that will mean for their supply chains. Now, it makes absolute sense for firms to invest time and effort both in signalling their needs to Government and preparing for different as yet unknown possible futures, but is there a risk that amid all the Brexit brouhaha, we could just miss a rather more significant challenge?

Here within the HVM Catapult, one message is coming across loud and clear: the world is changing and those who don't adapt risk getting left behind. That's particularly true in

supply chains: if the companies you supply want the flexibility and increased productivity that comes from the new technologies of the 4th Industrial Revolution and you can't deliver them, then prepare to wave goodbye to a fat order book.

The good news is that there are people out there who can help you think through where it makes most sense to invest your time and resource. The HVM Catapult has produced a simple paper to get you going. Take a peep at "The Fourth Industrial Revolution demystified" [here](#) or get in touch with one of our centres – we could be the difference in your future success. ■

Stronger Together: It's good to talk



Stronger Together: New Researchers in Residence Programme supports knowledge exchange



A new pilot initiative was announced last month to improve knowledge sharing between research universities and the Catapults. The Research Councils UK (RCUK)/Catapult 'Researchers in Residence' (RiR) initiative provides £2.6 million of funding to support up to 52 awards to cover research visits/residencies for university (and other eligible research organisations) academics to spend time embedded within the Catapult teams. The awards will cover researcher salary costs, travel and subsistence as well as any key consumables used at the Catapults.

The initiative has been created with the goal of really accelerating the impact of Research Council-funded research as well as increasing knowledge exchange and co-creation between academia and Catapult centres. We hope that it will stimulate new collaborations between academia and Catapult centres in ways that expand our capabilities and knowledge.

Announcing the awards Professor Philip Nelson, EPSRC's Chief Executive and Chair of RCUK said: "The movement of people is widely acknowledged as one of the most effective ways of exchanging knowledge. Improving interaction between researchers and users has been a focus for Research Councils for many years. By stimulating the flow of people and skills in the innovation system these Researcher in Residence positions will help accelerate impact and enable our world leading researchers to maximise the impacts of their research."

If you'd like to know more about the Researchers in Residence initiative or to become a participant, [click here](#). ■

When was the last time you heard someone say that the UK was brilliant at turning the output of its research base into prosperity-boosting goods and processes? Recently? Quite a while? Never? The truth is that through the ages review after review has discovered that while the UK has an enviable, world leading reputation for brilliant science, it has never quite managed to create a smooth conveyor belt from the science base into the commercial world. That's why, back in 2011, Government launched the Catapult programme to create a network of technology-focused centres to transform the UK's capability for innovation in specific areas and help drive future economic growth.

Today, the HVM Catapult sits at the fulcrum of the relationship between our research community and innovation-hungry businesses. In its short history, the Catapult has delivered a number of great successes in harnessing the power of UK research but is far from complacent that the journey from research excellence to commerce can look after itself. Let's be honest, researchers and industrialists rarely share a room. That's why, towards the end of 2017, the HVM Catapult created the UK Manufacturing Forum to bring together the leading academics, innovation providers and key industrialists with interests in advanced manufacturing.

Its first gathering, in December, attracted some 150 participants and explored both emerging trends and opportunities for collaboration across the national manufacturing ecosystem. The conversations within the event delivered clear recommendations for Government, academia and Research and Technology Organisations on kicking forward strands of the recently published industrial strategy, but also provided an opportunity to compare notes and join up on technology progress.

Demand for the sort of interaction enabled by the Forum is such that, having originally anticipated that the Forum would meet formally only once a year, the HVM Catapult is now gearing up for a second gathering in May. Megan Phipps, Technology Portfolio Manager for the Catapult, was excited about the potential for the Forum in the longer term. "When industrialists, innovators and research communities come together great things happen – the focus of research becomes better tuned to market needs, new product and process development is inspired by new research, and great ideas can be accelerated to commercialisation because all the right people are involved. The UK Manufacturing Forum kick starts collaborations that could change our world" she said.

For more information on the UK Manufacturing Forum [click here](#). ■



New project to transform biologics manufacture

The Centre for Process Innovation (CPI), the UK's technology innovation provider for process manufacturing, has announced that it is in the final stages of a Biotechnology & Biological Sciences Research Council (BBSRC)-funded collaboration with the University of Edinburgh's Roslin Institute that will transform the way valuable proteins are manufactured for research, veterinary and human health.

Therapeutic proteins are an important class of medicines serving patients most in need of novel therapies, particularly chronic diseases, immune disorders and cancers. But current production processes are both costly and inefficient. The collaboration with the Roslin Institute, hosted at CPI's state-of-the-art National Biologics Manufacturing Centre, aims to develop commercially viable and scalable methods to produce biologics in transgenic animals. It will enable the production of cost-efficient, highly pure, biologically active therapeutic proteins.

The project builds on the Roslin Institute's long-standing work to develop therapeutics proteins using genetically modified chickens that can express different recombinant proteins in their egg whites. The Institute has made great progress, but to be commercially viable the protein being produced needs to be scalable. The collaboration with CPI will purify a substantial amount of egg white to evaluate the initial scalability of the protein and help form the basis of the purification process. The goal is to demonstrate an economically viable and scalable downstream process to isolate this therapeutic protein in egg whites. Positive results of this project will have wider implications for the development of both veterinary and human therapeutics, by providing a more efficient route for biologics manufacture in the future.

As Lissa Heron of the Roslin Institute commented, the CPI team's biologics expertise, chromatography experience and the high quality of facilities available was core to the success of the project. "CPI has been critical in developing our methods into a commercially scalable and viable process." ■

Nuclear Power: Small is Beautiful



Small modular reactors (SMRs) are advanced reactors producing up to 300MW of electric power that can be largely built in factories as modules to minimise costly on-site construction. The technology potentially offers significant opportunities to manufacturers. If the UK can take an international lead in SMR technology development, the UK supply chain could produce SMRs for the global market.

Rolls-Royce is leading a consortium of British companies to design a small modular reactor power station to deliver low cost, low carbon energy to help the UK meet its carbon commitments. The Rolls-Royce-led UK SMR could produce reliable energy for as little as £60 per-megawatt-hour – competitive against wind and solar – and through its innovative approach to modular construction, avoiding the complexities, delays and overspend often associated with large infrastructure projects.

"Modular design is central to our UK SMR power station, not only for the reactor components but for the construction of the entire plant," says Matt Blake, Chief Engineer for the UK SMR at Rolls-Royce. "The UK SMR uses road-transportable modules that are completed in factories and transported for direct plug-and-play installation on site, allowing a fleet of reactors to be built and operated with much greater levels of cost certainty and operational efficiency."

In February, Rolls-Royce announced the award of a contract to the HVM Catapult's Nuclear AMRC to develop a module demonstrator for the UK SMR. The demonstrator will develop an understanding of modules and underpin early-stage design principles which will help deliver cost and programme certainty for the manufacture, construction and through-life operation of its UK SMR power plants.

Jonny Stephenson, Business Development Manager at the Nuclear AMRC said "This is a fantastic project for our new modular manufacturing research facility in Birkenhead ... We will work with the UK SMR consortium to explore both physical and digital aspects of modularisation, using technologies that have the potential to deliver significant savings in the manufacture, assembly and operation of SMR power stations."

[Click here](#) to read more about the Nuclear AMRC's SMR activity. ■

Faster charging – New sensor tech for commercial Lithium-ion batteries

Batteries – in our era of rechargeable devices and electric cars, they're more important to us than, perhaps, they have ever been. But we're all familiar with the frustration that can come from slow charging times. The good news is that researchers at WMG at the University of Warwick, part of the HVM Catapult network, have developed a new direct, precise test of Lithium-ion batteries' internal temperatures and their electrodes potentials and found that the batteries can be safely charged up to five times faster than the current recommended charging limits.

The new technology works in-situ during a battery's normal operation without impeding its performance and has been tested on standard commercially available batteries. The new technology will enable advances in battery materials science, flexible battery charging rates, thermal and electrical

engineering of new battery materials/technology and has the potential to help the design of energy storage systems for high performance applications such as motor racing and grid balancing.

If a battery becomes over heated it risks severe damage particularly to its electrolyte and can even lead to dangerous situations where the electrolyte breaks down to form gases that are both flammable and cause significant pressure build up. Overcharging of the anode can cause internal short circuits and subsequent catastrophic failure.

In order to avoid this, manufacturers stipulate a maximum charging rate or intensity for batteries based on what they think are the crucial temperature and potential levels to avoid. However, until now it's proved either impossible or impractical to test internal temperatures a battery without significantly

affecting the battery's performance.

Manufacturers have had to rely on a limited, external instrumentation unable to provide precise readings which has in turn meant that manufacturers have assigned the most conservative limits on maximum charging speed or intensity to ensure the battery isn't damaged or destroyed.

Now, though, researchers in WMG at the University of Warwick have developed new range of methods that allow direct, highly precise internal temperature and "per-electrode" status monitoring of Lithium-ion batteries. The data acquired by such methods is much more precise than external sensing and the WMG have been able to ascertain that the lithium batteries commercially available today could be charged at least five times faster than the current recommended maximum rates of charge. That should give all of us a boost. ■

The Industrial Strategy Challenge Fund: The search is on

At the end of November last year, Business Secretary Greg Clark launched the government's Industrial Strategy, setting out a long-term vision for how Britain could build on its economic strengths, address its productivity performance, embrace technological change and boost the earning power of people across the UK. Announcing the strategy, he committed to investing a further £725 million over the next 3 years in the Industrial Strategy Challenge Fund (ISCF) to respond to some of the greatest global challenges and the opportunities faced by the UK and make the UK the world's most innovative nation by 2030.

In February, Innovate UK and its partners issued a call inviting ideas for the third wave of societal and industrial challenges that should be tackled as part of the Strategy. Proposals need to be aligned with at least one of the four 'grand challenges' Government has identified: artificial intelligence and the data economy; clean growth; the future of mobility; and meeting the needs of an ageing society.

Innovate tell us that, to have the best chance of succeeding, proposals should be collaborative, joining industry, academia and other stakeholders, and should define an industry-led strategic which is compelling, focused,

understandable and with clear benefits if solved. More than this, proposals should take advantage of the depth and expertise of UK research, offer a clear opportunity for sustainable growth, including global markets, and boost productivity. It will of course help if businesses can declare their intention to co-invest with government, but challenges cannot be "owned" by a single company.

Earlier waves of the Challenge Fund have already addressed manufacturing. These include medicines manufacturing, batteries, construction, food & composite materials, but where else should Government be putting its funding weight? If you have an idea but aren't sure whether to proceed Innovate UK and the Knowledge Transfer Network (KTN) are on hand to help. For example, the KTN can offer impartial advice to:

- helping establish overlap with what has gone before,
- encouraging the joining together of consortia (where there is mutual benefit and helps scale)
- helping to gain more industry commitment via making connections across our network.

For more details about the call, [click here](#).

Please get in touch with KTN's manufacturing team for help and advice on finding the right expertise, funding and partners for your project, and challenges and opportunities specific to your business.

<https://ktn-uk.co.uk/contact>. ■

Innovate UK

Knowledge Transfer Network

Only Connect: Nuclear AMRC disk laser cell open for R&D

One of two HVM Catapult Centres in South Yorkshire, the Nuclear Advanced Manufacturing research Centre (Nuclear AMRC) works with companies to overcome their manufacturing problems and help them develop the technical capability to compete on cost, quality and delivery in one of the world's necessarily most demanding industries. In February, the Centre opened a new facility for collaborative R&D into high performance welding techniques.

Using a powerful new disk laser cell, the Centre's power beam team have completed the first welding trials, following a four-month installation of the cell. The cell is designed to produce high-quality deep penetration joins, from around 15mm in stainless steel, over lengths of a metre or more. It features a 16kW Trumpf disk laser, the most powerful of its kind in the UK.

The Nuclear AMRC team will initially use the cell to investigate the viability of using the laser to weld seams on large intermediate-level waste containers for the nuclear decommissioning sector where laser welding promises to reduce manufacturing times and costs whilst maintaining a high quality of weld seams. But the technology – which promises significantly to reduce manufacturing times and costs whilst maintaining the quality of weld seams – has a far wider application than the nuclear industry.

The team at the Nuclear AMRC is now keen to talk to manufacturers who are interested in developing laser welding processes for their own production, or who want to investigate innovative applications of the technology. Click [here](#) to read more. ■



Something in the water: VR delivers Yorkshire prudence

Engineers at Yorkshire Water are turning to a virtual reality technology developed by the Advanced Manufacturing Research Centre (AMRC) at the University of Sheffield to help design and visualise new treatment works. Not only could the approach help deliver a better-functioning water system, it will also help to save up to £1million in design costs by 2020, reducing pressures for customer price increases.

The approach makes use of virtual reality headsets, developed by the AMRC, that allow Yorkshire Water engineers to bring to life plans for new treatment works and other equipment. The cutting-edge technology, which has already helped the likes of Boeing and Mercedes-Benz, is seen as a

viable alternative to traditional modelling packages because it allows for powerful interaction with conceptual design models. So far, the approach has saved Yorkshire Water some £180,000 in prototyping costs and further cost savings are likely as the technology allows equipment to be manufactured off-site and rigorously tested in a virtual environment, helping to improve construction accuracy and reducing on-site health and safety risks. Less reliance on expensive physical prototypes will also help the business keep a check on its carbon footprint by keeping design in the virtual, rather than the real world.

A detailed virtual reality model has already been made of Yorkshire Water's Irton

water treatment works in Scarborough which is in the process of having a £17.5m upgrade. Nevil Muncaster, Director of Asset Management for the company, is positive about the benefits using virtual reality is delivering "What we now have is an immersive experience that enables us to check all the interfaces; to check that everything fits where it is supposed to fit before it goes on site; to ensure that safety and efficiency are fully integrated into the design, to give our operators and maintenance engineers a plant that is easy to run. It is a step change in how we design our new engineering projects and has the potential to generate significant cost savings." ■

Delivering value through driving innovation: The Centre for Process Innovation publishes 2017 Annual Review



The UK process industry contributes some £195 billion each year to the UK economy by providing essential materials and components into downstream manufacturing or directly into consumer markets.

The Centre for Process Innovation (CPI), established in 2004 as the UK's national technology and innovation centre for the process manufacturing industries, is therefore a vital part of the HVM Catapult, focusing in on an important segment of manufacturing that is all too often forgotten. As CEO Nigel Perry comments "CPI is a key player in fulfilling the UK's Industrial Strategy. Ensuring that new processes, technologies and products get to market means that companies based in Britain can be more successful, employ more people, and give benefits to our society that are much sought after."

As the CPI published its latest Annual Review last month, Perry can be confident that his team is having an impact. Alongside the traditional flow of numbers, the document shines a spotlight on just a few of the projects the CPI has driven forward which have the potential to transform life

experience for every one of us ranging from SeaGas – the production of bio-methane from seaweed through anaerobic digestion - to the SmartMed project, focussed on developing the smart packaging for medicines that will allow healthcare providers to track and monitor the location of medicines, and whether and when patients are taking them. See page 4 for more on the CPI's work on biologics manufacture.

CPI's Non-Executive Chair, Jennie Younger, is confident that there is more to come from the CPI team. "With strong, proud roots in the North East of the UK, CPI is helping this nation to become the go-to destination for the development of new science and technology," she said. "Since it was established, CPI has developed an outstanding reputation and track record for delivering value through driving innovation and improving the UK's manufacturing productivity. This is a strong foundation on which to build our future strategic intent to establish CPI as a world leader in every technology that we offer."

If you'd like to know more about the work of the CPI, click [here](#) to visit their website, or read a copy of CPI's Annual Review [here](#). ■

CPI's National Formulation Centre Opens



Effective and efficient formulation underpins success across a broad swathe of business sectors – pharmaceuticals and healthcare, food and drink and personal care to name just the most obvious. So the opening of a new, state-of-the-art formulation facility by the CPI last month is reason to celebrate. The new National Formulation Centre, based at NETPark in County Durham, was first announced by then Chancellor, George Osborne, in 2014, but opens its doors thanks to funding from the North East LEP as part of the North East Growth Deal.

Home to world-class formulation laboratories and the accompanying expertise, the Centre's goal is to help UK businesses succeed and grow by developing innovative products and processes using formulation science. CPI experts will guide companies through the steps needed to take their next-generation formulated products to market and reduce risk on their decisions or capital investment plans.

CPI Chief Executive, Nigel Perry sees the new Centre as a natural next step in the development of the CPI offer commenting "This new national innovation centre builds on CPI's substantial capabilities which support the UK's process industries and will play an important role in anchoring R&D for formulation and stimulating manufacturing-based growth. It will provide companies and academia with leading technical expertise combined with open-access facilities for the development and optimise their formulated products across a wide range of applications." ■

Current Innovate UK funding opportunities

Innovation loans: manufacturing and materials readiness

Registration closes:
Wednesday 25th April 2018 12:00pm

Innovate UK is to offer up to £10 million in loans to micro, small and medium enterprises (SMEs) for innovative manufacturing or materials projects.

The aim of this competition is to provide a loan which will help SMEs increase manufacturing readiness. This applies to innovations in manufacturing systems, technologies and processes, and/or materials development, properties, integration or reuse.

Proposals should focus on the scale-up of recent or ongoing manufacturing process innovation and/or materials development activities. The project's aim should be to enable UK based companies to progress innovative manufacturing or materials developments to commercial readiness.

To find out more and apply, click [here](#):

Click [here](#) to read blog post about Innovation Loans at Innovate UK.



IDC Machining Science EngD and PhD vacancies available

The Industrial Doctoral Centre, or IDC, in Machining Science is a unique collaboration between the University of Sheffield's Advanced Manufacturing Research Centre, part of the HVM Catapult network, and the Faculty of Engineering. Its aim is to bring together the brightest engineering postgraduates, academic expertise and industrial partners to develop new technologies and skills for the benefit of all partners. The IDC also provides Engineering Doctorate (EngD) and PhD training with a focus on machining science.

See current vacancies here: www.ms-idc.co.uk/vacancies or email ids-machining-science@sheffield.ac.uk with your details to join the IDC mailing list to receive project announcements. ■

The HVM Catapult has a wealth of quantitative and qualitative data on the impact it is having on the companies we work with. Our case studies give a good impression of the value we have added to many companies across all sizes and all sectors. Maybe we could help your business? There is a cost involved, but we can signpost sources of funding, for example, through Innovate UK. Email us at info@hvm.catapult.org.uk if you'd like more information or to discuss working with us.

Embedded Sensors for Intelligent Composite Structure

The National Composites Centre (NCC) is working with the Centre for Process Innovation (CPI) to print a network of sensors to create intelligent composites structures with a "sensing skin" capability.

The design, development and implementation of printable electronics by CPI, combined with the design, process and advanced composites manufacturing capability of the NCC, have been brought together to create greater intrinsic learning for embedding and sensing in composites.

The aim is to produce multi-functional sensors that can withstand composites processing, whilst maintaining the integrity of the printed electronics and advanced composites. The project will produce a proof-of-concept prototype which will show an embedded sensor within an advanced composites laminate that is suitable for both wireless and non-wireless power and data transmission.

Based on the results of the tests carried out during this study, NCC and CPI have determined a method suitable for embedding

sensing electronics in to composites parts. CPI has designed several printable strain sensors and has developed a system for testing these with composites for real-time structural health monitoring from a PC display, using data acquisition software.

CPI has also designed, developed and is currently assembling a wireless communication method suitable for use with glass fibre composites. CPI is currently working with NCC in a joint HVM Catapult follow-on project to tackle the challenges of wireless communication in carbon fibre composites, which are known to have challenges with wireless connectivity. The original project worked with glass fibre and only short distance communication, but the new project will be looking into carbon composites and longer-range communication. The outcome from this project will be a substantial reduction in part count and assembly complexity, as well as the creation of simple, low-cost methods to integrate structural health monitoring in composites structures. ■

AFRC and Haven

Award-winning social enterprise, Haven, is part of Momentum Scotland and the wider Rehab Group. A commercially viable and efficient business, Haven is first and foremost a social enterprise organisation providing long-term employment opportunities for disabled and socially excluded people. One of the organisation's primary focuses is on contract packing.

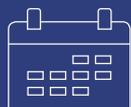
Haven approached the AFRC to help it demonstrate the laser etching of wooden whisky boxes used by a long-term customer – an international spirits company based in Scotland. They wanted to develop a new capability to help achieve the long-term objective of returning the manufacturing of the 60,000 wooden whisky boxes that are required by the spirits company each year, from China to Scotland.

Currently on a 16-week lead-time, the move would shorten this to a matter of days,

dramatically improving response time to new commercial opportunities.

Using an Epilog Laser Fusion Etcher, the AFRC successfully demonstrated the process capability and more importantly, the quality output, to Haven. The Centre's engineers also showed the company how it would be able to begin developing its own capability in this process that it could then sell to other customers, enabling a market growth for the organisation.

Supported by Scottish Enterprise, the successful delivery of the project saw Haven secure funding from Resilient Scotland to purchase three Epilog Laser Fusion Etchers of its own. The organisation is now in advanced talks with the spirits company regarding the reshoring of its whisky box manufacturing process. The technical support provided by the AFRC has been vital to the success of these discussions, as the customer is very much focused on quality. ■



Dates for your diary

AGP Supply Chain Event 2018

26th April
London, UK

Hear HVM Catapult Chief Technology Officer Professor Sam Turner speak at the AGP Supply Chain Conference, in partnership with Airbus.

The Business of Science Conference 2018

17th May 2018
Hilton, Liverpool City Centre

Come and see HVM Catapult Communications Director, Rosa Wilkinson, speak at the conference which will explore the development and commercialisation of great science.

National Manufacturing Debate 2018

23rd May 2018
Cranfield Campus

The HVM Catapult are sponsoring the National Manufacturing Debate 2018 – an annual event hosted by Cranfield University.

SMAS National Manufacturing Conference 2018

30th May 2018

The Westerwood Hotel, Cumbernauld
The SMAS National Manufacturing Conference, sponsored by the HVM Catapult, returns on Wednesday 30th May, where 400 manufacturing leaders will gather to be inspired, learn, network and debate.

Farnborough 2018

16th July – 22nd July 2018

The HVM Catapult will be exhibiting in the Aerospace 4.0 tent at the Farnborough International Airshow 2018.

WORK WITH US

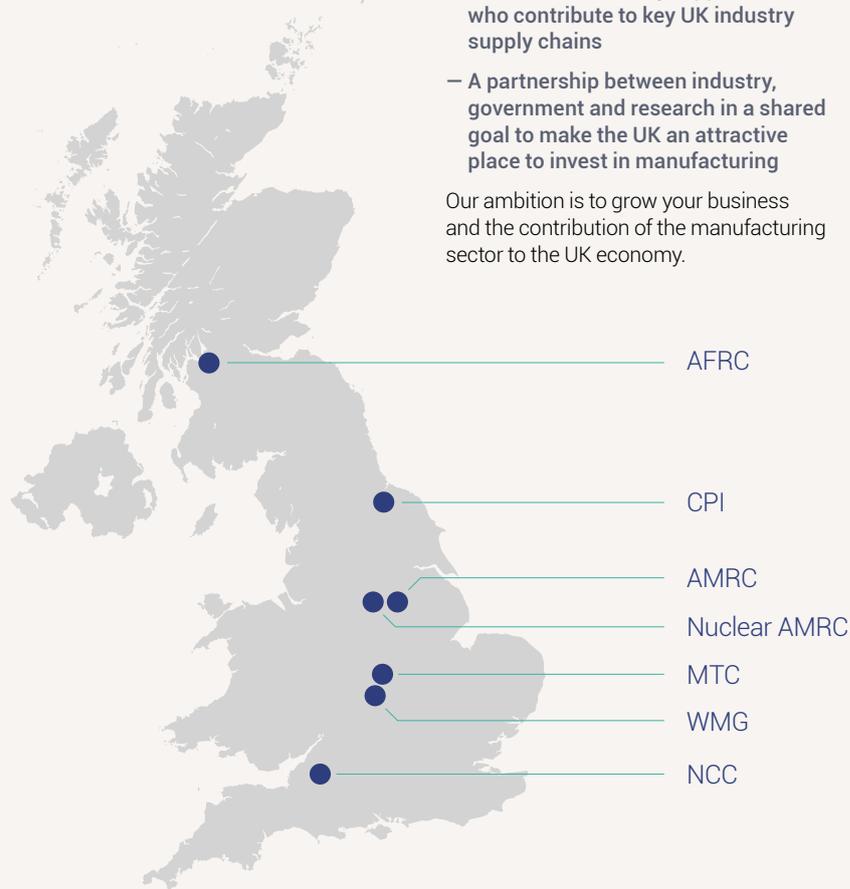
The High Value Manufacturing (HVM) Catapult is here to help UK businesses of all sizes accelerate new concepts to commercial reality.

Working through seven world-class centres of industrial innovation, we provide access to the specialist equipment and expertise you need to help investigate new technologies and processes and test their application. We can also help you to improve existing processes. We're here to help you strip away the risks of innovation and make investment decisions when you are confident that an idea can be scaled up to deliver on a commercial scale.

Our services are available to firms of all shapes and sizes, from FTSE-listed companies to SMEs deep in the supply chain. They include:

- Capability which spans from basic raw materials through to high integrity product assembly processes
- World-class facilities and skills to scale-up and prove high value manufacturing processes
- A network of leading suppliers who contribute to key UK industry supply chains
- A partnership between industry, government and research in a shared goal to make the UK an attractive place to invest in manufacturing

Our ambition is to grow your business and the contribution of the manufacturing sector to the UK economy.



For more information or to discuss working with the HVM Catapult, please contact:

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