THE FUSION CLUSTER

The Fusion Cluster Directory 2025

Getting to fusion faster. Together.

3-SCI + ABMI ENGINEERING UK + ACCENTURE + ACTEMIUM + ALLOYED + ALTRAD BABCOCK + AMENTUM + ANSALDO NUCLEAR + API CAPACITORS LTD + ARCADIS CONSULTING + ARCHER TECHNICOAT LTD + ASD + ASSYSTEM + ASTRAL SYSTEMS + ATG SCIENTIFIC + ATKINSRÉALIS + BABCOCK INTERNATIONAL + BALFOUR BEATTY + BAY FUSION + BOND GLOBAL + BURGES SALMON LLP + BUSCH UK + CAIRNHILL STRUCTURES + CENTRONIC + CFMS + COCKCROFT INSTITUTE + COMMONWEALTH FUSION SYSTEMS + COMSOL + CREATEC + CRITICAL SOFTWARE + CULHAM INNOVATION CENTRE + CUSTOM CAMERAS + CW FLETCHER + DASSAULT SYSTÈMES UK + DELKIA + DIGILAB + DISTRIBUTED MICRO TECHNOLOGY LTD + DYNAMIC MINDS RECRUITMENT + DYNEX SEMICONDUCTOR + EGB ENGINEERING + ELEMENT DIGITAL ENGINEERING + ELEMENT SIX + ELITE MATERIAL SOLUTIONS + ELYSIUM ENGINEERING + EMPTOR PLUS + ENERGY SYSTEMS CATAPULT + ENTERPRISE OXFORDSHIRE + ENVIRONMENT AGENCY + EQUILIBRION + EUCALYPTUS CONSULTING + EXTRACT TECHNOLOGY LTD + FAITHFUL AND GOULD + FEED4WARD CONTROL + FOREPOINT LTD + FIRST LIGHT FUSION + FLAMGARD ENGINEERING + FOCUSED ENERGY + FRAMATOME + FRAZER-NASH CONSULTANCY + FTI + FUJIKURA EUROPE + FURUKAWA ELECTRIC EUROPE LTD + FUSION ENERGY INSIGHTS + FUSION ENERGY PARTNERS LTD + FUSIONX GROUP LTD + GARDINER AND THEOBALD + GAUSS FUSION + GENCOA LTD + GENERAL FUSION + GLOBAL NUCLEAR SECURITY PARTNERS + GOODFELLOW CAMBRIDGE + GRAHAM ENGINEERING LIMITED + GSF UK + HUTCHINSON ENGINEERING + HYDROBOLT + I4CNC + ICEOXFORD + IDOM + INDUCHEM GROUP + INEO NUCLEAR UK + INNOVATE UK + INNOVATE UK BUSINESS CONNECT + INTERWELD NUCLEAR SERVICES LTD + IS INSTRUMENTS + JAMES WALKER UK + JCS NUCLEAR SOLUTIONS + JOHN ELLISON ELECTRONICS + KI CONSULTANCY LTD

Contents

* UK suppliers and fusion energy primes who supplied details
* Information correct at time of going to press

Welcome to

The Fusion Cluster.

The Fusion Cluster brings the right organisations and people together to get to fusion faster

Valerie Jamieson
Development manager
The Fusion Cluster

Welcome to the 2025 edition of The Fusion Cluster directory.

Our vision is for fusion to become a practical energy source working with renewables to provide the sustainable power the world needs. Recent breakthroughs and accelerating progress strengthen our view that, for the first time, fusion power is within our reach.

From its beginnings in October 2021, The Fusion Cluster has been bringing together fusion energy developers, the supply chain, investors, academia and government to help achieve fusion faster.

Over the next 78 pages, discover the breadth of capabilities and depth of expertise that exists across the UK. And meet the fusion energy developers from around the world who are part of the growing cluster.

Join us to keep up to date with the ever-evolving world of fusion.

To join us
visit thefusioncluster.com

@FusionCluster
@the-fusion-cluster

Fusion is thriving

$12.6bn

We're seeing strong investment in fusion companies (FusionX, Funding Fusion: The State of the Market, 2025)

566

More UK suppliers than ever (London Economics, Overview of the UK Fusion Sector, July 2023)

$40tn

A huge market valuation (Bloomberg Intelligence, December 2021)

$612m

A healthy supply chain spend in 2023 (Fusion Industry Association, The Fusion Industry Supply Chain, 2024)

$7bn

Our annual value to suppliers will rise with a first-of-a-kind power plant (Fusion Industry Association, The Fusion Industry Supply Chain, 2023)

80% → **0%**

Today, 80% of the world's energy comes from fossil fuels

By 2050, we're aiming for 0%

x10m ↑

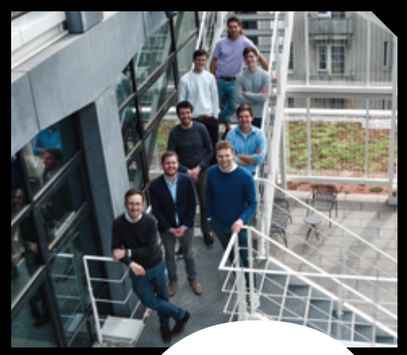
Fusion will release 10 million times more energy per kilogram than fossil fuels

Key markets for fusion:

- ELECTRICITY GENERATION
- INDUSTRIAL HEAT
- HYDROGEN AND AMMONIA
- SPACE PROPULSION
- MEDICAL ISOTOPES

Fusion is the answer.


Monty Rakusen




Monty Rakusen

And it starts with us.

ABOUT THE FUSION CLUSTER

Since October 2021, The Fusion Cluster has grown from a handful of companies to more that 400 organisations working in fusion energy.

What the cluster offers

Access to talent
The UK has an experienced, multi-talented fusion workforce and a pipeline of graduates and apprentices.

Knowledge sharing
Newsletters, networking events, supply chain days.

Showcasing fusion
Raising awareness of fusion at local, national and international level across many different channels.

Support for start-ups
Business incubation, flexible office space and links to investors.

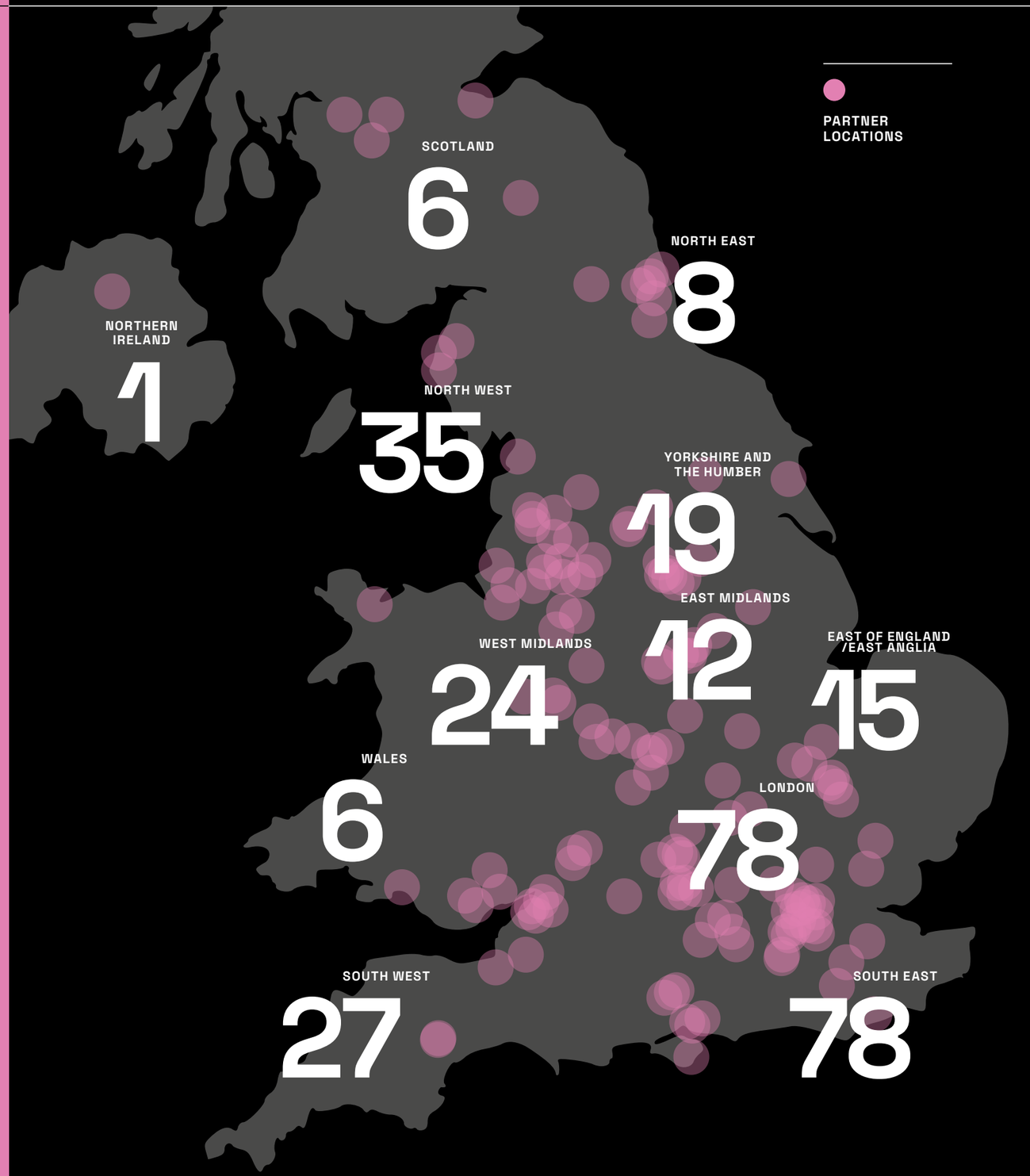
Access to national facilities
World-class equipment is available for companies to test fusion fuel, prototypes, materials and maintenance.

Together, we're stronger

13
Private fusion energy developers

$3.3b
Together they have declared over $3.26b in investment. (FusionX, 2025)

WHERE DO OUR PARTNERS OPERATE?



OUR ADVISORY BOARD

The people behind the cluster

Greg Willetts

CHAIR

As vice president of technology, consulting and innovation at Amentum, Greg is a seasoned leader in the energy industry with a strong commercial focus and extensive global market expertise.

RICHARD BEAKE

Richard is UK advisor to Type One Energy and consults on net zero policy for Atkins. Among his previous roles, Richard was a director of General Fusion UK and negotiated the agreement for a fusion demonstration plant at Culham.

DAVID BRYON

David is chief financial officer at First Light Fusion. The company's new approach to fusion promises to be simpler, more energy efficient and has a lower physics risk.

MATT GALLIMORE

Matt is chief sales officer at leading fusion engineering company Assystem. He also chairs the Nuclear Industry Association's fusion working group.

WILL GOODLAD

As a founding principal of Oxford Science Enterprises, Will is responsible for investments in deep tech companies spun out of Oxford University including First Light Fusion.

NORMAN HARRISON

Normal is a board member of General Fusion and its UK chair. He also has various advisory roles with the UK Atomic Energy Authority, having previously been its CEO and led a major privatisation programme.

ANGUS HORNER

In 2009 Angus established Prorsus, a property development and investment company that supports the UK knowledge economy.

ROSS MORGAN

Ross joined leading fusion energy company Tokamak Energy in 2016 and is responsible for directing the company's overall commercial and intellectual property strategy.

ROBBIE SCOTT

Robbie is a senior plasma physicist at STFC's Rutherford Appleton Laboratory. He chairs the committee responsible for the UK inertial fusion roadmap 2021–2035.

EMMA SOUTHWELL-SANDER

Emma oversees the development and management of the Energy Tech Cluster at Harwell. She has been instrumental in growing the cluster from 19 organisations at launch to 80 on site.

MARK WHITE

Mark is investment director and investment committee member of the UK Innovation & Science Seed Fund. He has over 20 years experience in investment with extensive periods in UK investment banking and emerging markets.

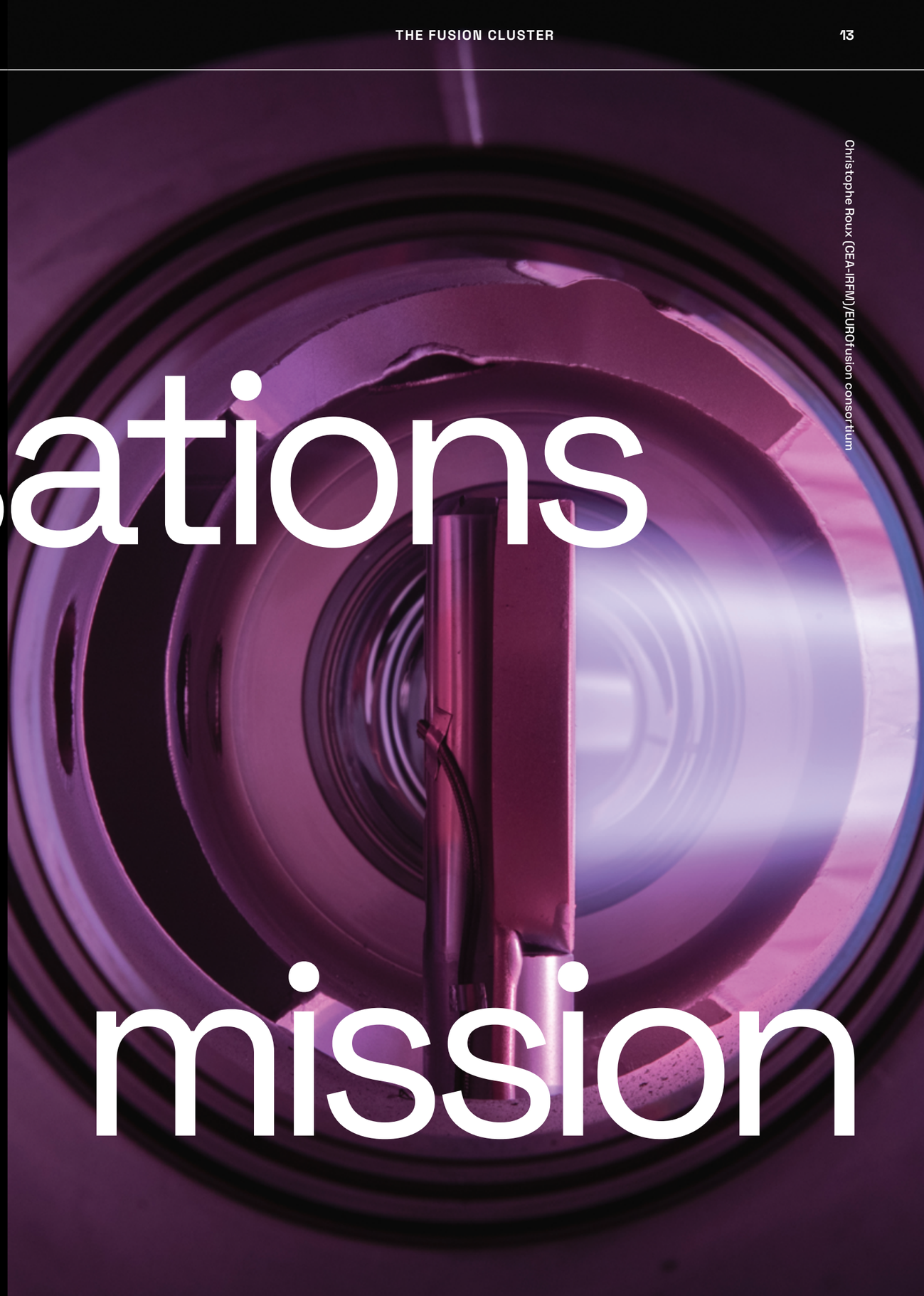
MELANIE WINDRIDGE

As founder of Fusion Energy Insights, Melanie helps fusion companies talk about their complex science and busy professionals understand the growing fusion energy industry.

150+ organisations

One mission

Bringing together businesses, scientists, investors,
and government to realise the potential of fusion faster.



Christophe Roux (CEA-IRFM)/EUROfusion consortium

COMPANY DIRECTORY

FUSION PRIME

Commonwealth Fusion Systems

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Commonwealth Fusion Systems (CFS) was spun out of MIT's Plasma Science and Fusion Center to combine decades of fusion research with the innovation and speed of the private sector.

Supported by the world's leading investors in breakthrough energy technologies, the CFS team is uniquely positioned to deliver the fastest path to commercial fusion energy.

3-SCI

3-Sci fabricates innovative new products that emerge from our R&D activities, and sells them globally. We focus on novel transduction, electronics systems, wireless communication, remote non-intrusive wireless sensing, provision of software control and predictive analytics. These enable our clients to maintain their devices, structures and environments in an optimised condition. In supporting the fast-moving developments in fusion, we presently seek to introduce new, very high-temperature sensing techniques based on some of our remote sensing developments.

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ABMI ENGINEERING UK

ABMI is an engineering company providing solutions in the energy, health and transport sectors. We meet our clients' engineering needs with agile and reliable solutions in design, method development and project management. For 35 years we have been a partner to many key players. We are committed to using our expertise to change the world in a sustainable way.

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ACCENTURE

Accenture is a leading global professional services company that helps the world's businesses, governments and other organisations build their digital core, optimise their operations, accelerate revenue growth and enhance citizen services to create tangible value at speed and scale. We are a talent and innovation led company with 738,000 people serving clients in more than 120 countries. Technology is at the core of change today, and we are one of the world's leaders in helping drive that change with strong ecosystem relationships. We combine our strength in technology with unmatched industry experience, functional expertise and a global delivery capability. We are uniquely able to deliver tangible outcomes because of our broad range of services, solutions and assets across Strategy & Consulting, Technology, Operations, Industry X and Accenture Song. These capabilities, together with our culture of shared success and commitment to creating all-round value, enable us to help our clients succeed and build trusted, lasting relationships. We measure our success by the all-round value we create for our clients, each other, our shareholders, partners and communities.

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COMPANY DIRECTORY

ACTEMIUM

Actemium's mission is to help our customers improve their industrial performance. At Actemium Design UK, our main focus is delivering multi-discipline design and project management services to the UK nuclear industry. In recent years we have expanded from solving engineering challenges in decommissioning, waste retrievals and remediation programmes, to working in the defence and nuclear new-build markets, contributing to projects of national strategic importance. With our industry partners, we also provide HVAC, civil, structural and architectural (CS&A) engineering, industrial process engineering, and asset management. We cover the full project lifecycle – from the initial concept design to commissioning of the final product. We use the latest 2D and 3D design software, computational modelling and stress analysis tools, ensuring rigorous compliance and thorough engineering checks at every stage of the project.

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AFRY SOLUTIONS UK LTD

We provide nuclear engineering design, safety and analysis.

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ALLOYED

We are experts in metal additive manufacturing (AM), with an extensive track record of making precise, complex parts to tight specifications at volume in the electronics and space industries. We make extensive use of computational methods to improve our manufacturing process and are currently developing digital twin capabilities for AM. We also have deep expertise in developing metallic materials for a range of applications, including fusion. We are currently developing fusion steels for AM, demonstrating we can improve upon legacy parts both in materials properties and part complexity. We are also developing advanced joining technologies to enable the assembly of AM parts, limited in size due to the nature of the process, into much larger, multi-metre-sized assemblies. We envision manufacturing complex, high-performance parts for blankets or heat exchangers in collaboration with organisations specialising in component design.

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ALTRAD BABCOCK

Altrad Babcock has a 70-year heritage in nuclear, transforming from a boiler OEM into a supplier of specialist services and equipment, supporting both existing and new-build power plant. We operate across the full project lifecycle, providing services ranging from full EPC delivery, mechanical and electrical site delivery expertise, access and waste management services, specialist welding development, manufacturing integration, supply of nuclear pressure equipment, project delivery and NDT services. We are currently supporting the UK's fusion programme as part of the UKAEA's industrial site services framework, providing a year-round core team at Culham Campus, manufacturing integration services and one of the tier 1 manufacturing framework partners for the STEP programme. We see the potential for fusion to provide clean and reliable energy generation, and are excited to be involved in the delivery of the manufacturing, construction, maintenance and reliability services that will be required for future commercial fusion plants. Our work is underpinned by our peoples' dedication, strong customer relationships and existing site presence.

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AMENTUM

Our commitment to fusion dates back more than 30 years. Since we began work on the Joint European Torus for the UK Atomic Energy Authority in the 1980s, we have remained at the forefront of design and engineering support for advanced research. We are the delivery organisation for a substantial amount of UKAEA's engineering and we have worked for ITER from its inception to the present day. On a similar timescale, we have provided critical project delivery and systems engineering to the Lawrence Livermore National Laboratory's National Ignition Facility in the US. Our support to the National Ignition Facility continues today as we play an active role in its operations. In the US we also support the Department of Energy and private fusion organisations in delivery of their engineering programmes. With 350 people working in fusion we provide: engineering integration, robotics and remote handling, fuel cycle engineering, plasma facing component design, manufacture and testing, maintenance and repurposing, materials science and digital engineering. We are making fusion science a practical reality, using our experiences of the toughest challenges in fusion.

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ANSALDO NUCLEAR

Ansaldo Nuclear's history starts in the 1950s with the first nuclear power plants. We are proud to be one of the few nuclear companies in the UK to provide in-house capability covering the full lifecycle of bespoke solutions – design, engineering, manufacturing, assembly, testing, commissioning, site installation and integrated logistics through-life support. We work seamlessly with our sister company in Italy, Ansaldo Nucleare. Together we have accumulated 30 years of experience supporting fusion reactor projects, including JET, STEP, DTT, DEMO and ITER. At ITER, we have secured multi-million pounds design and supply contracts as sole supplier or lead supplier in partnerships. These include the tokamak assembly and divertor validation programme. Ansaldo Nuclear supports all sectors of the nuclear industry from new builds and operational sites to decommissioning in both the civil and defence markets. Ansaldo Nuclear is a part of the Italian Group Ansaldo Energia, which has a worldwide workforce of more than 3,500. Ansaldo Energia is a globally recognised brand in power generation with an installed capacity of more than 176 GW over 1,800 projects completed in over 90 countries.

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COMPANY DIRECTORY

API CAPACITORS LTD

API Capacitors Limited is the leading UK manufacturer of high-performance power capacitors for power electronic applications including fusion. The company was previously part of Norfolk Capacitors and Standard Telephone and Cable, giving the company over 100 years of capacitor manufacturing heritage The business currently operates from a 2,000 m² manufacturing facility in Great Yarmouth, Norfolk, producing a variety of capacitor product ranges. This location benefits from excellent road links and proximity to major UK ports and airports, ensuring efficient logistics. To support its growth and enhance manufacturing capabilities, the group has recently acquired a larger 8,500 m² facility.

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ARCADIS CONSULTING

Arcadis is the leading global design & consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are more than 36,000 people, active in over 70 countries that generate €3.5 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world. Our purpose is simple: improving quality of life. In today's ever-changing world that purpose has never been more important. Developing scalable solutions that are sustainable and digitally-enabled is the best way we can continue addressing our biggest societal challenges. Through our projects, in our communities and our work for clients, we enhance the human experience and foster personal, societal, and business growth. Arcadis sees the potential for fusion to be a sustainable, carbon free energy source as part of a green energy transition and are delighted to be part of the fusion community.

Jennifer Johnston
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ARCHER TECHNICOAT LTD

ATL (Archer Technicoat Ltd) is an internationally recognised expert in chemical vapour deposition (CVD) that provides coating development services, low-quantity production and CVD equipment for materials that frequently operate in extreme environments. Established in 1980, our materials catalogue covers a wide range. For fusion this includes SiC coatings and SiC-based composites, tritium permeation barrier coatings (rare earth oxides such as yttria and erbia) and tungsten coatings and tungsten-based composites for plasma-facing components. We specialise in developing materials at lab scale and upscaling production equipment to address the needs of industry. We also provide coatings and composites for aerospace, fission, semiconductors and other applications.

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FUSION PRIME

First Light Fusion

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First Light Fusion is the world's leading inertial fusion start-up.

Based in Oxford, First Light was founded in 2011 by Dr Nicholas Hawker and Prof Yiannis Ventikos with the mission to solve the problem of fusion power with the simplest machine possible. First Light is an innovative deep-tech business pushing the boundaries of science and theoretical modelling by taking a new approach to inertial confinement fusion, called projectile fusion. It validated its unique projectile approach after successfully demonstrating fusion in November 2021. The company was founded as a spin-out from the University of Oxford, raising seed capital from IP Group plc, Parkwalk Advisors Ltd, and other private investors. First Light is one of the recent great British start-up success stories, raising over £77 million of capital over the last 11 years and growing to a team of over 90 engineers, physicists, and operational staff. The business has grown from a research-focused university project to a fully-fledged company that has developed not only a new approach for how to make fusion energy work, but also a sustainable business model based on the technology. It is now regarded as one of the leading fusion companies in the world, widely covered by **The New York Times, The Financial Times, The Sunday Times, Bloomberg, BBC, Forbes** and more.

COMPANY DIRECTORY

ASD

At ASD, we pride ourselves on being one of the leading metal stockholders and processing suppliers in the UK. We are renowned for supplying a diverse range of ferrous and non-ferrous products, sourced from reputable and accredited mills across Western Europe. Operating in all major market sectors across the UK, we are known for our unrivalled ability to meet clients' requirements. Our extensive in-house processing portfolio combined with our processing expertise enables us to deliver cost-effective metal solutions and high-quality steel products.

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ASSYSTEM

A key player in the development of ground-breaking fusion energy technologies, Assystem holds major contracts at ITER, where it has been the architect engineer since 2005, as well as JET, STEP, and DEMO. It is also actively contributing to innovative efforts being led by the private fusion sector. With over 55 years of experience as a world-leading independent nuclear engineering company, Assystem is dedicated to spearheading the energy transition and combatting the challenges posed by climate change. The company's core mission revolves around supporting the delivery of cutting-edge projects that reduce the impact of climate change and accelerate the adoption of low-carbon technologies. Across its 12 countries of operation, Assystem's 7,000 experts are actively supporting the energy transition. By providing engineering digital, and project management services for complex infrastructure assets throughout their life cycle, the group is contributing to the global mission of an affordable low-carbon energy supply. Assystem's commitment to developing sustainable energy sources and facilitating the integration of low-carbon electricity into industrial sectors like transportation is evident in its forward-thinking approach. Currently ranked among the top three nuclear engineering companies globally, Assystem continues to drive progress towards a net zero future.

Emily Read
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ASTRAL SYSTEMS

Astral Systems is a developer and manufacturer of the first multi-state fusion device, enabling high-energy proton and neutron production with unparalleled performance and lifetime. Our systems marry an industrially-proven core reactor architecture that has been decades in the making with our application of breakthrough discoveries in physics. Due to the compact size and high particle flux, our systems are unique in their capacity to break into multiple new markets. We are focused on supporting technology R&D within the fusion energy industry with a parallel effort to develop our technology for use in medical isotope production. We invite all those interested to visit our facilities in the south of England to see our systems up and running. We will be opening up our neutron irradiation facility for customer use by autumn 2023. Our neutron facility capabilities for 2023 are expected to be less that 10^9 neutrons per second from our isotropic source at 2.45 MeV energy. By late 2024, we plan to build our second facility that will offer up to 10^{12} neutrons per second at 14 MeV.

Talmon Firestone
Co-founder and CEO
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ATG SCIENTIFIC

A specialist in laboratory products and equipment solutions, including noise reducing enclosures and gas blending/mixing instruments.

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ATKINSRÉALIS

AtkinsRéalis is a leading engineering and project management services organisation. We bring people, data, and technology together to transform infrastructure and energy systems around the world. Working with our industry partners, clients, and global team of consultants, designers, engineers, and project managers, we aim to create a better future for our planet and its people. Since 2010, we have been at the forefront of engineering for the science of fusion. From the UK, we have led contributions to the design, engineering, and project management of some of the global fusion industry's most significant projects, supporting the UK's goal to export its fusion skills internationally. Our work in fusion covers strategy and advisory services, site development, architecture, and multidisciplinary design, as well as whole plant integration and fusion fuel cycle development. Our vision is to be the delivery partner of choice for fusion technology developers, integrating science and engineering to accelerate safe, clean, and affordable energy from fusion.

Lee Patrick
Fusion energy market lead
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BABCOCK INTERNATIONAL

Babcock International is a leading engineering services company that supports the development of fusion technology through its extensive expertise in nuclear engineering, precision manufacturing, and asset management. With a rich history in delivering complex projects across the defense, energy, and infrastructure sectors, Babcock contributes to the advancement of fusion power by applying its proven capabilities in high-integrity fabrication, specialised tooling, and safety-critical systems. Our work focuses on the integration of cutting-edge engineering solutions to overcome technical challenges in fusion energy, including the design and manufacture of high-precision components, remote handling systems, and the management of large-scale, mission-critical assets. Our involvement in the fusion sector is built on our deep understanding of nuclear and high-temperature materials, acquired from its decades-long support of the UK's defense nuclear programmes and international energy projects. By collaborating with key stakeholders and fusion research initiatives, Babcock aims to drive innovation and efficiency in fusion energy, contributing to a sustainable energy future.

Atul Shetty
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> "The Fusion Cluster has been a catalyst for us in sourcing and helping several of our early-stage portfolio companies who are now on the way to taking their ideas to commercial success."
>
> Rory Scott Russell
> Head of venture capital
> East Alpha

COMPANY DIRECTORY

BALFOUR BEATTY

Balfour Beatty is a 100-year-old UK contractor that has engaged in the construction of energy projects during its history, including fission power stations. This work commenced with Berkeley Power Station in the 1950s, is currently involved at Hinkley Point C and preparing for Sizewell C. We have also been building a variety of facilities to accommodate or process legacy nuclear waste at Sellafield over the last 40 years. Whilst we have no fusion expertise, we are keen to deploy our skills in the construction of fusion plants.

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BAY FUSION

Based in Lancaster, Bay Fusion is a dedicated regional fusion cluster organisation helping the north of England's business, academic and public sector to engage and participate in the growing global fusion industry. Bay Fusion previously coordinated the STEP siting bid for Heysham and is now bringing stakeholders together to support fusion development activities, helping bring the UK closer to the industrialisation of fusion technology. Located within the north-west nuclear arc, and reaching into the Northern Powerhouse, we build on the proud industrial heritage and wealth of industrial experience found in the north and aim to support existing businesses already engaged with the nuclear sector transition to support fusion, as well as helping businesses that are new entrants to the sector. We aim to help our cluster find opportunities in fusion development, promote collaboration, share knowledge and promote investment. We are keen to help businesses access supply chain opportunities across the developing fusion industry, especially SMEs in the region. We also work closely with academia across the region, including Lancaster University to help businesses engage with research and create further opportunities, facilitating the exploitation of learning outcomes. Finally, we promote engagement, STEM and learning, including skills bootcamps.

Rich Grant
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BOND GLOBAL

Talent will always be a focal point in fusion. We believe talent is often one of the most undervalued and underdeveloped functions within a business. We are passionate about changing that. Our solutions are designed to transform talent functions adding value way beyond the day-to-day candidate engagement piece. Our solution enhances your employee value proposition and employer branding, retention and culture.

Dan Bisset
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BURGES SALMON LLP

Burges Salmon LLP is a UK law firm with leading expertise in the fusion sector. We advise on the STEP project in the UK and support several fusion start-ups in relation to their technology. Our lawyers participate in the International Nuclear Law Association and Nuclear Industry Association fusion groups. Owner and partner Ian Salter is an invited member of the International Group of Legal Experts on Fusion Energy (FELEX), a small group of leading lawyers from international agencies, fusion companies, regulators and law firms. FELEX provides thought leadership, legal and regulatory expertise and guidance regarding the development of fusion energy and emerging international law. Our team has extensive experience across nearly all UK public nuclear licensed sites and supply chain operators. We are now bringing this expertise and experience to the fusion industry, recognising the parallels and distinctions with traditional nuclear. We advise on strategy, project development, corporate structures, financing, siting, planning, supply chain, commercial and construction contracts, intellectual property, procurement and subsidy control. We offer guidance on the regulation of fusion in the UK, international law, sanctions, export controls, and regulatory justification.

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BUSCH UK

Manufacturer of vacuum pump and systems, including dry vacuum pumps suitable for helium recirculation and detritiation systems.

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CAIRNHILL STRUCTURES

Cairnhill Structures has been providing steel solutions to the power industry for over 20 years, both in the UK and internationally. In that time, we have built an excellent reputation within the industry, based on proven experience and our extensive knowledge of power station refurbishment. We provide design, fabrication, welding, machining and installation of structural steelwork.

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COMPANY DIRECTORY

FUSION PRIME

Focused Energy

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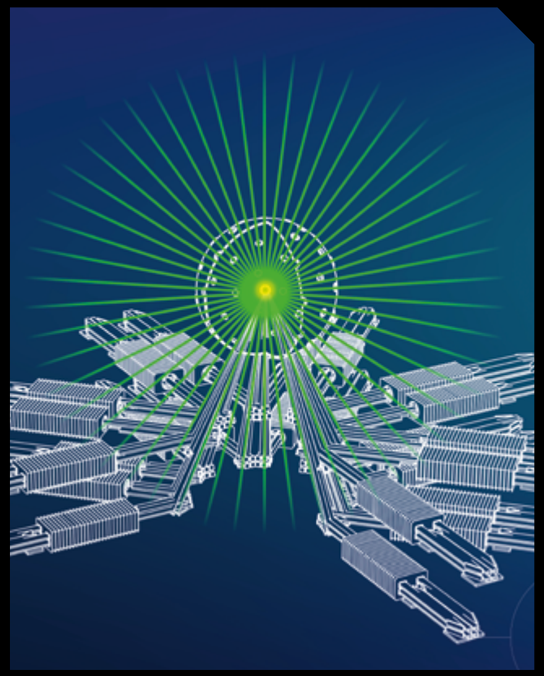

Focused Energy is a German-US company founded in 2021 with locations in Austin, Texas, USA and Darmstadt, Germany.

The company aims to use the best of both locations to develop fusion energy as a clean, reliable and sustainable energy source for humankind based on modern laser technology.

Focused Energy seeks to demonstrate laser-based fusion energy by the end of this decade and a commercially-attractive, first power plant during the middle of the next decade.

Focused Energy improves on 30 years of laser fusion experiments by adding the proton fast ignition concept to reduce the required laser energy and improve the energy output. The company also uses modern 21st century laser technology to provide the required repetition rate and efficiency to match competing technologies with respect to the cost of electricity.

Among possible approaches to fusion energy, we regard our approach as the most credible. The founders and employees of Focused Energy are deeply embedded in the international fusion science and research community.

CENTRONIC

Centronic is a leading manufacturer of detectors based in Croydon, UK. For fusion diagnostics our products include fission chambers (neutron flux), diode arrays (X-ray camera), vacuum feedthroughs, thermocouple arrays and custom detector assemblies. For radiation facilities including fission, fusion and accelerator environments we also manufacture ion chambers, Geiger-Müller tubes and electromagnetic (coil wound) components.

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CFMS

The Centre for Modelling and Simulation (CFMS) is an independent digital engineering consultancy providing technical expertise to help organisations create better solutions by pioneering new approaches to product development. With a full portfolio of digital capabilities, including design and analysis services, consultancy and IT infrastructure, CFMS uses digital innovation to help develop more effective engineering solutions across industrial sectors critical to the UK economy. Working with commercial and research organisations of all sizes, CFMS is at the forefront of scientific and engineering development. Our experts in model-based engineering, data science, and advanced simulation and computing use digital tools to challenge the performance of commercially-available tools, and provide balanced opinions on how to optimise designs and processes, resulting in better productivity and lower costs. Our projects include: automated designs to improve operational efficiency; simulating real-world events to optimise defences, saving millions in construction costs; optimised production-line inspection using artificial intelligence to improve quality. CFMS collaborates across industry, academia and research organisations, including research projects funded through Aerospace Technology Institute, Advanced Propulsion Centre, i3P, FlyZero, WECA and more.

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COCKCROFT INSTITUTE

The Cockcroft Institute is a collaboration between STFC and the universities of Liverpool, Manchester, Lancaster and Strathclyde. It is the largest UK centre of expertise in particle accelerator research and technology. We have expertise in microwave sources, radiation modelling and plasma physics, which are all highly applicable to fusion.

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COMPANY DIRECTORY

COMSOL

COMSOL is a provider of simulation software for product design, engineering, and research in technical enterprises, labs, and universities. COMSOL Multiphysics is an integrated environment for creating physics-based models and simulation applications. Optional add-on modules add discipline-specific tools for mechanical, fluid, electromagnetics, and chemical simulations, plus CAD interoperability. Specifically in the field of fusion, areas of use include: electromagnetic coils (tokamaks); superconductors; magnetohydrodynamics (liquid metal); and system heat transfer control and effects, including thermal structural stress.

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CREATEC

Createc is an applied research and technology organisation with core capabilities in imaging/sensing, robotics and radiometrics. Createc has patented technology associated with a unique capability to map radiation in 3D using a range of tools and software processing. At Createc, we make technology happen. We're the team behind some of the world's most advanced applications of emerging sensor technology, robotics, and software. By collaborating with both academia and industry, we are uniquely able to uncover, shape and bring to life innovative ideas to solve real-world problems. Createc operates primarily at Technology Readiness Level (TRL) 4-8. Typically, TRL 9 requires an industrial partner to develop a fit-for-market product. Createc has on occasion taken this step itself, for example self-funding the N-Visage range of gamma radiation mapping hardware and software. Createc has a track record of industry firsts including deploying on-site UAVs in a nuclear radiation contaminated area and open platform robotics systems integration. The main products and services are research, development, and consultancy in the fields of sensing, radiometrics and robotics; systems and software integration of sensors and robotics; ready-to-use radiometric instruments and software; ready-to-use robotics and sensing technologies.

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CRITICAL SOFTWARE

We are dedicated to the reliability and excellence that have become our hallmarks, maintaining our ambition of tackling the world's most demanding technological challenges transforming the world into a better and safer place. Established in 1998, Critical Software provides solutions for safety, mission and business-critical applications. We help to ensure compliance with the most demanding quality standards for software safety, performance, and reliability. With offices in the UK, Portugal, Germany, and US, our 1200+ engineering team helps transform industries across the globe on land, sea, in the sky and beyond. Adding to our heritage of software engineering in the energy, aerospace, transportation, industry and automation, and medical devices sectors, we count more than 30 ESA space missions that use our software. We also work on the largest scientific endeavours of our time, including the Square Kilometre Array (SKA), European Southern Observatory (ESO), European Spallation Source (ESS) and International Thermonuclear Experimental Reactor (ITER). Our critical software fields of expertise include software and systems engineering, verification and validation, real-time operating systems, simulation, safety, scientific computing, data analytics, machine learning, cyber security. For fusion we currently work on: distributed data access, communication and control systems, and embedded software systems.

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CULHAM INNOVATION CENTRE

As an innovation centre we support early stage and SMEs in the fusion industry, we offer free business support via our innovation director, with access to funding and grants.

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CUSTOM CAMERAS

Custom Cameras is a UK-based product manufacturer of radiation tolerant camera systems and associated control equipment. We have been developing and supplying camera systems to high-energy physics facilities and nuclear power facilities around the world for over 40 years. Our range of products has been developed to withstand high levels of nuclear radiation, designed to operate in hostile environments including extremes of temperature and underwater operations. To support our specialist radiation tolerant camera systems we have also designed and manufactured radiation tolerant peripheral products such as pan and tilt units, lighting units including a high-powered solid state underwater illuminator, bespoke mirror assemblies and microphones. We enjoy engagement directly with the customer communities or equally through collaboration with prime contractors.

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CW FLETCHER

With engineering expertise that has been refined over 130 years, CW Fletcher continues to innovate. We are market leaders in complex engineering. Working hard to expand and develop, and using cutting edge technologies, we strive to offer the best solutions to every engineering challenge we encounter, exceeding your expectations with our manufacturing solutions.

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> "We're building a strong relationship with companies in the UK thanks to introductions made by The Fusion Cluster."
>
> Mike Prato
> Chief technology officer
> Avalanche Energy

COMPANY DIRECTORY

DASSAULT SYSTÈMES UK

Dassault Systèmes is the world leader in design, engineering and simulation software. At the very heart of our business, our purpose is to enable our customers to innovate sustainably, enabling product, nature and life to work in harmony. Our goal in fusion is to continue supporting fusion companies, the supply chain and workforce of the future to ensure the UK is maintaining its position as the pioneer in fusion technology.

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DELKIA

Delkia is a specialist systems integrator operating throughout the UK and internationally for mission critical and highly regulated sectors including nuclear, defence, aerospace and maritime. Our offering includes digital engineering, systems and technical consultancy, systems integration, engineering design, build-to-print, control panel build, and complex control systems support. All of these are harnessed specifically for each project's needs, maturity and technology requirements. Our approach is to build long-lasting partnerships with our clients through the right expertise and approach. This enables us to know your exact needs, add value and innovation, as well as providing you the right services, at the right time, both tactically and strategically.

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DIGILAB

digiLab is a cutting-edge data science and machine learning company. We provide no-code machine learning software, close collaboration on first-of-a-kind projects, and machine learning training via our academy. We offer a wide range of solutions such as experimental design, data cleaning, system optimisation, and digital twins. Our expertise in probabilistic machine learning and uncertainty quantification ensures that we can assess the reliability of predictions and account for variability, randomness, and misspecification in models. This way you know the level of confidence you can have in the model's predictions and make better informed decisions. We are working on a breadth of fusion challenges including gyrokinetics, material characterisation, electromagnetics, and system digital twins. We always welcome a challenge and are keen to explore new innovative solutions to accelerate the realisation of fusion energy.

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FUSION PRIME

Gauss Fusion

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Gauss Fusion GmbH is a greentech venture founded in 2022 by various European companies from Germany, France, Italy and Spain with extensive experience in fusion technology.

The Gauss Fusion initiative has set itself the goal of bringing the first European gigawatt-class fusion power plant (Gauss GIGA fusion power plant) on stream by 2045. The initiative is characterised by its strong industrial leadership and close cooperation with renowned European research institutes and experienced technology experts, including the Max Planck Institute for Plasma Physics and the Karlsruhe Institute of Technology. At present, fusion energy is primarily being developed within the framework of international state-financed large-scale projects.

Gauss Fusion now offers support to this process, which has the potential to accelerate the development of clean fusion energy generation "at venture speed" thanks to efficient structures. Gauss Fusion is a proponent of an entrepreneurial path to accelerate fusion energy in a close public-private partnership with national and European institutions. Under its motto of "Fusion with integrity", Gauss Fusion is pursuing the ambitious but realistic goal of providing green energy through magnetic fusion – without raising any false expectations.

COMPANY DIRECTORY

DISTRIBUTED MICRO TECHNOLOGY LTD

Founded in 1987, DMTL has developed into a global provider of passive components, offering design support to UK designers and engineers across all sectors and industries. Supporting a wide range of advanced components, including capacitors, resistive products, circuit protection, frequency control, electromagnetics and electromechanical, our commitment is to provide truly effective application solutions. DMTL supplies a wide range of high power and high voltage capacitors suitable for energy storage applications. With a history of supplying capacitor banks for high-end research, military and medical applications, DMTL has a wealth of experience in supporting the large energy storage requirements for fusion energy.

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DYNAMIC MINDS RECRUITMENT

At Dynamic Minds, we recognise that talent drives the future of fusion energy. Our mission is to connect exceptional candidates with pioneering companies, accelerating innovation and growth in the fusion industry. With deep expertise in deep tech and the fusion energy sector, we're positioned to match the right talent with organisations shaping the future of clean energy. Our extensive network enables us to find candidates who meet both technical and cultural needs, ensuring a perfect fit. Delivering a positive experience for clients and candidates is at the core of our business. At Dynamic Minds, it's "people over profit." We partner closely with our clients to gain an in-depth understanding of their businesses, culture, and goals, adopting a consultative approach to deliver tailored recruitment solutions that produce results. Our recruitment process is efficient, transparent, and ethical. We don't just complete tasks – we do them right. By combining industry insights with a commitment to integrity, we aim to exceed the expectations of both candidates and companies in the fusion energy sector.

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DYNEX SEMICONDUCTOR

We specialise in the design, development, and manufacture of cutting-edge power semiconductor solutions, offering both bespoke co-development options for partners and a range of fully validated pre-specified products. Our product portfolio includes a comprehensive selection of bipolar thyristors, IGBTs, and power assemblies. With our UK-based fabrication line in Lincoln and a vertically integrated supply chain, we minimise supply risks and ensure reliability. Our end-to-end services encompass design, development, simulation, testing, and manufacturing, all carried out in-house to deliver high-quality, tailored solutions.

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EGB ENGINEERING

EGB Engineering provides expertise in the field of power. Our research into nuclear energy puts our knowledge and expertise at the forefront of clean sustainable energy for next generation civil nuclear power plants. We are knowledge-led and collaborative. We focus on industry and academia, and predominantly research, conceptualise, design and develop cleaner and sustainable solutions for various sectors including nuclear. Our capabilities in fusion include process and mechanical engineering, materials sciences and computer-based modelling and simulation. These capabilities have been used to deliver projects for UKAEA's STEP programme. Our in-house tool, HYPER-ION, aims to increase the understanding of nuclear power plant (NPP) design by using a bespoke in-house modelling and simulation solution. HYPER-ION bridges the technical, economic and risk gaps when analysing a NPP by using defined algorithms that represent various cycle configurations and operations. They aid the decision-making process of choosing the best economic plant configuration. The modelling and simulation aims to provide a better understanding of how critical parameters affect the overall design and cost of the plant. This allows the NPP to be optimised during the initial conceptual phases, to reduce costs and improve efficiency.

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ELEMENT DIGITAL ENGINEERING

Element Digital Engineering provides insight, understanding, and answers to complex engineering and technology challenges. We are engineers, mathematicians, software specialists, and digitalisation experts, providing services throughout product lifecycles and across industries.

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ELEMENT SIX

Element Six (E6) is a global leader in the design, development and production of synthetic diamond and tungsten carbide supermaterials. Since 1946, our mission has been to deliver competitive advantage and extreme performance through the innovative solutions enabled by these materials. E6's technical expertise, global presence and scaling capabilities make it the ideal partner for fusion developers requiring materials capable of withstanding extreme conditions of heat and neutron irradiation. Due to its radiation hardness, fast response, and high gamma ray and temperature insensitivities, our electronic grade chemical vapour deposition (CVD) diamond is used in neutron detectors, allowing neutrons from both deuterium-deuterium and deuterium-tritium fusion to be detected and distinguished from the background. For magnetic confinement devices, we supply diamond microwave transmission windows for electron cyclotron heating systems. These utilise diamond's low loss, stable permittivity and outstanding thermal conductivity. In addition, E6 has the capabilities to produce tungsten carbide with low activation and excellent thermomechanical properties for neutron shielding.

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COMPANY DIRECTORY

FUSION PRIME

General Fusion

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General Fusion pursues a fast, efficient, and collaborative path to practical fusion power.

The company is advancing an aggressive development plan to deliver economical carbon-free electricity to the grid with its proprietary Magnetized Target Fusion (MTF) technology by the early to mid-2030s. General Fusion is currently building a ground-breaking, large scale MTF machine called Lawson Machine 26 (LM26), designed to achieve fusion conditions of over 100 million degrees Celsius by 2025, and progress toward scientific breakeven equivalent by 2026. The data gathered from LM26 will be incorporated into the design of the company's planned commercial scale machine in the UK. General Fusion is headquartered in Richmond, Canada.

ELITE MATERIAL SOLUTIONS

International specialists in the supply and consultation for tungsten, molybdenum, tantalum and niobium, in all forms and alloys from mill product, complete to customer drawing and specification. We have 20 years experience in development and final project development with science projects worldwide. A clear focus on these metals only has given our customers a huge technical and supply chain resource for their project development, all the way to completion.

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ELYSIUM ENGINEERING

Elysium Engineering specialises in additive manufacturing, also known as 3D Printing, offering consultancy and design services for a range of additive manufacturing technologies. Elysium has worked on projects for both fusion and nuclear decommissioning, helping clients to exploit the benefits of additive manufacturing to unlock more advanced designs, reduced costs, improved part performance and decreased lead times.

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EMPTOR PLUS

Emptor Plus is a leading advisory firm that helps companies with complex engineering needs in the energy and nuclear sectors to improve their procurement and supply chain performance. For over a decade, we have equipped individuals and organisations – particularly SMEs – with the tools, knowledge, and insights needed to succeed. We provide tailored support to buyer and seller organisations, enabling meaningful growth while improving understanding of risk across national and international markets. Our expertise stems from decades of hands-on experience in supply chain management, industrial capability research, and value chain systems. What sets us apart is our deep understanding of the nuclear sector's evolution and buyer expectations. We deliver gap analyses, regulatory guidance, and insights into current and emerging technologies, helping clients navigate complexities and debunk myths in the pursuit of net-zero goals. We also offer expert assistance in tendering and bid processes, potential selections, intricate commercial negotiations, and project risk management within the supply and value chain. At Emptor Plus, we remain committed to our mission of helping individuals and organisations achieve lasting success. This commitment drives everything we do.

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COMPANY DIRECTORY

ENERGY SYSTEMS CATAPULT

Energy Systems Catapult (ESC) works to accelerate the transformation of the UK's energy system whilst ensuring businesses and consumers capture the opportunities of clean growth. ESC is an independent, not-for-profit centre of excellence that bridges the gap between industry, government, academia and research. We collaborate to overcome the systemic barriers of the current energy market to help unleash the potential of new products, services and value chains. Our whole-system view of the energy sector – from power, heat and transport to industry, infrastructure, consumers and policy – helps to identify and address innovation priorities and market barriers to decarbonise the energy system most efficiently and effectively. ESC works to unleash the potential of innovative companies of all sizes, helping them to develop, test and scale their solutions. More generally, we work with national, devolved and local governments, as well as industry, to achieve the UK's ambitions for net zero at both country-wide and local levels. ESC is encouraged by the potential that fusion will eventually play in the energy system. Our work with the National Nuclear Laboratory has built on ESC's expertise in energy systems modelling, integrating nuclear as a provider of heat, hydrogen and synthetic fuels as well as electricity.

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ENTERPRISE OXFORDSHIRE

Our role is to champion Oxfordshire's economic potential, acting as a catalyst and convener to drive a dynamic, sustainable and growing economy. Oxfordshire is a world leading centre for science and technology innovation, R &D and commercialisation. We have supported development of the Fusion Energy High Potential Opportunity launched in 2022 and provide business and skills support to companies who are based in Oxfordshire. Our inward investment service provides confidential and tailored assistance to help businesses from across the globe to locate, relocate and grow within Oxfordshire. The inward investment service identifies commercial premises for businesses; arranges property viewings, tours of key facilities and meetings with sector specialists; connects businesses with professional service providers; signposts to business support organisations and sector specific networks; provides on-going aftercare to Oxfordshire companies. If you are an international investor, we can connect you to investment opportunities. Our team works closely with the Department for Business and Trade combining access to local and national support to help overseas business locate in Oxfordshire and to help businesses secure international investment and trade.

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ENVIRONMENT AGENCY

The Environment Agency regulates radioactive disposals, including the discharge of gaseous and aqueous radioactive wastes, on and from nuclear site licensees. On non-nuclear sites, the Environment Agency regulates the keeping and use of radioactive material and accumulation and disposal of radioactive waste.

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EQUILIBRION

Equilibrion is a consultancy and project development business founded on the belief that fusion and fission can create a safe, prosperous and equitable society free from the challenges of climate change. We specialise in expanding the use of nuclear technology beyond electricity, to support net-zero solutions in transport, industry and heat through the production of hydrogen, synthetic fuels and direct heat. Our experience is in securing and delivering innovation to government-funded programmes focused on advanced technologies and the applications of nuclear energy.

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EUCALYPTUS CONSULTING

Eucalyptus Consulting advises businesses on strategy and sustainability, specialising in bringing new cleantech innovations to market.

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EXTRACT TECHNOLOGY LTD

Extract Technology is a British glovebox manufacturer offering turnkey solutions.

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COMPANY DIRECTORY

FAITHFUL AND GOULD

Faithful and Gould is a world-leading integrated project and programme management consultancy. We build strong relationships by understanding the challenges our clients face, sharing their ambition and helping them transform potential into reality. Our core suite of digital platforms and tools underpin our service delivery model. Through innovation, standardisation and automation, we maximise efficiencies for our clients to save time and money. We advise and support public and private sector clients with the delivery of complex, outcome-focused projects, building relationships based on understanding, integrity and collaboration.

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FEED4WARD CONTROL

Feed4ward specialise in industrial automation. We design and create highly validated control software. We are Siemens Solution Partners.

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FOREPOINT LTD

Forepoint is a B2B creative and ideas agency specialising in creative captivation for organisations in highly regulated or complex sectors. We have over 30 years' experience in developing successful brand communications and stakeholder engagement in the nuclear sector, working with the NDA, Sellafield, NNL, Nuclear Transport Solutions, and Nuclear Waste Services among others. Our nuclear expertise covers brand and positioning, corporate reporting, website creation and build, community and public engagement, social impact campaigns and internal communications.

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FUSION PRIME

Marvel Fusion

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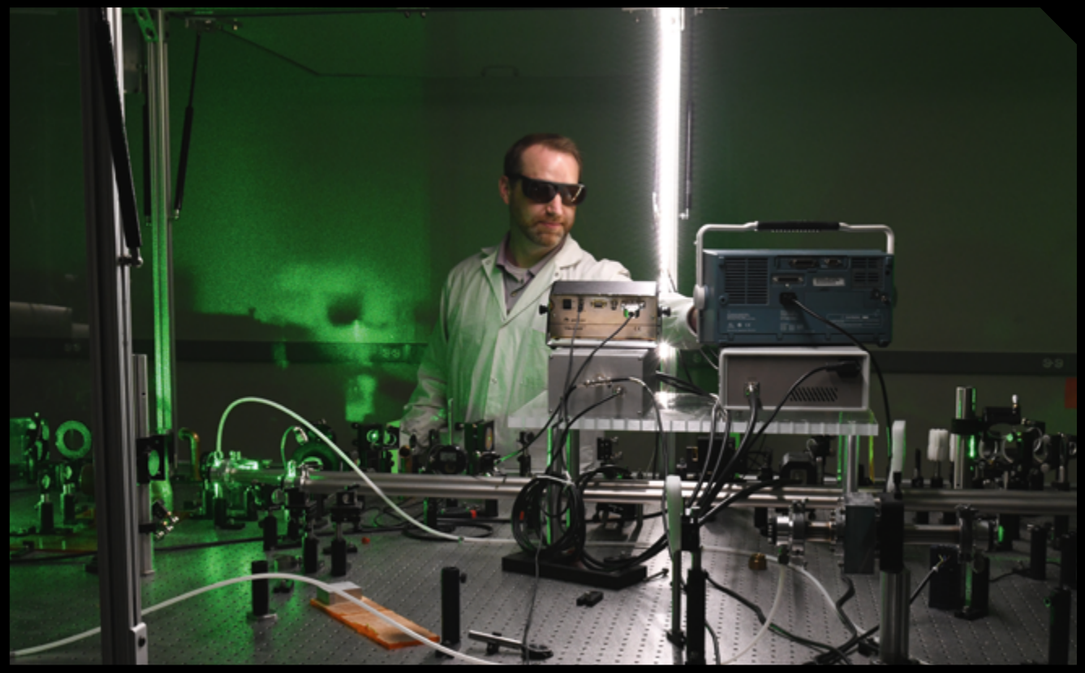

Marvel Fusion pursues a direct-drive inertial confinement approach with the goal of commercialising fusion energy using non-cryogenic fuels.

Highly intense short-pulsed lasers and proprietary nanostructured fuel targets enable a highly-efficient fusion process with a clear path to commercialisation. Together with Colorado State University, we have started constructing one of the most advanced laser systems to validate our technology. The facility is planned to start operating in 2027.

COMPANY DIRECTORY

FLAMGARD ENGINEERING

Flamgard have been designing and manufacturing high integrity heating, ventilation and air conditioning (HVAC) dampers for more than 40 years. During this time we have supplied our fire, isolation and general dampers to all UK nuclear facilities along with decommissioned facilities. Our equipment is extensively utilised at Sellafield in the UK and we are also supplying large quantities of dampers to the new flagship Hinkley Point C project. In Europe we have supplied large quantities of HVAC dampers for the Chernobyl Safe Confinement Project in Ukraine. With emphasis on fusion, Flamgard have provided our equipment to Joint European Torus (JET) and International Thermonuclear Experimental Reactor (ITER). Flamgard are keen to continue supplying our equipment on future fusion projects.

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FRAMATOME

Framatome's strong technical competences gained in the nuclear industry and its expertise in UK and international regulatory environments also benefit fusion projects. Framatome has the capacity to perform and integrate complex projects with international partners in the areas of technological manufacturing. We are also a services provider in nuclear-like scopes. We have comprehensive expertise and laboratory capabilities for thermal-hydraulic and component testing, as well as for materials, corrosion, welding, radiochemical analyses, and qualification engineering. Framatome supports designers and operators, as well as system and equipment suppliers in their R&D and project delivery activities.

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FRAZER-NASH CONSULTANCY

Frazer-Nash, a KBR company, is a leading systems, engineering and technology organisation dedicated to delivering innovative engineering and technology solutions to make lives safe, secure, sustainable, and affordable. We collaborate closely with clients and supply chain partners, across three core areas: developing and maturing fusion power plant design, designing and developing fusion-enabling technologies, and applying cross-sector expertise to support effective decision-making. As a tier 1 supplier to the UK Atomic Energy Authority's Engineering Design Services (EDS) and Manufacturing Support Services frameworks, we work with tier 2 supply chain partners – including academia, research organisations, SMEs and industry – to tackle challenges in materials, manufacturing, concept and design. We also work with all major fusion developers in the UK and many in North America, bringing extensive experience to support new fusion developers as they progress towards commercialisation. Our commitment to the future of fusion energy is reflected in our broader nuclear sector growth strategy, which focuses on investment, innovation, and the development of our people and capabilities.

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FTI

Supplier of instrumentation products and services to various customers involved in fusion projects.

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FUJIKURA EUROPE

Fujikura is a major supplier of rare-earth barium copper oxide (ReBCO) high-temperature superconductor tapes. We pioneered the ion beam assisted deposition (IBAD) and pulsed laser deposition (PLD) manufacturing processes in the early 1990s. This work was recognised with an IEEE award being made to Yasuhiro Iijima, who is a fellow in our superconductor research department. We make a range of high quality ReBCO tapes for fusion and high-field applications. More details can be found at www.fujikura.com/solutions/superconductingwire/.

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FURUKAWA ELECTRIC EUROPE LTD

We specialise in the development and supply of low-temperature superconductors, high-temperature superconductors, and semiconductor lasers.

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> "Until The Fusion Cluster was a 'thing' it was a challenge to give the early-stage companies we support in the Innovation Centre contact with the skills, knowledge, and collaboration opportunities the sector can now offer. This access, via The Fusion Cluster, has greatly advanced their opportunities."
>
> Wendy Tindsley
> Innovation director
> Oxford Innovation Space

COMPANY DIRECTORY

FUSION ENERGY INSIGHTS

Fusion Energy Insights is the primary independent information provider for the fusion industry. Our aim is to keep you up to date with developments in fusion and to comment on the significance of activity in the industry. Members get to discover and track key developments in fusion via our Fusion Energy Insights Quarterly magazine (which provides a thorough and evolving overview of the industry), to understand some of the key challenges on the path to commercial fusion through our live expert Insights Q&As, and to make connections with others in the industry through virtual networking and our members group. Corporate members have the opportunity to feature in the Quarterly, blogs and on social media, showcasing your part in the industry to potential customers or collaborators. Our free newsletter alerts you to important news stories that you may have missed, new perspectives on big news stories and key insights from our events. Sign up for it on our website www.fusionenergyinsights.com

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FUSION ENERGY PARTNERS LTD

Fusion Energy Partners provides specialised consultancy services to the fusion energy sector. With over 250 years combined experience in fusion energy research, our consultants bring a wealth of knowledge directly relevant to the implementation of fusion energy. Our work will directly lead to improved decision making and greater likelihood of success within the burgeoning fusion sector and its supply chain.

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FUSIONX GROUP LTD

FusionX connects capital providers with fusion innovators.

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GARDINER AND THEOBALD

G&T is an independent construction and property consultancy working across all sectors of the built environment. We focus on minimising risk and creating opportunities to maximise the value of our clients' developments and property assets. We deliver project leadership, commercial success, construction excellence and specialist consultancy, operating from our network of offices across the UK and USA. We continue to contribute to an extensive range of energy sector projects across both the public and private sectors where we provide our clients with specialist business case development, supply market management, procurement, commercial, cost and contract management, P3M and PMO, and assurance services. Our team has experience in the whole nuclear cycle from building new power stations and associated developments to decommissioning and demolition, waste management and final disposal. We work with research organisations in the UK as well as advanced modular nuclear reactor vendors. We regularly support organisations evaluating complex business case decisions, improving the success rate of proposals and ensuring that deliverables are met at every stage of the programme lifecycle within time and budgetary constraints. Among the clients we work with are XLCC, Affinity Water, Amentum, Thames Water, National Nuclear Laboratory, Sellafield, Nuclear Decommissioning Authority and National Grid.

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GENCOA LTD

Gencoa manufactures a remote plasma optical emission spectrometer that can be used to measure isotopes of hydrogen, helium-3 and helium-4. We are currently working with several fusion players to develop the tool further.

Erik Cox
New business development manager
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GLOBAL NUCLEAR SECURITY PARTNERS

Global Nuclear Security Partners is the UK's leading management consultancy specialising in nuclear security and threat reduction, with deep experience in the civil and defence sectors, setting and implementing regulation across the fuel cycle. We collaborate with our clients to deliver secure nuclear operations and de-risk complex highly regulated projects. We pride ourselves on delivering agile, timely and actionable advice. Our goal with fusion is to ensure that practical and proportionate security and safeguarding arrangements are developed and implemented, to support its commercial exploitation.

Nick Tomkinson
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> "Very few places in the world can offer the same extensive knowledge and experience in conducting research, development, and experimentation in fusion."
>
> **Peter Roos**
> Chief executive officer
> Novatron Fusion Group

COMPANY DIRECTORY

FUSION PRIME

NearStar Fusion

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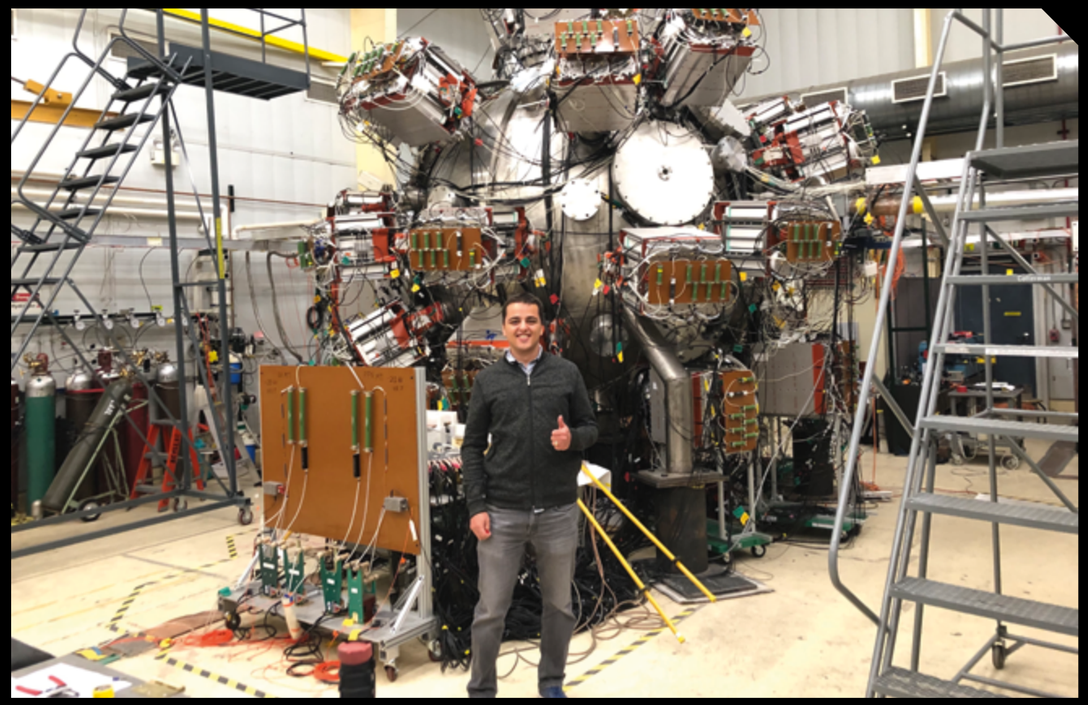

We at NearStar Fusion are building a future with unlimited clean and reliable energy with our simplified and modular design for fusion power plants.

Our core science team is composed of world-class experts in plasma physics and has worked together for more than 15 years. With our extensive experience (including work at Los Alamos National Lab) for developing hypervelocity pulsed plasma guns, our inertial confinement design is unique in its approach.

GOODFELLOW CAMBRIDGE

Goodfellow has been a trusted partner in scientific advancement for over 75 years, supplying high-quality advanced materials to researchers and businesses globally. Since 1946, our mission is to help design, manufacture and deliver every scientific material you will ever need, wherever you are in the world. With one of the most comprehensive ranges of advanced scientific materials available, we offer a wide selection tailored to the fusion sector, including graphite and lithium compounds, as well as high-purity materials for vacuum technology evaporation processes. In 2024, we expanded our capabilities by acquiring Potomac Photonics, adding a range of cutting-edge micromanufacturing services to our portfolio. From cochlear implants to fusion energy, we have been at the forefront of innovation and are dedicated to being a reliable and comprehensive partner. Our aim is to support the development of your ground-breaking projects by providing high-quality materials, advanced manufacturing capabilities, and exceptional service.

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GRAHAM ENGINEERING LIMITED

Graham Engineering Ltd (GEL) is a multi-faceted manufacturer of quality, complex projects in stainless and exotic steels for highly regulated industries. Clients include UKAEA, AWE, the NDA Estate, and companies from the aerospace, medical and the security sectors. GEL is renowned for its 40-year history of manufacturing containers for the storage and production of nuclear waste up to 3 cubic metres in volume, but it also manufactures a diverse range of products varying in size/thickness. GEL specialises in early collaboration with clients to understand design intent, remote process handling interfacing, and product longevity and specifications. This embedded approach facilitates effective production, operational efficiency, accuracy, reliability, maintainability, and quality assured products, aligning with technical specifications, engineering drawings and quality requirements. It also identifies cost saving opportunities for the entire life cycle of products. GEL can accommodate a full range of new product-development services and offers a multitude of engineering processes and skills. GEL's impressive capability includes precision materials cutting, deep drawn pressings, fabrication, machining, robotic laser welding suites, and NDT. GEL is able to self-certify products providing full traceability via LTQRs, manufacturing records, or clients' specific requirements.

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GSF UK

GSF UK is a specialist cleaning and associated services company. We specialise in complex environments and constantly develop new methodologies to enable our clients to focus on their business rather than their facility.

Jerome Solia
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COMPANY DIRECTORY

HUTCHINSON ENGINEERING

Hutchinson is located in Widnes, North-West England. As a “Fit for Nuclear” certified company, we are committed to delivering the most technically challenging and logistically complex projects. Since 1979, Hutchinson Engineering has been dedicated to designing and manufacturing complex steel structures. Our team of 160 is incredibly passionate about continuous improvement, always seeking ways to enhance our efficiency, quality, and capabilities. We invest in state-of-the-art machinery and technology, including the latest precision plasma, laser and CNC cutting technologies to provide our customers with advanced, cost-effective solutions in design, fabrication, and manufacturing carried out under ISO9001:2015 quality procedures. We hold accreditation to UKCA CE ISO1090-2 EXC4, ISO14001, ISO 45001, ISO3834-2, EN15085-2, enabling efficient and cost-effective supply to a high quality-assured standard. With total steel production space of over 10,000 m^2, maximum lift capacity of 50 tonnes, in-house part processing, including cutting, folding and rolling up to 4.3 metres and painting booths up to 32 metres long, we can comfortably handle fabrications of large proportion to high tolerance with the highest integrity.

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HYDROBOLT

Hydrobolt manufactures special fasteners in unusual and high temperature materials for the nuclear industries. Providing extra testing & inspection, we often work to client’s bespoke specifications and approved inspection and test plans.

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I4CNC

Our heritage rests with the production and maintenance of specialist hardware to be found within complex scientific instrumentation. We manufacture build-to-print, and bespoke, precision-engineered components, electro-mechanical assemblies, and hybrid fusions of mixed technologies and materials. Operating CNC and lapping machinery, we also offer metal-working and welding solutions. Our fields of professional interest extend into electronics, electromagnetic assemblies, high-vacuum constructions and most other multifaceted engineering requirements demanded by industrial scientific research and production. Whilst striving to meet our Industry 4.0 objectives, we are also ISO 9001 and Cyber Essentials accredited. Our core competencies are: experienced team of problem-solving engineers from the scientific community; consistent exposure and support to a global community of instrument end-users; flexible service contract relationships.

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ICEOXFORD

ICEoxford specialises in the design and manufacture of wet and dry cryogenics systems, incorporating high current leads for the research, development and use of high-temperature superconductors.

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IDOM

IDOM has developed more than 145 references relating to fusion activities at JET, STEP, ITER and IFMIF DONES among others. IDOM started work for ITER in 2007 with a civil and structural analysis contract. Three years later we began working as part of the Energhia Consortium in the role of “support to the owner”, reviewing the design and assessing compliance with the technical requirements of ITER. In the UK, we have been involved in several projects with UKAEA, collaborating in the engineering design services framework and fuel cycle framework as a tier 1 contractor. We have brought our skills in mechanical engineering (including structural analysis, material selection and manufacturability assessment); computer-based modelling and simulations (including stress analysis of STEP components using FE analysis codes, neutronics analysis and electromagnetic analysis of the magnet systems); power transmission and distribution; and control and instrumentation. Our highly professional team of engineers has a track record of successfully demonstrating their capabilities in fuel cycle, in-vessel components and materials in the area of research and development, design and engineering.

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INDUCHEM GROUP

Induchem Group is a specialist process solutions equipment provider with service and repair capability to all industries with global reach. We have over 40 years in the industry with offices in Cork, Congleton, and our new site at Cleator in west Cumbria to support the Sellafield site and the surrounding area. The company has 120 staff spread across its sites and a turnover of up to € 24 million. We have recently been taken over by Axflow group which extends our product portfolio, with their selection of pumps, valves and services. Products from Induchem Group alone include all types of valves for process and control, regulators, actuators, flame arresters, bursting discs and their holders, PTFE lined pipe, boiler gauge level glasses and flow control equipment, pneumatics, tank top vessel equipment and much more.

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COMPANY DIRECTORY

INEO NUCLEAR UK

Ineo Nuclear, a subsidiary of the Equans group, provides electrical engineering expertise to the nuclear industry. Our extensive knowledge comes from decades of experience and a spirit of innovation. We deliver large turnkey projects through design, engineering, calculations, manufacturing, qualification, installation, on-site supervision, testing and commissioning, maintenance, obsolescence management and decommissioning. Our core businesses are low-voltage and high-voltage electrical cable and cable tray routing, installation security, radiation protection and nuclear safety, IT and comms, instrumentation and control, and multi-technical maintenance. We have worked on ITER for 13 years. Our work includes: the design, study and implementation of utility networks, according to the requirements and codes applicable to nuclear installations. Our multi-skilled team has completed a range of work on nuclear and conventional buildings from designing to commissioning. And we have assembled equipment and elements of the experimental reactor, totalling several million unique parts.

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INNOVATE UK

Innovate UK inspires, involves, and invests in businesses developing life-changing innovations to create a better future. Providing sectors with expertise, facilities and funding, we help test, demonstrate and evolve ideas that drive UK productivity and economic growth. Our network and communities of innovators realise the potential of ideas and accelerate business growth.

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INNOVATE UK BUSINESS CONNECT

Innovate UK Business Connect exists to connect pioneers with new partners and opportunities beyond their existing thinking to accelerate the transformation of ambitious ideas into real-world solutions. We are part of the Innovate UK Group, the UK's innovation agency. We help to drive innovation, widen supply chains, and create diverse connections in both the fission and fusion energy communities.

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FUSION PRIME

Novatron Fusion Group

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The NOVATRON concept is an innovative reactor solution for stable magnetic plasma confinement and a significant step towards fusion power generation.

We strive to provide a solution to one of the major problems inherent in previous and current reactor designs, including the added benefits of faster development and commercialisation on a large scale.

COMPANY DIRECTORY

INTERWELD NUCLEAR SERVICES LTD

Interweld Nuclear Services Ltd is an ISO 19443 accredited company based in the UK. Supported by our specialist workforce of nuclear qualified tradespeople – including welders, platers, pipefitters, mechanical fitters and electrical fitters – we have the capability to manufacture, purchase and supply a wide range of products needed across the nuclear ecosystem. We also provide a range of services, from the supply of welding consumables and heat treatment to the provision of skilled labour for both blue-collar and technical white-collar roles. We also deliver scoped manufacturing projects utilising both off-site and on-site delivery modes. We are trusted by clients around the world to support the delivery of complex works in and around the nuclear island.

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IS INSTRUMENTS

IS-Instruments is a micro-SME based in Kent that specialises in laser-based instrumentation, namely Raman spectroscopy. Our instruments can be used to measure liquids and solids over the spectrum of excitation wavelengths. Our latest development is a gas Raman spectrometer that uses a hollow core microstructured optical fibre designed and manufactured by the Optoelectronics Research Centre in Southampton. The gas Raman spectrometer has been used to successfully analyse hydrogen, deuterium and deuterium hydride, and current funding is in place for tritium analyses. Gas Raman can be used to qualify and quantify gaseous species either offline, or within an online process.

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JAMES WALKER UK

James Walker holds a respected reputation as a leading force in the application of specialised fluid sealing products and other materials technology to provide effective solutions to operational issues in critical applications. Based on our unrivalled experience, we precisely match materials, product design and component manufacturing methods to meet customers' exact specifications and operational requirements. With more than 40 years of service to the energy sector, our materials and products are used across a broad range of applications. Supplying only the highest integrity materials and specialised fluid sealing products to the energy industry, our capabilities are firmly based on our knowledge of the processes involved, their highly specialised sealing requirements, plus the need for exacting quality control and assurance regimes. We are at the forefront of development and application of high performance elastomers. In addition to working with industry standard materials and customers' own proprietary materials, our materials technology centre is continually working on new formulations to meet customer specific operational parameters and to advance our own product ranges. The result is materials for sealing-related products that work efficiently and for longer at extremes of temperature and pressure, with improved resistance to chemicals, abrasion, or ionising radiation.

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JCS NUCLEAR SOLUTIONS

JCS provides nuclear radiation sensing and shielding solutions for fusion, fission, research, medical, and defence applications. JCS has been supporting fusion research since 1975.

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JOHN ELLISON ELECTRONICS

We research, design, approve and manufacture machines and instrumentation. Our research emphasis is carbon reduction and improving public health. We are nuclear industry trained and currently working with UKHSA Centre for Radiation, Chemical and Environmental Hazards.

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KI CONSULTANCY LTD

Ki Consultancy is an international consultancy that specialises in supporting companies and institutions in the fusion industry. We specialise in strategic sourcing, business development, operational excellence, and supplier and supply chain development.

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COMPANY DIRECTORY

FUSION PRIME

Proxima Fusion

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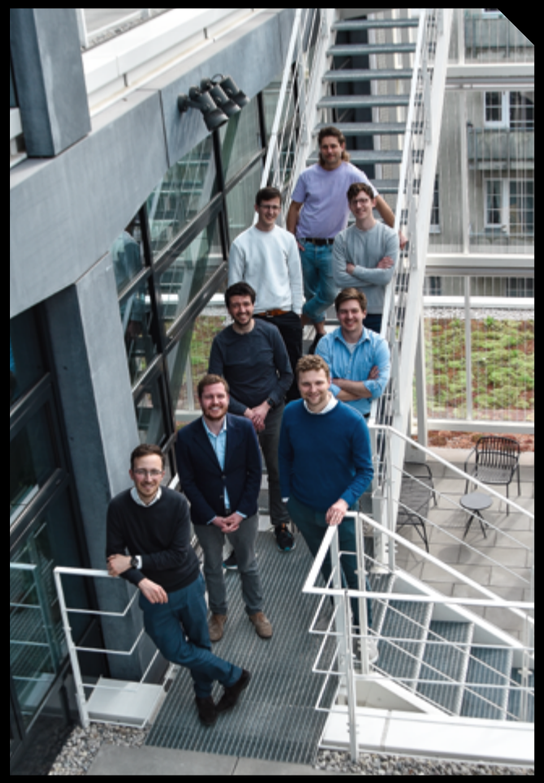

Proxima Fusion is a startup based in Munich, working to develop power plants via optimised, quasi-isodynamic stellarators.

Proxima is the first-ever spin-out company from the Max Planck Institute for Plasma Physics, which built and operates the most advanced stellarator in the world, W7-X. Research over the past decade has now set the stage for Proxima to leverage modern optimisation tools and design capabilities, and accelerate fusion. With W7-X reaching high-performance in continuous operation, uniquely among fusion concepts, the concept of a quasi-isodynamic stellarator has now emerged as offering the clearest and most robust path to fusion energy.

Connecting partners from industry and academia, the Proxima Fusion founding team, which comprises individuals from the Max Planck Society, MIT and Google, is now entering the race for fusion energy to turn stellarators into economically viable fusion power plants.

KIER

Kier's purpose is to sustainably deliver infrastructure that is vital to the UK. We are a leading provider of infrastructure and construction services, and are committed to delivering for communities and leaving lasting legacies through our work. At the core of our project delivery is technical excellence, utilising the latest construction methods, innovations and technology to ensure we offer the best value for our clients. We take pride in bringing specialist knowledge, market-leading experience and fresh thinking to create workable solutions on a huge range of projects across many sectors including power, defence, nuclear, energy, rail, aviation, education, health, housing and highways. Kier is committed to supporting the UK's fusion journey by bringing this experience, learnings, and expertise from similar sectors. The opportunity to deliver the infrastructure for fusion power generation aligns with both our values and capabilities. Being part of the fusion community will allow us to be at the forefront of upcoming news and developments.

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KINECTRICS

Kinectrics is a leading provider of lifecycle management services for the electricity industry. Trusted by clients worldwide, our expertise spans engineering, testing, inspection, and certification, supported by independent laboratory and testing facilities, a diverse fleet of field inspection equipment, and an award-winning team of more than 1,300 engineers and technical experts. From initial design and type testing to operational deployment and maintenance, Kinectrics collaborates closely with customers to ensure utility assets perform safely, reliably, and efficiently throughout their entire lifecycle. With extensive experience in isotope production, separation, extraction, storage, transport, and waste management, we are uniquely positioned to support the fusion industry in designing, testing, and deploying sustainable and efficient fuel cycles. Our broad expertise in structural integrity and other critical areas enables us to deliver a comprehensive range of services to our clients.

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KONECRANES

Konecranes has been supplying and servicing lifting equipment for the nuclear industry for more than 50 years. And now more than 60 per cent of nuclear facilities around the world use our products. Konecranes was heavily involved in the original development of single-failure-proof cranes for the nuclear industry, cranes that are still used in critical load-lifting applications today. During our time serving the nuclear industry, we have maintained the distinction of never experiencing a part 21 reportable nuclear defect or non-compliance issue. Our expertise and concern for nuclear safety is recognised throughout the industry; we serve in several nuclear advisory groups, including ASME NOG-1. Konecranes maintains an active nuclear quality-control programme that has been audited and approved in compliance with almost every relevant worldwide regulatory standard. Our nuclear quality-control programme adheres to stringent quality, testing and documentation requirements that can be customised to meet local standards. We are one of the few suppliers in the material handling business that has the capability to complete engineering analyses in-house with our own engineering personnel. Our staff includes over 100 engineers in disciplines applicable to industrial nuclear material handling: seismic analyses, safety analyses and regulatory compliance.

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COMPANY DIRECTORY

KUKA SYSTEMS UK

KUKA UK specialises in robot automation systems for the nuclear decommissioning industry. The KUKA competence centre for nuclear applications is based at our facility in the UK where all nuclear projects for KUKA are completed. We offer full design, build, test and installation of our systems. Supported by training and full nuclear-level document support, KUKA also has an active interest in fusion and new build programmes.

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KYOTO FUSIONEERING

Kyoto Fusioneering is a privately-funded technology start-up founded in 2019, with its headquarters in Kyoto, Japan. The company is focused on developing advanced technologies for commercial fusion reactors, including gyrotron systems, tritium fuel cycle technologies, and breeding blankets for tritium production and power generation. Kyoto Fusioneering is developing innovative solutions that are simultaneously high performance and commercially viable. Supporting both public and private fusion developers around the world, the company is accelerating the realisation of fusion as the ultimate energy source for humankind.

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LASER 2000 UK

Laser 2000 UK is a supplier of lasers, optical components, and equipment for materials research, spectroscopy and nuclear/plasma diagnostics. Laser 2000 UK also offers components for harsh environments, such as metal optics, high-power laser optics, FBG sensors and fibre communications products including transceivers, cables and modules. We delight in helping our customers achieve their goals through the application of photonics.

Lisa Thomson
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> “The Fusion Cluster boosts the visibility of fusion organisations, providing the spark to ignite cross-sector collaborations.”
>
> Richard Pearson
> Co-founder, chief innovator & UK director
> Kyoto Fusioneering

LASER ADDITIVE SOLUTIONS

Laser Additive Solutions is a precision engineering company based in Doncaster that uses state-of-the-art laser-based equipment to produce cost effective solutions to engineering and production problems encountered in a wide range of industrial sectors. We specialise in laser welding, laser surface hardening, laser 3D cutting and laser-direct energy deposition (L-DED) additive manufacturing using both wire and powder. Our workload involves the processing of many difficult materials, such as duplex stainless steels, Ni-base alloys including Inconel 718 and Inconel 625, and refractory metals such as tungsten and molybdenum. Our customers include internationally recognised companies such as Rolls-Royce, Siemens, and Sulzer. We carry out both commercial repair and manufacture work, and academic research and development activities, and we understand the often urgent and confidential nature of the work we undertake. We have recently completed a project for UKAEA to develop a deposition process using our new L-DED cell that includes a TRUMPF 3001 TruDisk laser and a KUKA high accuracy robot to repair pure tungsten plate using both tungsten wire and powder. The company operates a ISO 9001 quality management system approved by BSI.

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LEYBOLD UK

Delivering vacuum pumps, systems, accessories, services and tailor-made vacuum solutions for more than 170 years, we offer a broad range of advanced vacuum solutions for use in manufacturing and analytical processes, as well as for research purposes. These span laboratory to industrial scale and rough to UHV pressure range which includes turbomolecular, cryogenic and ion pump solutions. We also offer market-leading leak detection equipment. We focus on the development of application and customer-specific systems for the creation of vacuums and the extraction of processing gases. Fields of application are coating technologies, thin films and data storage, analytical instruments and industrial processes.

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LUCIDEON

We are materials experts and consultants specialising in materials characterisation, development, and process optimisation. We have supported the nuclear industry in areas such as simulant testing, stress cracking corrosion, failure analysis, pelleting, sintering and other bonding techniques, and more. Our technology agnostic approach means we are not bound to specific methods or standards.

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COMPANY DIRECTORY

LUFFY AI

Luffy AI is a team spinout of UKAEA. Our mission is to help our customers improve productivity, safety and sustainability through intelligent control systems. Our adaptive AI controllers enable operators to extract the maximum potential from their equipment, without the need for expert human input. Our novel AI controllers are trained in a digital twin environment (no large data based training), specifically to target your key commercial drivers, and through adaption at the edge, will self-optimise once deployed. This enables you to accomplish significant enhancements to your process, whether it is improving productivity, robustness to failure modes or reducing energy consumption, all whilst removing the headache of configuring and optimising your control system. Our AI technology has value across the fusion supply chain, from core plasma control to the production of specialist fusion materials.

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M5TEC

M5tec is a multidisciplinary engineered solutions provider and consultancy located in County Durham, England. Our team consists of experienced and enthusiastic engineers who are dedicated to supplying high-assurance industries with new and innovative solutions to engineering challenges. We have a strong history in designing remote handling solutions for hazardous environments including fusion, nuclear and subsea. We are a tier 1 supplier on the UKAEA's engineering design services framework and a tier 2 supplier on the UKAEA's embedded engineering resource framework. M5tec's experience within the fusion industry includes: feasibility studies to assist with the electrical design of UKAEA's STEP power plant; market surveys on remote maintenance solutions; rotary actuator upgrades and improvements for remote handling solutions; concept design of shielding solutions for tokamaks; consultancy on long-reach tooling upgrades and improvements; literature reviews on tokamak core fuelling technologies; manufacturing plans for tokamak in-vessel components; design of remotely operated segmentation tooling for tokamak decommissioning; detailed technical report into the use of fasteners within a fusion environment; procurement and assembly of mechanical components for use in a fusion environment; and providing engineering design resource to embed within fusion industry design teams.

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MAGDRIVE

Magdrive is developing the next generation of spacecraft propulsion for low-Earth orbit satellites. With high thrust and high efficiency, the propulsion systems are designed to foster the sustainable use of space, and open entirely new business models such as orbital manufacturing and servicing. Magdrive is working with companies in The Fusion Cluster to space-qualify the high quality electronics and components developed there for use in space. Magdrive intends to lead the propulsion market with a high-power electric plasma thruster, leveraging technology developed in the fusion industry. Magdrive's CTO and co-founder Dr Thomas Clayson studied plasma laboratory astrophysics at Imperial College London, and worked at First Light Fusion where he helped to design and build Europe's largest pulsed power machine for fusion research.

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FUSION PRIME

Realta Fusion

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Realta Fusion is developing compact magnetic mirror technology as the lowest capex and least complex path to commercially competitive fusion energy.

Realta is targeting the need to decarbonise industrial process heat and power for early adoption of fusion. The company spun out of an ARPA-e funded project at the University of Wisconsin.

COMPANY DIRECTORY

MATERION UK

Materion is a worldwide supplier of engineered materials. In particular we are a leading supplier of beryllium and beryllium-containing materials. Our full product range can be viewed at materion.com

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MCT BRATTBERG LTD

MCT Brattberg patented the world's first modular cable transit system in the early 1950's. Today we are the industry standard to which all others aspire. We manufacture and supply modular cable transit systems globally to major projects in the offshore, defence and nuclear industries with unrivalled experience and certification. We have supplied JET for the whole of its operational life and want to use this experience to benefit future fusion projects.

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MEWBURN ELLIS LLP

Mewburn Ellis works with organisations and innovators building the technologies that will define tomorrow. As one of Europe's top specialist intellectual property (IP) firms we believe in a personal approach to business. Our focus is on providing strategic advice to maximise the potential of IP as an asset and so increase the value of businesses. We can be counted on to be one step ahead, looking at how organisations can best exploit their IP portfolios both now and in the future. We're known for providing clear, concise and to-the-point IP advice. We won't crush new ideas at early stages, but from the outset we'll be clear on what will and won't work from an IP perspective. We have a large and technically diverse engineering team with both legal and research experience in the fusion space and are ready and able to help fusion innovators, regardless of their size, technology, or age to protect, strategise and monetise their IP to help them reach their goals.

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> "The UK Fusion Cluster has been leading the way when it comes to bringing together global fusion businesses with the same overarching vision of commercialising fusion energy."
>
> Jonathan Musgrove
> Chief executive officer
> Oxford Sigma

MIRION TECHNOLOGIES

Mirion Technologies has a proud tradition of supporting fusion projects in the UK and worldwide. As a world-leading supplier of radiometric equipment and services, we recognise the importance of fusion research and investment. Based in Harwell, we support many UK fusion projects with our products, services and expert consultancy. Mirion's services include: supply of off-the-shelf and custom radiometric instruments for all radiation types; measurement systems for special radionuclides such as tritium and carbon-14; supply of high-temperature and high-radiation tolerant cameras and systems; consultancy to determine optimum radiometric strategy for customers' plants, process, active waste, fuel processing and decommissioning; feasibility studies including concept designs and performance assessments, to develop new assay systems and characterisation processes for operations and decommissioning; operation of suites of assay equipment for customers, including mobile characterisation services, incorporating setting up, operations and QA procedures, and reporting; in-situ gamma-imaging measurements using portable gamma camera equipment; development and implementation of complete in-situ waste activity characterisation and dose-rate mapping solutions using combined measurement techniques; expert data review of assay results, including interpretation of results and recommended action; modelling for shielding calculations, assay system performance using specialist codes.

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MOTT MACDONALD

We're a global engineering, management and development consultancy with 7,800 UK staff in programme delivery, energy, defence, water, environment, transportation and the built environment. Our key points are: £1.6bn revenue and 16,000 global staff working in more than 135 countries with over 150 years of heritage; employee-ownership is at the heart of our culture with a focus on long-term sustainability; developing the best staff, raising the bar, adding value with experienced people, focusing on technical excellence; attracting the brightest talent, including apprenticeships and graduate programmes; leading the formation of an industry coalition towards net-zero by 2050 and working towards carbon neutrality in our business operations by the end of 2020; maximising the opportunity that digital delivery provides.
We believe our focus on technical development to deliver excellence sets us apart.

Dan Mistry
Executive business development
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NAG

The Numerical Algorithms Group (NAG) is a company with a purpose; to serve engineering, science, and business through technical excellence. Our expertise is delivered through a combination of products and services including the world-renowned NAG Library, automatic differentiation software and our world class high-performance computing (HPC) and cloud cost-to-solution optimisation services. The NAG Library is the largest and most comprehensive commercially available collection of mathematical and statistical algorithms. We design and build custom algorithms that exactly meet your needs and solve your complex problems better. We can provide a flexible arrangement whereby clients can utilise NAG HPC & Cloud HPC expertise for a range of services including: application profiling and performance optimisation (software modernisation service); algorithm design, implementation and testing; application modernisation, scalability, performance and capability enhancements (software modernisation service); HPC benchmarking and technology evaluation; software porting and tuning; cloud cost-to-solution services (NAG cloud HPC migration service). We can also provide a managed technical support service for HPC applications and HPC systems & infrastructure.

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COMPANY DIRECTORY

NASCENT SEMICONDUCTOR

Nascent Semiconductor is a high technology start-up, based on a 20 year pedigree in silicon carbide electronics. The company designs and manufactures electronic components and systems that are capable of operating in a range of extreme environments, including those found in the nuclear industry. From sensors and power electronics to detectors and quantum technology, the company offers a range of unique solutions to problems.

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NICHOLS GROUP

As an independent, leading UK consultancy, Nichols Group has the creativity, innovation and capability to fulfil all complex programme and project management needs. For more than 47 years we have advised on large, iconic programmes, complex projects and major business change initiatives in a wide range of industries, especially energy, regeneration, infrastructure and technology. We work collaboratively with clients, providing small high-calibre teams or individuals who operate as trusted advisors, partners and deliverers. Together, we design a fresh, creative approach that focuses on bespoke needs to ensure successful and positive outcomes. Our teams' backgrounds range across the disciplines needed for fusion with expertise from physics to collaboration, and systems engineering to the Green Book. We aim to maximise value for our clients and provide them with confidence, assurance, clarity and success. We have significant experience and expertise in the nuclear decommissioning sector. We have undertaken strategic reviews, improved assurance and programme management support to the Nuclear Decommissioning Authority (NDA), enabling them to achieve their goals safely and effectively. We have also provided NDA sites, such as Sellafield, Dounreay and Bradwell, directly with strategic support and expertise, bringing clarity and confidence to a number of highly complex and challenging programmes.

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www.nicholsgroup.co.uk

NORTHERN VALVE AND FITTING CO LTD

Northern Valve And Fitting Company (NVFCL) is the only authorised distributor in the UK and Ireland for the complete range of products manufactured by FITOK, generally recognised as the leading alternative to all established manufacturers of fluid-system components in terms of price and service. Founded in 1998, FITOK manufactures and distributes its range of products in six continents. With a product portfolio covering instrumentation, medium and high pressure, ultra-high purity, rigid tubing, and sampling systems FITOK is established as a global brand associated with quality and value. NVFCL has a total of over 50 years' experience in the supply of gas and fluid system components, working across most industries. NVFCL is dedicated in supporting our customers' needs by increasing local stock holdings, having responsive internal and external sales teams, superior product and application knowledge, and adding value to any supply chain team or process.

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NTTAU DIGITAL

nTtau Digital is in the business of building software as a service (SaaS), focusing on the AI co-design of fusion power plants, extending capabilities developed under Advanced Research Projects Agency-Energy (ARPA-E) support in the US for fusion power plant costing. Along the way we are offering micro services for the integration of fusion simulation tools.

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NUCLEAR JOBS LTD

NuclearJobs is a job board aligned with supporting attraction, retention and mobility throughout the nuclear industry. We do this by showcasing opportunities with employers based on nuclear sites and within the supply chain. Demand for jobs is accelerating due to the number of proposed new-builds, commissioning, decommissioning and research projects. This is giving a renewed focus on local education, apprenticeships, graduate schemes, professional training and initiatives to attract people with the right skills from other industries to fill talent gaps across the many, varied business areas of nuclear. These include: energy generation, fuel manufacturing, transportation, reprocessing, repository, defence, medicine, research and development, site remediation and restoration. Nuclear remains at the cutting edge of our science and technology, accelerating developments in personalised medicine and with the attainability of fusion offering the potential as an unlimited energy source without pollution or global warming. NuclearJobs mission is to support a diversifying working population who are finding their chosen career pathway destination aligned with opportunities within nuclear. Alongside linking today's nuclear professionals and assisting them with navigating their career moves and choices.

Andy Gee
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nuclearjobs.co.uk

NUCLEAR INDUSTRY ASSOCIATION

New reactor designs mean nuclear can do more to cut carbon and fight climate change. New small reactors, advanced reactors, more efficient large reactors, and fusion technology are all on the way. They let us use more sites, create more heat, and expand our flexibility. We can decarbonise buildings, transportation, and industry, as well as electricity.

Ella Ashdown
Member relations and event executive
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COMPANY DIRECTORY

FUSION PRIME

Renaissance Fusion

Simon Belka, Chief movement builder
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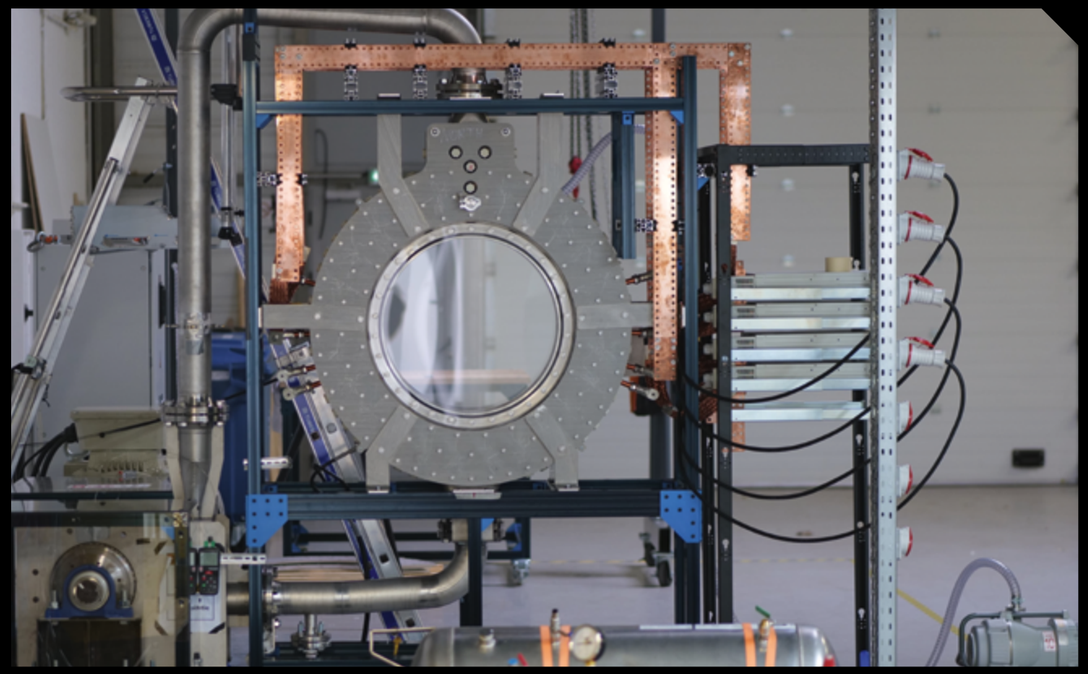

Renaissance Fusion is making the stellarator concept reactor-ready by quadrupling the magnetic field and simplifying the design using proprietary high-temperature superconductors (HTS) manufacturing.

It uses flowing liquid metal walls to protect the stellarator and the delicate HTS from neutrons, and to keep the level of radioactivity as low as in a radiology department in a hospital. We target our fusion reactor to be commercialised within ten years. Furthermore, our unique IP allows promising applications in other fields to be licensed within three years.

NUCLEAR SOUTH WEST

Nuclear South West is a public-private partnership of industry, academic and the public sector, established to champion new nuclear in south-west England. We are committed to supporting the UK government's fusion strategy and the wider global drive to develop commercially viable fusion energy at scale. Fusion-related capabilities being developed in south-west England include; high temperature reactor expertise in Gloucestershire; sustainable lithium production in Cornwall; construction and welding excellence as part of Hinkley Point C in Somerset; digital engineering design and robotics at Bristol; skills development at the National College for Nuclear, University Technical College Berkeley Green, University of Bristol.

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NUVIA

NUVIA supports the commercialisation of fusion technology to provide safe, clean energy. Born from the original UKAEA, NUVIA can offer full life-cycle support to the fusion industry, including front-end services, engineering design, build and operate capabilities. NUVIA has been part of the fusion industry from the very beginning, in particular working closely with UKAEA and ITER to deliver a range of services including embedded personnel, design, build, install, commissioning and EPC contracts. NUVIA is at the forefront of build for decommissioning, which will be vital in this next phase of product development as companies start to build prototype and energy-output plants for the first time. Our real-world experience will be invaluable to our customers as we take the next, important steps in fusion. NUVIA is part of VINCI, the largest construction organisation in the world, outside of China.

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OKAZAKI MANUFACTURING COMPANY

We manufacture mineral insulated cable which is made into temperature sensors, heaters, coax and triax assemblies that operate from 1.5 kelvin to 2500 kelvin.

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COMPANY DIRECTORY

OPENSPDM

Research and development of a fusion reactor and a fusion power plant requires many large numerical simulations. These models work to numerous different fidelities of the science and engineering of fusion. The recent US Department of Energy workshop on the management and storage of scientific data (doi.org/10.2172/1843500) concluded that FAIR (Findable, Accessible, Interoperable, Reusable) data management of simulation data, processes and results is needed to provide confidence in results, to enable the large-scale, traceable use of artificial intelligence and machine learning, and to enable functional digital twins. Simulation data management is a technology which provides FAIR management of scientific and engineering simulation data. openSPDM is an open-source SDM solution built on the Aras Innovator open PLM platform. This solution was prototyped at UKAEA in 2020, and reported at the NAFEMS World Congress 2021 in the presentation Next Generation Information System Architecture for Simulation-led Engineering of a Fusion Reactor. openSPDM can help you get your simulation data under control, based on the methodology in the NAFEMS publication How to get Started with Simulation Data Management.

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OPTIMA SYSTEMS CONSULTANCY

Optima is a systems engineering and engineering management consultancy based near Bristol with clients across the UK. We work primarily in the defence and nuclear sectors, and have past and present clients in both public and private sectors. Optima has supported the UK's fusion sector since 2018, when it won a place on UKAEA's systems engineering framework. Since then, it has provided systems engineering expertise to many of UKAEA's programmes: JET, H3AT, RHSME, MAST-U, STEP, FTF and RACE. At Optima, we believe that today's complex systems and large organisations require a structured systems-thinking approach in order to manage complexity, develop balanced systems and deliver success. We work on some of the world's most complex engineering and organisational challenges, using a broad systems-thinking methodology that transcends sector. Our structured approach means that we insist on viewing the problem end-to-end and within the widest context, ensuring that no potentially critical element is missed. We pride ourselves on providing high-calibre, experienced engineering consultants. We engage at an individual level with our customers to ensure the best possible support is provided, working flexibly and in partnership to adapt to changing requirements and emerging technology.

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ORANO

Orano transforms nuclear materials so that they can be used to support the development of society, first and foremost in the field of energy. The company is a world leader in the fuel cycle for nuclear fission and fusion, with activities ranging from tritium cycle management for International Thermonuclear Experimental Reactor (ITER) to transformation of fissile materials for nuclear operators. Globally, Orano and its 16,000 employees bring to bear their expertise and their mastery of cutting-edge technology, as well as their permanent search for innovation and unwavering dedication to safety, to serve their customers around the world. In the UK, Orano offers a unique gateway to this global expertise, while combining this with four decades of on-the-ground experience with the UK nuclear and nuclear technology landscape. Orano is committed to supporting the development of the energy of the future, offering innovation and decades of expertise to the fusion sector. It offers expertise and experience that can be adapted, focused and implemented across the entire lifecycle of facilities.

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OXFORD INNOVATION SPACE

Oxford Innovation Space helps to transform local economies by creating environments where dynamic and innovative businesses come together and thrive. In these spaces, we design and deliver environments and support systems which foster communities of entrepreneurs, stimulate enterprise and innovation and provide ambitious small businesses with the space and support they need to succeed.

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OXFORD SCIENCE ENTERPRISES

Oxford Science Enterprises (OSE) is an independent, billion-pound investment company, created in 2015 to found, fund and build transformational businesses via its unique partnership with the University of Oxford. This partnership enables OSE to work with the brightest academic minds tackling the world's toughest challenges and guarantees unrivalled access to their scientific research. In collaboration with its global network of entrepreneurs and advisers, OSE shapes and nurtures these complex ideas into successful businesses, while targeting attractive returns for shareholders. Actively focused on a core portfolio of around 40 companies spanning three high-growth, high-impact sectors – life sciences, health tech, and deep tech – the company adopts a flexible, long-term investment approach, recognising the path from ground-breaking research to global markets takes time and resilience. To date, OSE has invested £0.5 billion in over 80 ambitious companies built on Oxford science. A key player in Oxford's entrepreneurial ecosystem, OSE is highly motivated to foster an environment that catalyses pioneering research and steers it to commercial success.

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OXFORD SIGMA

Oxford Sigma tackles energy security and climate change by accelerating the commercialisation of fusion energy. Our mission is to deliver materials technology, materials solutions, and fusion design services to accelerate the commercialisation of fusion energy. We are an organically grown fusion company, owned and operated by scientists and engineers, with our roots and headquarters in Oxfordshire, UK.

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COMPANY DIRECTORY

PREMIER MODULAR

Premier Modular, the UK's top provider of modular buildings, offers fast and cost-effective solutions across all industries. With over 60 years of experience, financial stability, and a commitment to sustainable building, we can create temporary or permanent spaces to your exact needs. Choose from collaborating with your architect or our turnkey solutions – our experts will get you up and running quickly, minimising disruption.

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PROTEC GROUP LTD

Protec is one of the UK's most prominent fire safety providers. As industry leaders in fire and gas detection, fire protection and suppression, audio and security, we provide innovative products and superior services to exceed our clients' ever more challenging requirements. Protec can provide an all-in-one integrated solution from initial design development at consultation stage, through to reactive service and maintenance packages. As a Bosch company, we may be able to extend our offering using our Bosch partners.

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PILLSBURY WINTHROP SHAW PITTMAN LLP

Pillsbury is a global law firm and a thought leader in the area of fusion energy. Pillsbury is widely recognised as one of the world's top law firms for nuclear energy and was the first firm to establish a dedicated nuclear energy practice over 50 years ago. While fusion energy and nuclear power are fundamentally different, the technical and regulatory requirements to advise on the legal frameworks of these advanced energy technologies are similar. Pillsbury's comprehensive fusion energy practice aligns with its commitment to advance clean energy technologies and complements our well-established focus on the energy transition. Pillsbury is actively advising companies on the role fusion energy will play in the energy transition, including advising commercial fusion developers on regulatory, commercial, public policy, and intellectual property matters, giving established companies and utilities guidance on fusion's role in meeting decarbonisation goals, serving as regulatory counsel to the Fusion Industry Association, collaborating with international and national agencies to develop guidelines for the global deployment of fusion, and working with the investment and finance communities on how fusion fits into their overall sustainability programs. Our fusion energy practices web page is https://bit.ly/3SeHfr6

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FUSION PRIME

STEP

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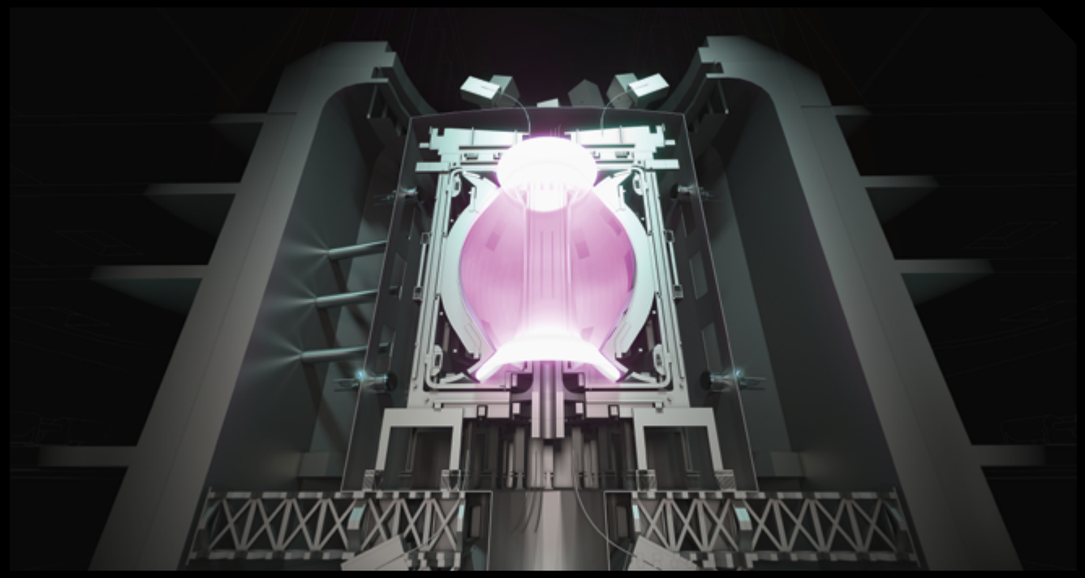

STEP is a pioneering programme to design and build the UK's first prototype fusion powerplant and stimulate the development of the UK fusion industry.

It's bringing government and industry together to develop and deliver at pace. Our mission is to demonstrate net energy generation and fuel self-sufficiency, and a clear path to commercialise fusion. This will spur innovation across multiple sectors as the fusion industry grows. STEP is a government-funded industry partnership programme led by UK Industrial Fusion Solutions, a wholly owned subsidiary of UKAEA Group, and will be built at the West Burton site in Nottinghamshire.

COMPANY DIRECTORY

PORVAIR FILTRATION GROUP

Porvair has been designing and supplying high-quality bespoke filtration solutions, and other equipment, to the global nuclear industry since the 1980s. We also offer tailored solutions to the power generation, fuel production, reprocessing, decontamination, decommissioning, and waste packaging sectors. As an engineering company in the filtration industry, we can progress an initial discussion to a fully-optimised solution, meeting material, code, technical and quality requirements to provide a total solution to a specific problem. Our capabilities range from a single, specialised, retrofit element to a complete, packaged system to meet the precise needs of a complex application, together with on-site support and a complete after-sales service. In addition to our acknowledged leadership in both engineering and quality, we can also offer the services of our extensive laboratory, development and testing facilities. We can provide custom-designed filtration solutions using a wide range of metallic and non-metallic filtration media. Also available is a variety of surface treatments to enhance the chemical, temperature and solids abrasion resistance for specific applications.

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PRECISION CERAMICS

Precision Ceramics is a UK-based manufacturer that supplies advanced ceramics with expert advice on materials selection, and design. Precision provides ceramics for a range of demanding applications including medical, space, energy, industrial and defence sectors. Precision has supplied many ceramic components for the Joint European Torus (JET), Diamond synchrotron and high-energy physics applications. We can supply oxides, carbides, nitrides and machinable ceramics. Ceramics may be chosen to solve challenges in temperature (high and low), magnetic, electrical, wear, radiation, corrosion, mechanical strength, dimensional accuracy. There will be numerous requirements for technical ceramics in fusion designs: magnetics, heat exchange, first wall, plasma. Please ask us for prototype assistance to production quantities.

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PRORSUS

Prorsus offers knowledge economy support, investment and partnership; technology ecosystems and collaborative clusters establishment, growth and stewardship; specialist real estate delivery and technical project management. Prorsus has 8 years' experience and investment as a private sector shareholder in the Harwell Campus Partnership (2013–21). In that time it has grown the interdisciplinary community, science infrastructure, and balance sheet values on the campus, and contributed to the wider UK GDP impact from Harwell. It has also provided pro bono strategic advice in Oxfordshire and for HM Government in the science and innovation spheres; multi-sector ongoing investment of both venture capital and real estate; and has interest and experience in space, energy, life sciences, quantum, agriculture and food technology.

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RDP ELECTRONICS

RDP Electronics has been designing and manufacturing displacement transducers in the UK for almost 60 years. We supply standard and bespoke sensors to almost every industrial sector. Our maximum capabilities encompass a range of features designed to meet diverse operational demands. We provide displacement ranges from 0.5 mm to 940 mm, with operating pressures spanning from a full vacuum to 20,000 psi. Our systems feature a maximum PT rating of IP68, enabling functionality at depths of up to 2.2 kilometres. They can operate in extreme temperatures ranging from -220°C to 600°C and withstand radiation doses as high as 1 giga gray. We also offer a comprehensive range of sensors designed for precise measurement of force, pressure, and torque. Our load cell options include tension, compression, and universal types, with ranges spanning from 250 grams to 2.2 mega newtons. For pressure measurement, we provide gauge, absolute, barometric, vacuum, and differential transducers, with pressure ranges from 542 millibar to 6,895 bar. To complement these sensors, we also design and manufacture instruments available with various output types, including display, digital, voltage, and current options. They can be configured for different mounting types, such as enclosure, desktop, panel, DIN rail, or rack-mounted setups.

Oliver Keeling
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REACT ENGINEERING LIMITED

We work in partnership with clients and like-minded organisations to rationalise and solve complex engineering, project management and technical challenges associated with safely and efficiently decommissioning legacy industrial assets. Our expertise spans defining and managing front-end project and engineering requirements, developing decommissioning programme and project strategies, and providing technical leadership to ensure seamless integration. We provide strategic decision-making, conducting comprehensive engineering and technical studies, and identifying, selecting, and mapping technology solutions. With experience in project engineering for highly regulated industrial sites, we design effective decommissioning and waste management methodologies, with "design for decommissioning" expertise. We also offer bespoke engineering and project management consultancy services and expertly manage the integration of safety cases, engineering, plant configuration, and site license compliance.

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RED ENGINEERING

RED Engineering is an award-winning SME with a mission to make hazardous operations safer, quicker and cheaper. Core expertise encompasses mechanical engineering including design of equipment for deployment in an active environment; robotics and process automation; agile product development – the rapid development and delivery of first-of-kind engineering solutions and equipment. Our capability is delivered via three linked services: engineering consultancy; equipment supply; testing services. These services can be provided individually or on a sequential basis to develop first-of-kind equipment to enable the most challenging construction, maintenance, and decommissioning projects. Over the past 14 years we have successfully delivered over 500 projects for clients in the energy industries including Sellafield, DSRL, GE Oil & Gas and TechnipFMC. We can add value in the following areas: mechanical handling equipment – design, manufacture, delivery, and testing of equipment for deployment on site; high integrity enclosures – including delivery of systems with an alpha containment capability as evidenced by our DPaCC project which featured a C5 process cell; material handling systems. Our track record is centred around the delivery of specialist materials handling systems to allow successful remote operations in hazardous environments.

Alistair Kitching
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COMPANY DIRECTORY

FUSION PRIME

Tokamak Energy

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Tokamak Energy is a leading commercial fusion energy company based near Oxford.

It is pursuing the global deployment of commercial fusion through the combined development of spherical tokamaks with high-temperature superconducting (HTS) magnets. The company has pioneered these technologies since 2012, long before their importance was recognised. Founded in 2009 as a spin-off from UK Atomic Energy Authority (UKAEA), the company employs a team of over 250 people with talent from the UK and experts from around the world. It combines world leading scientific, engineering, industrial and commercial capabilities and is focused on a fast and de-risked path to bringing clean, secure, affordable fusion power to market in the 2030s.

The company has 70 families of patent applications and has raised $250 million, comprising $200m from private investors and $50m from the UK and US governments. It is the only private fusion company to have more than 10 years' experience designing, building and operating tokamaks. In addition, Tokamak Energy has established a dedicated Magnets Business Unit to become the leading supplier of HTS magnets inside and outside the fusion energy market.

RGE LTD

RGE Ltd specialises in bespoke fabrications in stainless steel and higher alloys for critical process applications. We have particular knowledge of coaxial tubular containment systems and high and ultra high-purity process systems.

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RÖCHLING INDUSTRIAL UK

Röchling Industrial manufactures composite materials and neutron shielding.

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RTR GMBH & CO. KG

RTR GmbH & Co. KG is a steel material supply specialist, working independently with a varied and global supply chain network. We deliver customer-driven requirements in a wide range of steel forms, types and grades, from raw material to finished parts. We can provide single line requirements through to complex bills of materials, with traceability, certification and quality at the centre of all we do. RTR offers a project delivery partnership to integrate all aspects of the supply chain and allow our clients to focus on their required outcomes with the assurance of material availability.

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COMPANY DIRECTORY

RULLION

Rullion is one of the UK's largest recruitment businesses. We have been supplying contingent labour and recruitment services into the fusion sector for 20 years. In doing so, we are the biggest supplier of fusion professionals in the UK. We have a global network built up over two decades, which can rival any other organisation in the world. With dedicated fusion sector recruitment and account management teams at Culham, Oxfordshire, Rullion is uniquely placed and has the skills, experience and capability to support any company in the industry.

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SCHNEIDER ELECTRIC

Our mission is to be your digital partner for sustainability and efficiency. We drive digital transformation by integrating world-leading process and energy technologies to realise the full efficiency and sustainability opportunities for your business. We provide end-point to cloud integration connecting products, controls, software and services. We enable lifecycle solutions from design and build, to operation and maintenance phases through a digital twin. We deliver capabilities to transform from site-to-site to an integrated company management. Our integrated solutions are built with safety, reliability and cybersecurity and are already being utilised in pioneering fusion industry projects across the world.

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SCIENCE AND TECHNOLOGY FACILITIES COUNCIL

Our mission is to deliver world-leading national and international research and innovation to discover the secrets of the universe. Our research campuses at Harwell and Daresbury, along with facilities across the UK, support fundamental research in astronomy, physics, and space science. Our large-scale facilities provide a range of research techniques using neutrons, muons, lasers and X-rays, and high-performance computing. They are used by scientists across a huge variety of disciplines ranging from the physical and heritage sciences to medicine, biosciences, the environment, energy, and more. STFC has expertise in laser inertial-confinement fusion, with the Central Laser Facility at Harwell hosting some of the world's highest-power laser systems. We also lead UPLIFT, the UK Programme of Laser Inertial-Fusion Technology for energy, funded by the Department for Energy Security and Net Zero. UPLIFT focuses on developing next-generation laser-fusion technologies and science. We also address many of the technological challenges facing the fusion industry, including large-scale magnet design, high-radiation environments, thermal modelling, high-precision manufacturing, and extreme-scale computing. STFC collaborates with organisations in the fusion sector to make fusion energy a commercial reality. STFC is part of UK Research and Innovation.

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SCX

SCX is a design and build engineering business focusing on cranes and specialist handling systems for nuclear applications. We combine industry-proven COTS components with expert mechanical, electrical and hydraulic design to provide integrated solutions tailored to our customers' specific needs. Whether operating in irradiated environments, remotely handling hazardous materials, or manipulating valuable equipment, SCX's solutions deliver the reliability, performance, integrity, safety, and recoverability needed for nuclear lifting operations. Our nuclear mechanical handling services include front-end engineering design (FEED), engineering detail design, mechanical, electrical, hydraulic, safety, project management and quality assurance, manufacture and fabrication, assembly and test, installation and commissioning, in-service support, maintenance and upgrades. SCX works to the most rigorous standards of design and build, including ISO 12100 Design Risk Assessment, ISO 13849 Machinery Safety, IEC 61508 Functional Safety, and JSP 467 / JSP 482 Munitions Handling and Explosives Regulations. Our first nuclear crane was commissioned in 1997 to handle high-active waste skips for the decommissioning of the Magnox power station at Berkeley. Since then, SCX has delivered handling solutions to numerous nuclear licensed sites, including Sellafield, Nuclear Restoration Services, Urenco, UK Ministry of Defence, Atomic Weapons Establishment, and for UKAEA at the European Spallation Source in Sweden.

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SOUTH WEST NUCLEAR HUB

The South West Nuclear Hub is a membership network of universities, industry and government representatives pursuing research, innovation and skills for the fusion and fission industries. We are hosted by the University of Bristol and represent 12 industry partners, five universities and 22 small medium enterprises based primarily in the southwest. We use our network to identify and address common challenges across the sector and deliver against national strategic priorities. Our network has a broad research and innovation portfolio in fusion with expertise in tritium engineering and breeder blanket design, high performance computing and novel material development and analysis. We also support skills development through further education, undergraduate and postgraduate training. Universities in the South West Nuclear Hub host PhD students sponsored by UKAEA and other industry leaders. The South West Nuclear Hub is looking for collaborators to progress our research and development portfolio, end users to generate impact into the sector, and company links to support our training offering to the next generation of subject matter experts.

Tom Robinson
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STEEL DYNAMICS

Steel Dynamics is the world's first metal service centre to receive ISO 19443 accreditation for supplying products and services important to the civil nuclear sector. We believe that involving Steel Dynamics at the design stage of your projects will create a meaningful competitive advantage and lowest total acquisition cost thanks to our economy of scale and added-value processes. Our 6000 tonnes of inventory is coupled with processes including de-coiling of plate supported by a 14m x 4m water jet, laser processing up to 8m x 2.5m and CNC-machining to 4m x 2m x 1m. We provide one-touch solutions ensuring lowest total acquisition cost, while best value and best practice are realised using our supply chain management system. This structured, systematic approach guarantees to streamline, removing cost and waste from your supply chain and allowing you to focus on your core competencies. Our purpose is to work together to reduce our customers' costs and ensure that we develop beneficial business partnerships that lead to mutual growth and prosperity.

Lee Nicklin
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COMPANY DIRECTORY

SWANN ENGINEERING GROUP LIMITED

We specialise in the design, manufacture, and installation of steel structures, offering comprehensive engineering solutions across multiple industries. With decades of experience and a proven global track record, we have established ourselves as experts in delivering high-quality, innovative products and services. Our core products include innovative solutions for the evolving telecoms industry, ranging from self-supporting monopoles up to 25 metres tall for urban telecommunications to larger, complex towers and masts. We also offer specialised structures for radar and defence-related applications, engineered to meet stringent military and security requirements. Additionally, we excel in architectural and structural steelwork, delivering bespoke solutions for projects ranging from retirement complexes to commercial buildings. Our expertise extends to floodlighting and gantries designed for sports facilities, highways, and other demanding environments. Our services include comprehensive inspection and maintenance supported by our proprietary software platform, which ensures efficient service delivery, fault diagnostics, and real-time reporting. We perform site condition surveys, RF and PIM testing, tower installation, antenna rigging, and remedial works, and more. We also offer Global Design Checks (GDC), including level 2 and 3 GDCs that feature advanced computer modelling and thorough climbing surveys. These services are essential for structural assessments, safety compliance, and infrastructure optimisation.

Samudra Bhattacharjee
Special projects
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SWANSEA UNIVERSITY

Swansea's expertise in materials has secured a project on rapid alloy-development for nuclear technologies to explore new formulations of nuclear steels with higher operating temperatures. These would contribute towards higher reactor efficiencies. Our expertise in computational-mechanics-driven machine learning, image-based simulation, digital twins, physics-informed neural networks and deep learning has led to the development of several fusion related projects with the UKAEA. Projects include an EPSRC manufacturing fellowship, focusing on the development of NDE 4.0 methods for virtual qualification of fusion energy plant components. A EUROfusion engineering grant is developing a platform to perform analysis of the non-linear impact to component behaviour due to nuclear irradiation. Additionally, Swansea currently has seven part-funded PhD studentships supported by UKAEA focused on topics that include investigating fundamental challenges of physics-informed neural networks for thermomechanical problems and inducing multiple solutions in inverse problems. Our focus areas going forwards involve the development of dynamic digital twins for fusion applications. We anticipate this research will support and accelerate fusion R&D and provide a tool to not only design and predict the present status of fusion systems, but also accurately forecast their future status.

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THALES

Thales UK delivers over £1bn in complex projects each year, working directly with the Ministry of Defence and the Home Office, as well as through partnerships with leading primes and multinationals across civil and defence markets. Our microwave and imaging sub-systems business, based in Paris, is a long-standing partner and supplier to the science community, particularly in particle physics and fusion. Our solutions are used by the world's most prestigious research organisations, including CERN and DESY, as well as in industrial, medical and applied research. Drawing on world-class R&D capabilities and unique testing facilities, Thales manufactures radio-frequency power sources with unrivalled performance. Our multidisciplinary expertise in areas such as electromagnetism, precision mechanics, plasma physics and heating, enables Thales to offer complete solutions, from design to manufacturing, and integration in complex systems. As a leading manufacturer of gyrotrons, Thales is firmly established as a key player in the development of high-power microwave sources for a variety of applications, with a particular focus on ECRH systems for fusion installations.

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FUSION PRIME

Type One Energy

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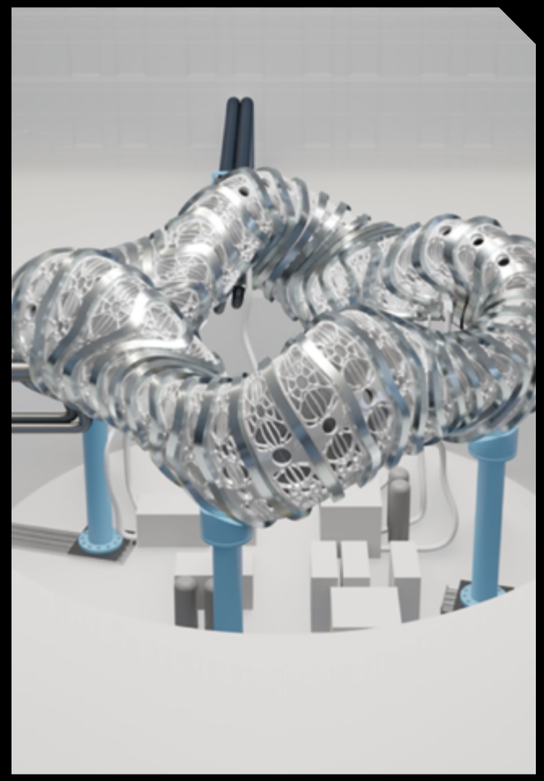

Type One Energy was formed by a team of globally-recognised fusion scientists with a strong track record building state-of-art stellarator fusion machines, together with veteran business leaders experienced in successfully scaling-up companies and commercialising energy technologies.

We are applying proven, advanced manufacturing methods, modern computational physics and high-field superconducting magnets to develop our optimised stellarator fusion energy system. Type One Energy pursues a low-risk, accelerated schedule approach to a viable fusion pilot plant. It benefits from the Type One leadership team's exceptional global network of fusion community partners and collaborators.

These relationships allow Type One to avoid the need for a large-scale fusion science validation device. As a result, Type One Energy will proceed directly to design and construct a fusion pilot plant that is intended to achieve stellarator fuel ignition conditions and put fusion electrons on the grid.

COMPANY DIRECTORY

THE MANUFACTURING TECHNOLOGY CENTRE

The MTC provides advanced manufacturing solutions for customers across a diverse range of industrial sectors. With over 500 specialist engineers, the MTC is enabling the UK to manufacture the cutting-edge technologies it creates – taking a great academic idea and making it cost effective for industry to manufacture. The nuclear element of the business sits within the power and energy sector which has the remit of managing green manufacturing technology development in areas such as hydrogen, electrification, wind power and clean maritime. The MTC is already supporting and remains committed to the nuclear sector and the development of manufacturing technology in fusion. The MTC is also focused on ensuring the UK has the skills needed for manufacturing development and operates the Oxford Advanced Skills training centre located at the Culham Campus. This is a partnership between the UKAEA and the STFC, managed by the MTC. Here apprentices are trained in science and engineering, enabling students to develop the skills needed for delivering the technologies of the future in the manufacturing sector.

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TRM

TRM (Thermal Resources Management) designs, manufactures and installs engineered temperature solutions. Our headquarters and manufacturing site is based in the north east of England, with our core capabilities being in heat tracing, temperature measurement, wiring and signal transmission cables, and capacitance sensors for blade tip clearance measurement. We have been working mainly in the nuclear and power generation industries, supplying all UK nuclear plants and various others around the world.

Jack Pearson
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TURNBULL AND SCOTT

For 90 years Turnbull and Scott has been applying knowledge and expertise in heat transfer to design, manufacture and supply heat-exchanger solutions in nuclear ventilation, heating and cooling. Our customers trust us to understand, solve and deliver the solution to their comfort or process heating, drying, cooling, chilling and energy saving challenges. We are proud to have a loyal and growing customer base within the nuclear supply chain from decomissioning, existing fleet and the nuclear new build programme. Our experience across the UK nuclear fleet in nuclear ventilation and heating, ventilation and air conditioning (HVAC), development in stable salt reactors (SSRs), involvement in the Combined Heating and Magnetic Research Apparatus (CHIMERA)'s facilities and pre-configuration studies in ITER places us in an excellent position to assist with heat exchanger related work outside and inside the nuclear island.

Sam Rippin
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TURNER AND TOWNSEND

We are a UK firm with a global footprint. We have a broad service offering across multiple sectors, with our key focus on the set-up and delivery of major programmes. We are rapidly growing our presence in fusion and the sector is one of our strategic priorities because its ambition, transformative potential and benefits align perfectly with our own direction of travel. We are a supplier for two lots on the UKAEA project delivery services framework, and separately we are providing a range of P3M services for General Fusion.

Al Searle
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TÜV SÜD

TÜV SÜD is a global organisation whose corporate purpose is to create a safer and more sustainable future by enabling progress in protecting people, the environment, and assets from technology-related risks. Its corporate mission is aligned with the aims and objectives of the Industrial Decarbonisation Challenge. TÜV SÜD operates at the forefront of standards and inventions, testing, auditing, inspecting, and advising. TÜV SÜD has worked with the UK Atomic Energy Authority to support their fusion programme across a number of areas in recent years. This has included support to the STEP programme, providing guidance on programme review, organisational development and technical governance arrangements. TÜV SÜD recently conducted a study on behalf of the UKAEA into the availability and purity of lithium, both in the UK and globally. These two examples show the variety and breadth of involvement that the organisation has in the fusion sector.

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TWI

TWI is a world leading research and technology organisation with bases in the UK, North America, South East Asia, China, Australia, Central Asia, India and the Middle East. With around 400 staff, TWI offers a single, impartial source of services for joining engineering materials. It is internationally renowned for its multidisciplinary teams that implement established or advanced joining technology, solving problems at any stage from initial design, materials selection, production and quality assurance, through service, performance, and repair. TWI also supports technologies such as material science, structural integrity, NDT, surfacing, electronic packaging and cutting. Further services include generic research, contract R & D, technical information, consultancy, standards drafting, training and qualification.

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COMPANY DIRECTORY

UK INERTIAL FUSION CONSORTIUM

The UK Inertial Fusion Consortium was founded to facilitate the formation of a commonly-agreed UK research strategy, to coordinate research collaboration, to create a collective voice for researchers, and provide a focal point for interactions with bodies such as the UK Government.

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UK INNOVATION AND SCIENCE SEED FUND

The UK Innovation and Science Seed Fund (UKI2S) is a £100m venture fund that is focused on the first stages of a company's life ("pre-seed" and "seed" funding rounds). The fund has close links with many of the major public research bodies in the UK, including UKAEA who were a founding partner nearly 20 years ago. The fund has a broad deep tech remit and has built a portfolio of over 60 companies across fields from gene therapy to fusion energy. With the recent increase in momentum in fusion, this is an area of increasing interest for investment and we are looking at investing in SME's with a substantial interest in the fusion field, whether as a spin-out from UKAEA or an existing private fusion company, a supplier of key technology into fusion companies or as a developer of fusion technologies for alternative applications outside fusion itself.

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ULTIMA FORMA

Ultima Forma is an engineering technology business specialising in the electroforming of advanced components, systems and coatings for demanding applications. We have patented technology for hydrogen containment and can produce products that excel in thermal management, lightweight structures, RF, mirrors and coatings. A wide range of material properties including functional engineered materials are used. Our work is complemented by a CAE, CAD and design for manufacture team. We are working in the energy, aerospace, space, defence, medical and automotive sectors.

Steve Newbury
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UNIVERSITY OF BIRMINGHAM

In the School of Metallurgy and Materials at the University of Birmingham, we explore how materials behave and how they can be used and improved. Working closely with industry, much of our research is focused on reducing environmental impact on the world, and includes materials and technologies for electrification, recycling of critical materials and developing green-energy solutions. We have a critical mass in the academic community and our research focuses on the engineering of fusion materials, from alloy design and manufacture to performance testing. Our work is underpinned by a throughout-materials characterisation across multiple length and time scales, as a springboard to new materials and component qualification for fusion plant technologies. We simulate real fusion environmental conditions and synergistic effects, using radiation sources and thermo-mechanical and corrosion testing rigs. This allows us to accelerate materials testing and feed back into computational materials design and down-selection.

Enrique Jimenez-Melero
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UNIVERSITY OF YORK NUCLEAR PHYSICS GROUP

We have a long tradition of building state-of-the-art radiation detectors and instrumentation for use at international facilities. More recently, we have gained significant expertise in developing radiation detectors for bespoke commercial applications. We would be happy to discuss any radiation detection challenges and opportunities relevant to the fusion industry. As part of the School of Physics, Engineering and Technology, we collaborate seamlessly with colleagues across electronic engineering, materials science, robotics, autonomous systems, and fusion. Our world-class facilities for detector development and characterisation include analogue and digital data acquisition systems, all classes of radioactive sources including thermal/fast neutron sources, a highly collimated gamma-ray beam scanning system for detector characterisation, large vacuum chambers, and temperature-regulated chambers. With a proven track record in developing detectors for international physics experiments and a growing portfolio of successful industry projects, you can trust that we either have a solution to your problem or innovative ideas to tackle it together.

Adam Featherstone
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UNIVERSITY OF YORK/ FUSION CDT

The EPSRC centre for doctoral training in fusion energy science and technology – the Fusion CDT – is a collaboration between five world-class universities (Durham, Liverpool, Manchester, Oxford and York) working with a range of non-academic partners to train four cohorts of PhD students. The four-year PhD programme recruits about 20 students each year, focusing on plasma physics, materials science, advanced instrumentation and related technologies. After an initial period of taught courses in the first year to build essential fusion knowledge, students work on their research projects, sharing knowledge and experiences. Collectively, they span a range of disciplines from fundamental theory and advanced computing to experiments in the laboratory or on international class facilities. Opportunities for collaboration are funded – both within the UK and internationally – to ensure a supportive, rich and diverse training and development experience that prepares students for an exciting career in delivering fusion energy, or in one of many adjacent sectors.

Roddy Vann
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> "The Fusion Cluster brilliantly brings together our world leading fusion expertise from across the country so it's all in one place – a valuable resource driving success."
>
> Sebastian Johnson
> Head of innovation and inward investment
> OxLEP

COMPANY DIRECTORY

FUSION PRIME

UKAEA

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Monty Rakusen

The UK Atomic Energy Authority (UKAEA) is the national organisation responsible for the research and delivery of sustainable fusion energy. It is an executive non-departmental public body, sponsored by the Department for Energy Security and Net Zero.

UKAEA runs the fusion machine MAST-Upgrade (Mega Amp Spherical Tokamak) and is delivering the transition of JET from plasma operations to repurposing and decommissioning. The insights gained from this process will contribute to the advancement of sustainable future fusion power plants. UKAEA is also a key partner in STEP (Spherical Tokamak for Energy Production), a major technology and infrastructure programme that will demonstrate net energy from fusion, fuel self-sufficiency and a route to plant maintenance.

STEP is being delivered by UK Industrial Fusion Solutions Ltd (UKIFS), a wholly owned subsidiary of UKAEA, which will design and build the prototype plant at West Burton site in Nottinghamshire, targeting first operations in 2040. Beyond STEP, UKAEA leads the Fusion Futures programme that aims to foster world-leading innovation and stimulate industry capacity for future fusion power plants. UKAEA also undertakes cutting edge work with research organisations and the industrial supply chain in a wide spectrum of areas, including robotics and materials.

UNIVERSITY OF SOUTH WALES

The University of South Wales (USW) is known for its strong focus on applied research and practical education. Fusion, in the context of a university, can refer to the integration of research, teaching, and engagement with industry and community. USW aligns with the fusion approach by emphasising practical, real-world applications of knowledge in its teaching and research activities. This integration aims to provide students with valuable hands-on experiences and ensure that research outcomes have practical implications and contribute to societal and economic advancements.

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VAT VACUUM PRODUCTS LTD

Global market leader for high-performance vacuum valves and mission-critical components for advanced R&D and manufacturing processes of semiconductors, LEDs, solar cells, displays and other products that demand a high vacuum. VAT is a key partner to current fusion facilities for their vacuum valve requirements and offers both standard and customised solutions.

Ian Andrews
Account manager UK
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www.vatvalve.com

VEOLIA NUCLEAR SOLUTIONS

Veolia Nuclear Solutions (VNS) aims to be the future leader in the decontamination and decommissioning of nuclear installations. It offers the most comprehensive range of technologies and services for facility management, decommissioning, and the treatment of radioactive waste, all nurtured by nuclear experts and backed by thousands of Veolia staff worldwide. It is helping to clean up significant global environmental threats by providing bespoke technologies and services for the most challenging environmental cleanup and decommissioning and dismantling projects. As a spin-off from JET, VNS UK has been supporting ITER since 2005 to bring its remote handling expertise to the unique challenge of the ITER complex operation, from the design of remote handling machinery in extreme radiation to the optimisation of control interfaces and architecture. We bring this unique remote handling experience and expertise from the fusion industry to multiple global markets including some of the industry's most high-profile deactivation and decommissioning projects at Sellafield and Dounreay in the UK, for the CEA and EDF in France, at Hanford and Oak Ridge in the US, and Fukushima in Japan.

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COMPANY DIRECTORY

WEST OF ENGLAND AEROSPACE FORUM

WEAF is the primary trade association based in the south-west of the UK supporting the aerospace and advanced manufacturing supply chain. WEAF supports SMEs who are interested in providing aerospace technologies to developing cross-sector capabilities such as fusion. It sign posts opportunities, shares knowledge and provides a network to promote collaboration in R&D and advanced technologies such as cryogenics, hydrogen fuel systems , electrical systems, superconductors.

Colin Turner
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WOODRUFF SCIENTIFIC

We have repurposed Woodruff Scientific. We are now exclusively performing fusion costing analysis and technology-to-market support for private fusion companies. The magnet and pulsed power business is now spun out as Woodruff Engineering Inc in the USA.

Simon Woodruff
President
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ZERO GLOBAL

We are a talent business dedicated to the fusion sector. We currently support a range of companies globally within the fusion sector who are trying to navigate the difficult path from science to industry. We work with academics, engineers, researchers, physicists and everyone in-between to play our part in the successful delivery of fusion power.

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KIER + KINECTRICS + KONECRANES + KUKA SYSTEMS UK + KYOTO FUSIONEERING + LASER 2000 UK + LASER ADDITIVE SOLUTIONS + LEYBOLD UK + LUCIDEON + LUFFY AI + M5TEC + MAGDRIVE + MARVEL FUSION + MATERION UK + MCT BRATTBERG LTD + MEWBURN ELLIS LLP + MIRION TECHNOLOGIES + MOTT MACDONALD + NAG + NASCENT SEMICONDUCTOR + NEARSTAR FUSION + NICHOLS GROUP + NOVATRON FUSION GROUP + NORTHERN VALVE AND FITTING CO LTD + NTTAU DIGITAL + NUCLEAR JOBS LTD + NUCLEAR INDUSTRY ASSOCIATION + NUCLEAR SOUTH WEST + NUVIA + OKAZAKI MANUFACTURING COMPANY + OPENSPDM + OPTIMA SYSTEMS CONSULTANCY + ORANO + OXFORD INNOVATION SPACE + OXFORD SCIENCE ENTERPRISES + OXFORD SIGMA + PREMIER MODULAR + PROTEC GROUP LTD + PILLSBURY WINTHROP SHAW PITTMAN LLP + PORVAIR FILTRATION GROUP + PRECISION CERAMICS + PRORSUS + PROXIMA FUSION + REALTA FUSION + RDP ELECTRONICS + REACT ENGINEERING LIMITED + RED ENGINEERING + RENAISSANCE FUSION + RGE LTD + RÖCHLING INDUSTRIAL UK + RTR GMBH & CO. KG + RULLION + SCHNEIDER ELECTRIC + SCIENCE AND TECHNOLOGY FACILITIES COUNCIL + SCX + SOUTH WEST NUCLEAR HUB + STEEL DYNAMICS + STEP + SWANN ENGINEERING GROUP LIMITED + SWANSEA UNIVERSITY + THALES + THE MANUFACTURING TECHNOLOGY CENTRE + TOKAMAK ENERGY + TRM + TURNBULL AND SCOTT + TURNER AND TOWNSEND + TÜV SÜD + TWI + TYPE ONE ENERGY + UK INERTIAL FUSION CONSORTIUM + UK INNOVATION AND SCIENCE SEED FUND + UKAEA + ULTIMA FORMA + UNIVERSITY OF BIRMINGHAM + UNIVERSITY OF YORK NUCLEAR PHYSICS GROUP + UNIVERSITY OF YORK/FUSION CDT + UNIVERSITY OF SOUTH WALES + VAT VACUUM PRODUCTS LTD + VEOLIA NUCLEAR SOLUTIONS + WEST OF ENGLAND AEROSPACE FORUM + WOODRUFF SCIENTIFIC + ZERO GLOBAL

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Unlimited potential.

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