



Getting to fusion faster. Together.

The Fusion Cluster
Directory 2023



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 ALEMNIS + ALGY CONSULTING + ALTEN + ALTRAD BABCOCK
 + AMEG + AMPEGON POWER ELECTRONICS + ANSALDO
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 + FRAZER NASH CONSULTANCY + FTI + FUJIKURA EUROPE +
 FUJITSU + FUSION ENERGY INSIGHTS + FUSION INDUSTRY
 ASSOCIATION + FUSION INSTRUMENTS KT + GARDINER
 AND THEOBALD + GAUSS FUSION + GENERAL ATOMICS
 + GENERAL FUSION + GLOBAL NUCLEAR SECURITY PARTNERS
 + GOODFELLOW CAMBRIDGE + GRAHAM ENGINEERING +
 GSF UK + HARWELL CAMPUS + HATCH + HELIXOS
 + HIPTEC AS + HYDROBOLT + I4CNC + IBM + ICEOXFORD +
 IDOM + INDUCHEM GROUP + INNOVATE UK + ITB + JACOBS

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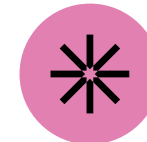
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* UK suppliers and fusion energy primes who supplied details

* 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 2023 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 the government to help achieve fusion faster.

Over the next 70 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.

Listed on the inside cover are more than 200 organisations globally who keep up to date with the ever-evolving world of fusion.

To join us
visit thefusioncluster.com

Fusion is thriving

\$6.2bn

We're seeing strong investment in fusion companies
(Fusion Industry Association, The Global Fusion Industry in 2023)

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)

\$500m

A healthy supply chain spend in 2022
(Fusion Industry Association, The Fusion Industry Supply Chain, 2023)

\$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.

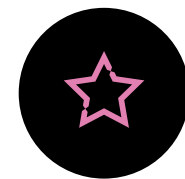


And it starts with us.

About The Fusion Cluster

Since October 2021, The Fusion Cluster has grown from a handful of companies to more than 200 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.



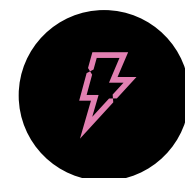
Knowledge sharing

Newsletters, networking events, supply chain day.



Showcasing fusion

Raising awareness of fusion at local, national and international level and across all media.



Support for start-ups

Business incubation, flexible office space, and links to venture capital firms.



Access to national facilities

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

Together, we're stronger

12

Private fusion
energy developers

\$2.9b

Together they have declared over \$2.91 billion in investment
Source Fusion Industry Association 2023 report

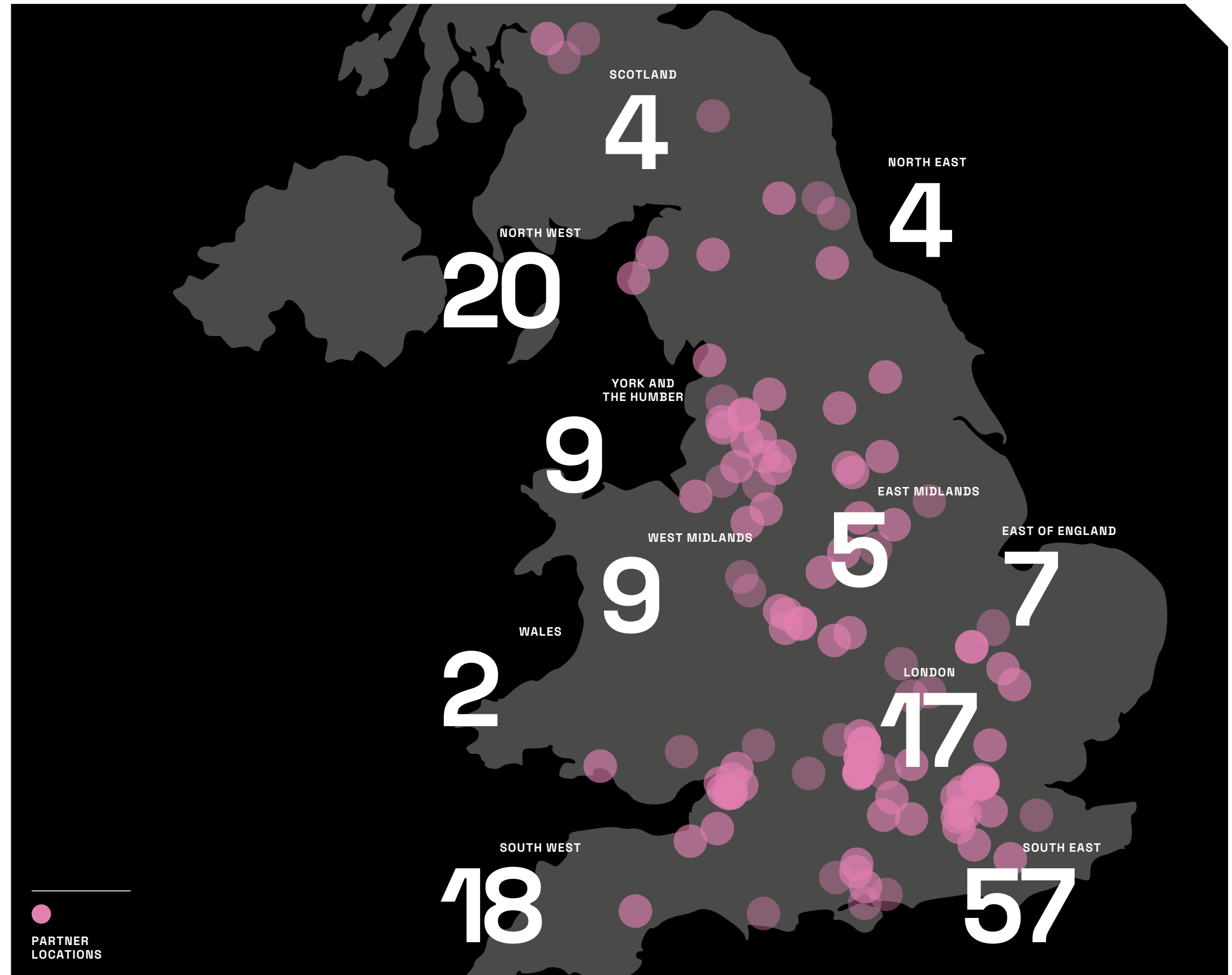
ABOUT THE FUSION CLUSTER

Where do our partners operate?

We have a growing list of partners all across the UK. A community of the country's brightest minds and organisations working to achieve fusion faster. Oxfordshire is fronting the UK's ambitions to take fusion from experiment to practical power source. Home to the national fusion laboratory, UK Atomic Energy Authority, and pioneering companies Tokamak Energy and First Light Fusion who are pushing the boundaries of fusion technology.

Resulting in spin-off companies, suppliers and consultants who want to be close to the action. Beyond, there's a wealth of expertise in manufacturing, engineering, artificial intelligence, robotics, universities, complex project management and financing and much, much more.

Fusion is too complex for any one organisation to achieve alone. If your organisation is working on fusion, [join us](#).



OUR ADVISORY BOARD

Tim Bestwick

CO-CHAIR

Tim is chief development officer and deputy chief executive officer at the UK Atomic Energy Authority.



Greg Willetts

CO-CHAIR

As vice president of technology consulting and innovation at Jacobs, Greg is responsible for a business with around 700 consultants who provide specialist services to a range of markets.



The people behind the cluster

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

Norman 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 Prosus, 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

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

mission

COMPANY DIRECTORY

FUSION PRIME

Commonwealth Fusion Systems



Michael Segal, Head of Open Innovation
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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

We make innovative new products that emerge from our R&D activities and sell 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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ACCENTURE

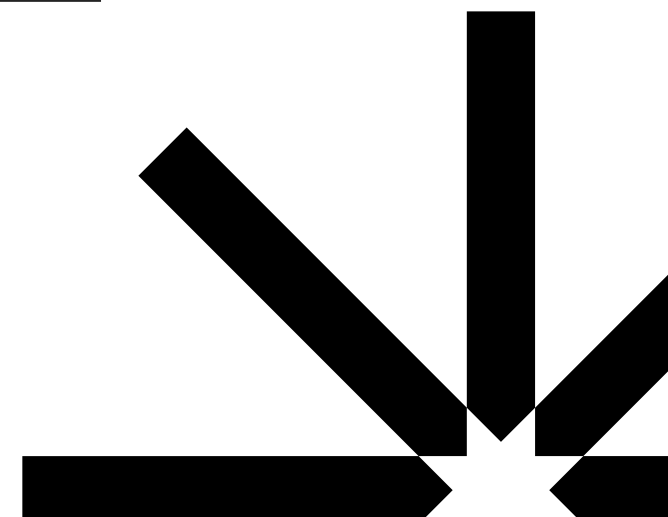
Accenture is a leading global professional services company that helps the world's businesses, governments and other organisations build their digital core, optimise their operations, accelerate revenue growth and enhance citizen services to create tangible value at speed and scale. We are a talent and 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 through our strong ecosystem of 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 through 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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ACTEMIUM

Our primary focus has been on the provision of design services for mechanical and construction engineering and inspection to the UK nuclear industry. In recent years we have diversified into the defence and nuclear new-build markets, working on projects of national strategic importance. In addition, with our industry partners, we provide HVAC; civil, structural and architectural; industrial process engineering; and asset management services. We cover the full project lifecycle, from initial front-end concept design all the way through to supporting the commissioning of the final product. We utilise the latest 2D and 3D design packages, computational modelling and stress analysis, together with rigorous compliance and engineering checks throughout the project stages.

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COMPANY DIRECTORY

ALTRAD BABCOCK

Altrad Babcock has a 70-year heritage in nuclear, transforming from a boiler OEM to a supplier of specialist services and equipment, supporting both existing and new-build power plants. 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 Science Centre, 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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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 pound design and supply contracts as sole 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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ARCADIS CONSULTING

Arcadis is the leading global design and 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 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 is broad. 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.

Calvin Prentice
Technical director
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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 combating the challenges posed by climate change. Our 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 our 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
Senior bid coordinator
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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 than 10^9 neutrons per second from our isotropic source at 2.45 MeV energy. By late 2024, we plan to build our second facility which will offer up to 10^{12} neutrons per second at 14 MeV.

Talmon Firestone
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COMPANY DIRECTORY

ATG SCIENTIFIC

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

Andrew Graham
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ATKINS

Atkins is one of the world's largest design, engineering and project-management consultancies. Within the nuclear and clean energy sector we are a trusted end-to-end solutions provider across the project lifecycle for all fission reactor types. We're now leveraging our industry-leading capabilities to deliver fusion on a commercial scale; developing safe, limitless and environmentally responsible energy as architect engineer in the Engage consortium for the ITER project. We're also a tier 1 supplier to the UK Atomic Energy Authority, supporting fusion research and development through strategic appointments on the STEP programme and as designer of the tritium recycling loop within the world-leading H3AT facility. Our services include: systems integration and architect engineer roles; project management and cost modelling; supply chain engagement, collaboration and management; process engineering; mechanical engineering; materials and corrosion; electrical, controls and instrumentation; civil, structural and architectural; safety case and regulatory; shielding, transportation, radiological protection and neutronics; human factors and ergonomics; nuclear robotics and digital techniques; waste planning and management.

James Goodenough
Business lead new nuclear technologies
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ATOMIC ACQUISITIONS

Atomic Acquisitions is a developer, financier and specialist consultancy for nuclear projects in the UK, Europe and North America with interests in other countries. We offer a unique combination of nuclear development and financial experience. We work with technology developers, investors and consortium partners to bring projects to commercial viability.

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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 (pictured) 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

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.

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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.

Ben Rutter
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BURGES SALMON LLP

Burges Salmon LLP is a UK law firm with an unrivalled understanding of the nuclear sector. We have worked on almost all of the UK's public nuclear licensed sites, and alongside operators at all levels of the supply chain. We are now bringing this expertise and experience to bear (drawing parallels and distinctions) when advising participants in the burgeoning fusion industry on matters such as strategy and project development; siting and consenting; supply chain and other contracting arrangements; and considerations stemming from the developing regulatory regime for fusion.

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BUSCH UK

Manufacturer of vacuum pumps 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.

Paul Denning
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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

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.

Kate Fairweather
Sales office team leader
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CFMS

The Centre for Modelling and Simulation (CFMS) is an independent digital engineering consultancy. We provide 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. We 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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COMSOL

COMSOL Multiphysics 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 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. On occasion we've taken this step ourselves, 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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COMPANY DIRECTORY

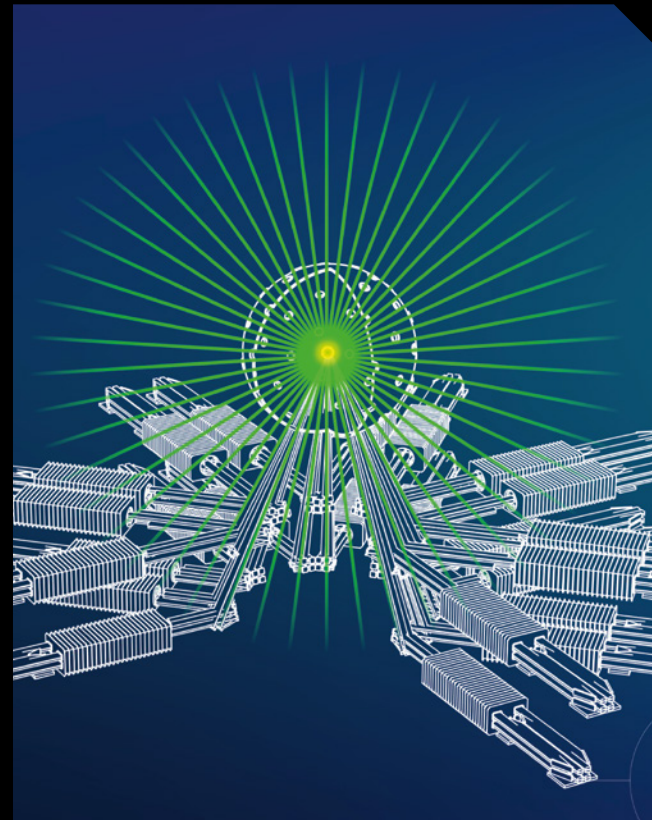
FUSION PRIME

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.

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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Centre director
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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 and 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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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. 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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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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Commercial director
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DUALITY QUANTUM PHOTONICS

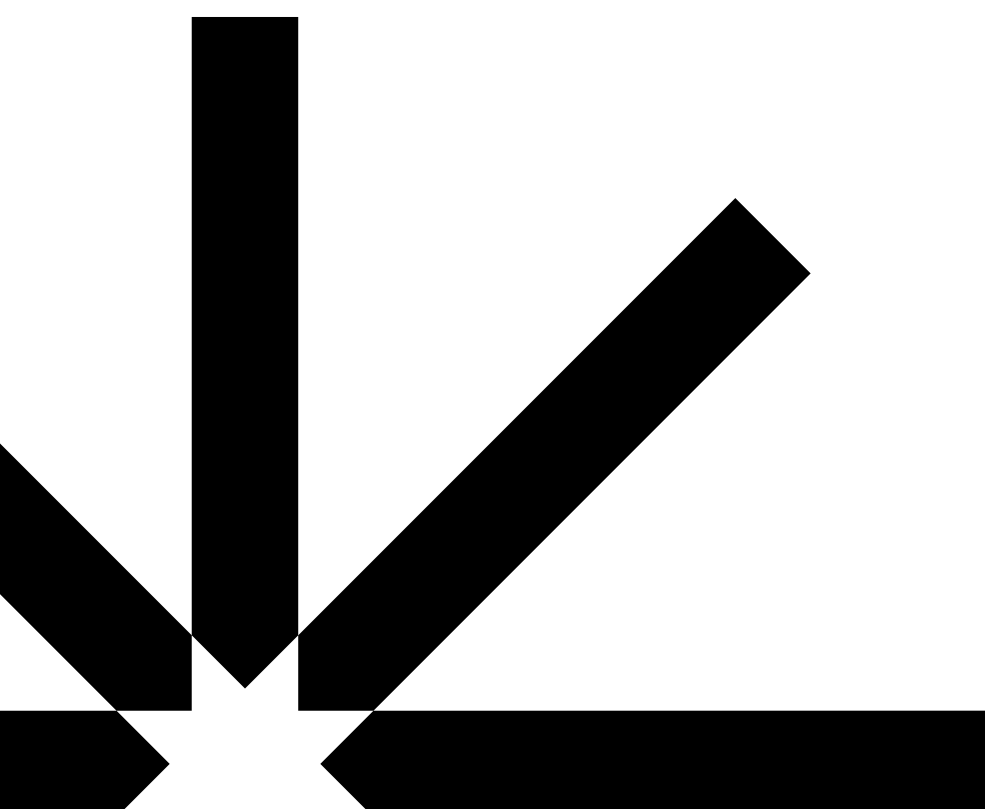
Duality designs and prototypes quantum technologies using integrated photonic chips. The company was founded by pioneers in this field. Duality is headquartered in Bristol and has in-house fabrication capabilities in Europe's leading cleanrooms in Southampton. In addition to developing hardware for quantum computing, Duality is contracted by several organisations to deliver innovative solutions in authentication and sensing. Duality has researched and developed innovative information processing and sensing solutions to support fusion and to maximise the up-time of fusion reactors.

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DYNEX SEMICONDUCTOR

Dynex Semiconductor designs and manufactures powerful, fast switching power electronics to control the electric field and stabilise the plasma in tokamaks. Our long history of providing pulse power devices for traction and high-voltage direct current applications has placed us in an excellent position to provide wide-diameter, fast-turn-on thyristors that can meet the challenging requirements of fusion. Because Dynex has full control of the design and manufacture of our devices, we are able to work collaboratively with researchers to optimise our devices to suit their application and support their research.

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www.dynexsemi.com



COMPANY DIRECTORY

EASL

EASL is a leading provider of advanced civil structural engineering services, specialising in design, analysis, and assessment consultancy for major UK and international projects. Based in the north west of England, we offer authoritative structural integrity advice to a diverse range of clients, primarily within the nuclear, fusion, and power industries. EASL operates as a division of Kinectrics and has established a strong reputation as a reliable engineering consultant, delivering valuable solutions to our clients. Since 2018, we have actively participated in several significant projects, including UKAEA's STEP (Spherical Tokamak for Energy Production), MAST-U (Mega Amp Spherical Tokamak Upgrade), and RACE (Remote Applications in Challenging Environments) projects. We are a Tier 1 supplier of the UKAEA's Embedded Engineering Resource framework. Additionally, we possess extensive experience and knowledge from working with the International Thermonuclear Experimental Reactor (ITER) in France. Our staff were seconded to various departments, including port plugs & diagnostics integration and construction.

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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 specialises in engineering simulation services, including advanced mathematical modelling, data science, and artificial intelligence. We solve complex challenges in a wide variety of industry sectors, working with the UKAEA to develop a concept diverter design, risk-based component qualification and peridynamics capability. Our simulation tools, data analytics, and modelling capabilities accelerate our clients' research and development initiatives, optimising the design process, giving the best possible products, realising processing and manufacturing efficiencies, and enhancing industrial and commercial competitiveness. Our services include advanced finite element analysis, computational fluid dynamics, discrete element modelling, and data science. These services become augmented with additional high-performance computing, scientific programming, and software development capabilities. We have expertise in structural mechanics, fluid mechanics, heat and mass transport, materials science, mechanical engineering, machine learning, and the design of experiments. We can develop customised simulation tools using C#, Python, and C++ and have extensive experience with ABAQUS, ANSYS, Star CCM+ and several other open-source software tools supporting simulation activities. Our modelling and simulation services, combined with our vast testing capability, give our clients a new dimension to generate the data for input to the models and product testing to validate any model data.

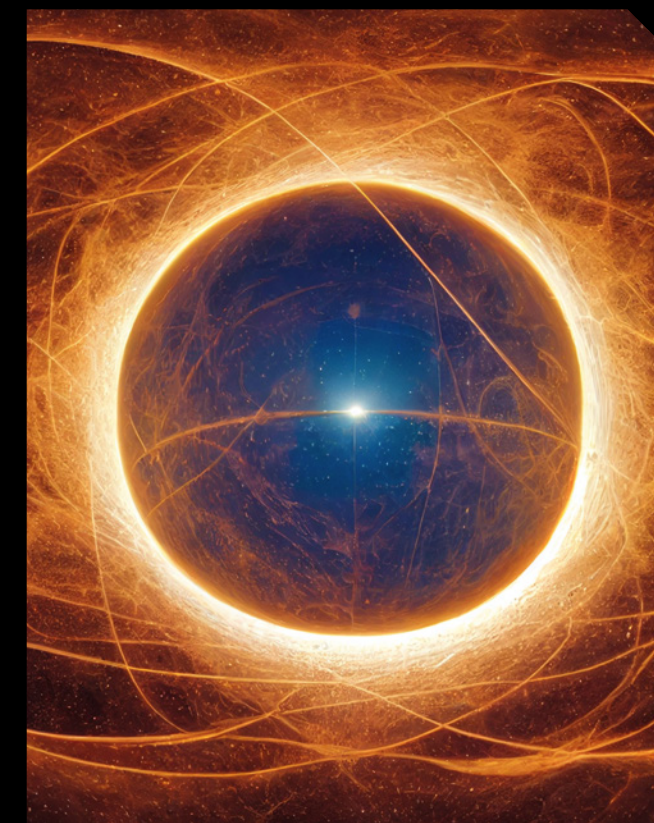
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FUSION PRIME

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

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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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 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.

Samuel Dallimore
Founder
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EMPTOR PLUS

Emptor Plus is an established and proven specialist industry procurement and supply chain professional advisory services company. We draw on more than 40 years of industry-relevant experience. Our key focus is on SME business and people growth within the wider energy and next generation nuclear industrial sector. We have a unique and comprehensive understanding of what it takes to succeed within a high technology and complex engineering environment with architect engineering expertise for supplier and supply chain development programmes. Helping people and organisations succeed is really what Emptor Plus is about.

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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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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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COMPANY DIRECTORY

EQUILIBRION

Equilibrion is founded on the principle that nuclear technologies, including fusion, can provide a safe, prosperous and equal society free from climate change. Our specialism is in the wider use of the technologies for decarbonisation beyond electricity and how they can support net zero solutions in transport, industry and heat through the production of hydrogen, synthetic fuels and direct heat, as well as providing flexible electricity. Our experience is in securing and delivering innovation to government-funded programmes 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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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 specialises in industrial automation. We design and create highly validated control software. We are Siemens Solution Partners.

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FLAMGARD ENGINEERING

Flamgard has 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 has provided our equipment to Joint European Torus (JET) and International Thermonuclear Experimental Reactor (ITER). We are keen to continue supplying our equipment on future fusion projects.

Lee Bramald
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FRAMATOME

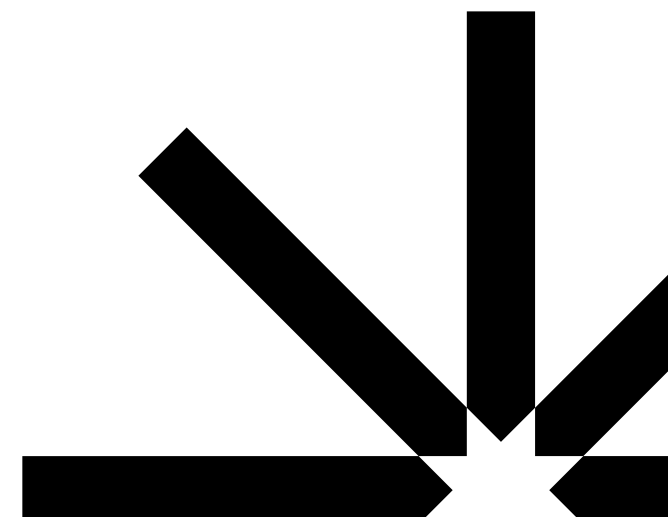
Framatome's strong technical competencies gained in the nuclear industry, and its expertise in UK and international regulatory environments, benefit fusion projects. Framatome has the capacity to perform and integrate complex projects with international partners in the areas of technological manufacturing. 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 analysis, and qualification engineering. Framatome supports designers and operators, as well as system and equipment suppliers in their R&D and project delivery activities.

Ian Henderson
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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

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.

FRAZER-NASH CONSULTANCY

Frazer-Nash, part of the KBR family, is a leading systems, engineering and technology company. We help organisations deliver innovative engineering and technology solutions to make lives safe, secure, sustainable, and affordable. We are a tier 1 supplier on the engineering design services, tritium and manufacturing frameworks with UKAEA.

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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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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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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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 Business development coordinator
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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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GOODFELLOW CAMBRIDGE

As a leading global supplier of metals, alloys, ceramics, glasses, polymers, composites and compounds we take our work very seriously. In fact, we've spent over 75 years facilitating scientific innovation. We have a vast range of 70,000 catalogue products, all of which are underpinned by the most rigorous quality accreditations.

Adam Sells
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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 our 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.

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COMPANY DIRECTORY

HATCH

Hatch believes that the development of fusion power is a crucial step towards solving the world's sustainable energy challenges. We embrace our clients' visions as our own and build long-term relationships to develop smarter, more efficient and innovative ideas. Our experience spans over 150 countries worldwide in the energy, metals, infrastructure, digital and investments market sectors. We are employee-owned and independent. Our exceptional, diverse teams combine vast engineering and business knowledge. We work in partnership with our clients to develop market strategies, manage and optimise production, develop game-changing technologies and design and deliver complex projects. We also work closely with the communities in which we serve to ensure that our solutions optimise environmental protection, economic prosperity, social justice, and cultural vibrancy. Hatch provides a full range of engineering, procurement, and construction management services that enable fusion technology companies to grow their core technologies into fully functional energy solutions. Through our current engineering and project management work with private and publicly-funded fusion clients, we are actively working to eliminate the remaining technology barriers, particularly for liquid metal and tritium systems, and bring deployable fusion energy solutions to the world.

Joanne Bailey
Regional manager, UK nuclear
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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.

Richard Barnes
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I4CNC

Our heritage lays within the production and maintenance of specialist hardware 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 our experienced team of problem-solving engineers from the scientific community, consistent exposure and support to a global community of instrument end-users and flexible service contract relationships.

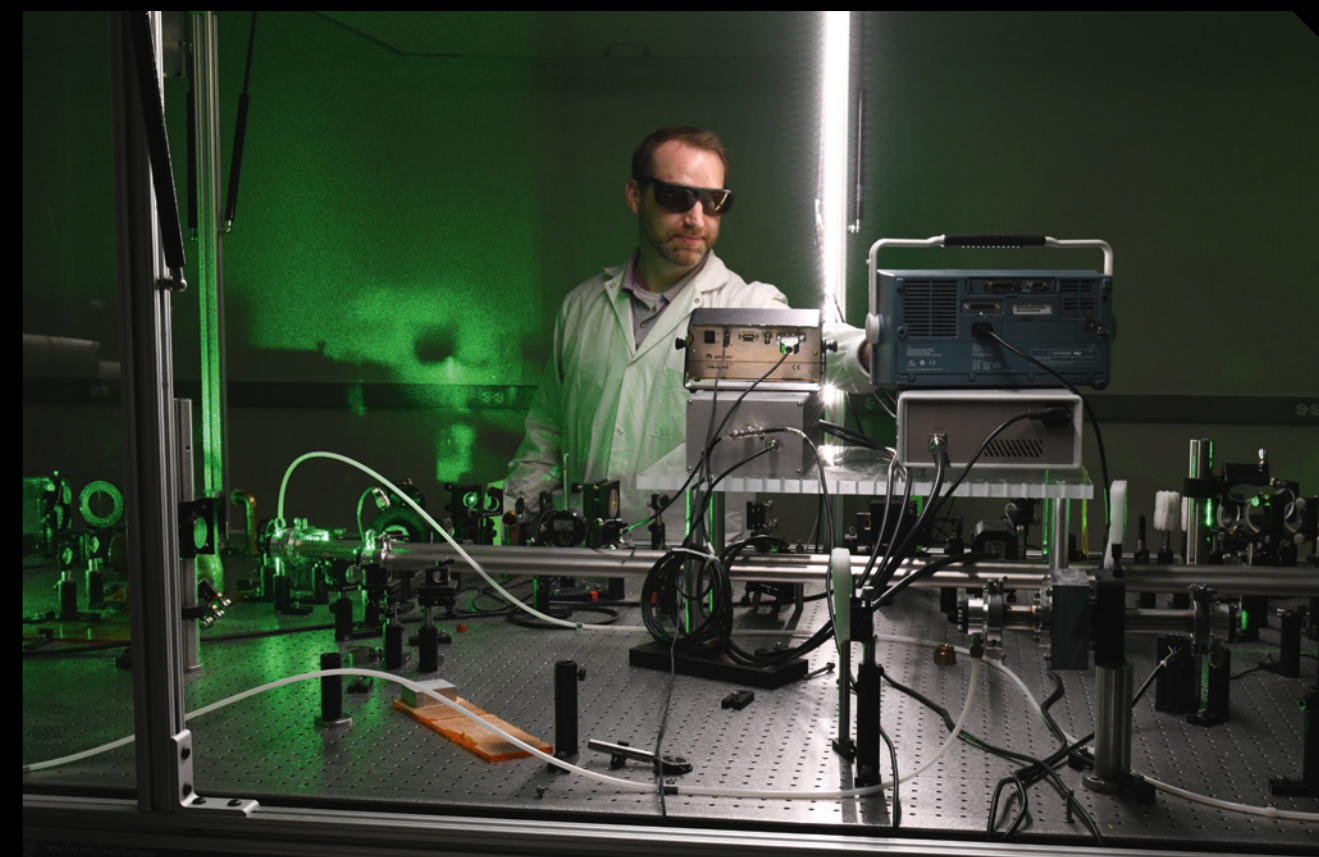
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FUSION PRIME

Marvel Fusion



Jannik Reigl, Manager PR
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Marvel Fusion pursues a direct drive inertial confinement approach with the goal of commercialising fusion energy using low-neutronic fuels.

Highly intense short-pulsed lasers and proprietary nanostructured fuel targets enable a highly efficient fusion process with a clear path to commercialisation. The company will build one of the most advanced laser systems to validate its technology jointly with Colorado State University by 2026.

COMPANY DIRECTORY

IBM

IBM is a global organisation bringing together technology and services, regardless of where those solutions come from, to help clients solve the most pressing business problems. Our company integrates technology and expertise, providing infrastructure, software and consulting services for clients as they pursue the digital transformation of the world's mission-critical businesses. IBM is always on the hunt for what's next. At IBM Research, we have a group of more than 3,000 scientists and researchers around the globe who deeply believe in the power of the scientific method to invent. For example, we are leading the charge in quantum computing. In 2021, we furthered our tradition of leadership in sustainability, announcing a goal of net-zero greenhouse gas emissions by 2030 across all the countries in which we operate. Our data-driven sustainability solutions are helping clients turn ambition into action.

Moira Huggins
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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.

Paul Kelly
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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 Cleator – our new site 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.

Ewan Turnbull
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INNOVATE UK

Innovate UK is the UK's national innovation agency. We support business-led innovation in all sectors, technologies and UK regions. We help businesses grow through the development and commercialisation of new products, processes, and services, supported by an outstanding innovation ecosystem that is agile, inclusive, and easy to navigate.

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www.ukri.org/councils/innovate-uk

INNOVATE UK KTN

Innovate UK KTN exists to connect innovators with new partners and opportunities beyond their existing thinking to accelerate ambitious ideas into real-world solutions. Innovate UK KTN is 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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Knowledge transfer manager, Nuclear
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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

NearStar Fusion



Amit Singh, CEO
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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.

JACOBS

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 UKAEA's CHIMERA, a world-first machine for testing fusion energy components, and we have worked for ITER from its inception to the present day, providing on-site delivery and support on engineering design, robotics, materials science and component manufacturing. On a similar timescale, we have provided critical project delivery and engineering to the Lawrence Livermore National Laboratory's National Ignition Facility in the US. Jacobs delivers high-end solutions for some of the most complex fusion projects, drawing on decades of experience and our capabilities in scientific, engineering and technology innovation.

Stuart Codling
 Group director fusion
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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. We 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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 Managing director
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COMPANY DIRECTORY

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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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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KLOECKNER METALS UK

Kloeckner Metals UK is one of the largest mill-independent multi-metal stockholders and distributors in the UK. Operating in all major market sectors across the UK, Kloeckner Metals UK is committed to supporting the delivery of all new nuclear power stations in the country, whilst continuing to support all existing operational nuclear sites and the NDA's decommissioning programme.

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KONECRANES

Konecranes is a world-leading group of lifting businesses, serving a broad range of customers. Regardless of a customer's lifting needs, Konecranes is committed to providing lifting equipment and services that increase that business's value and effectiveness. The fusion and nuclear industries depend on equipment that is designed to operate safely, reliably, and in compliance with stringent quality and regulatory requirements. Adhering to the standards for the design of lifting equipment for more than 100 years in industry – and 50 years in the nuclear industry – Konecranes has the experience to meet the most stringent requirements. Konecranes can expertly provide all material handling equipment, engineering services, onsite services, spare and replacement parts, and equipment modernisations worldwide. We can also supply the capability to service any manufacturers' equipment within fusion power plants, nuclear waste storage and fuel processing facilities, including the most critical safety-related lifting equipment. Our organisation brings the expertise of Konecranes Nuclear Equipment and Services to provide equipment designed specifically for fusion and nuclear applications, combined with our Konecranes Demag UK experience in providing cost effective designs with shorter delivery periods using our state-of-the-art COTS crane components, which are especially suited to decommissioning and general applications.

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KUKA SYSTEMS UK

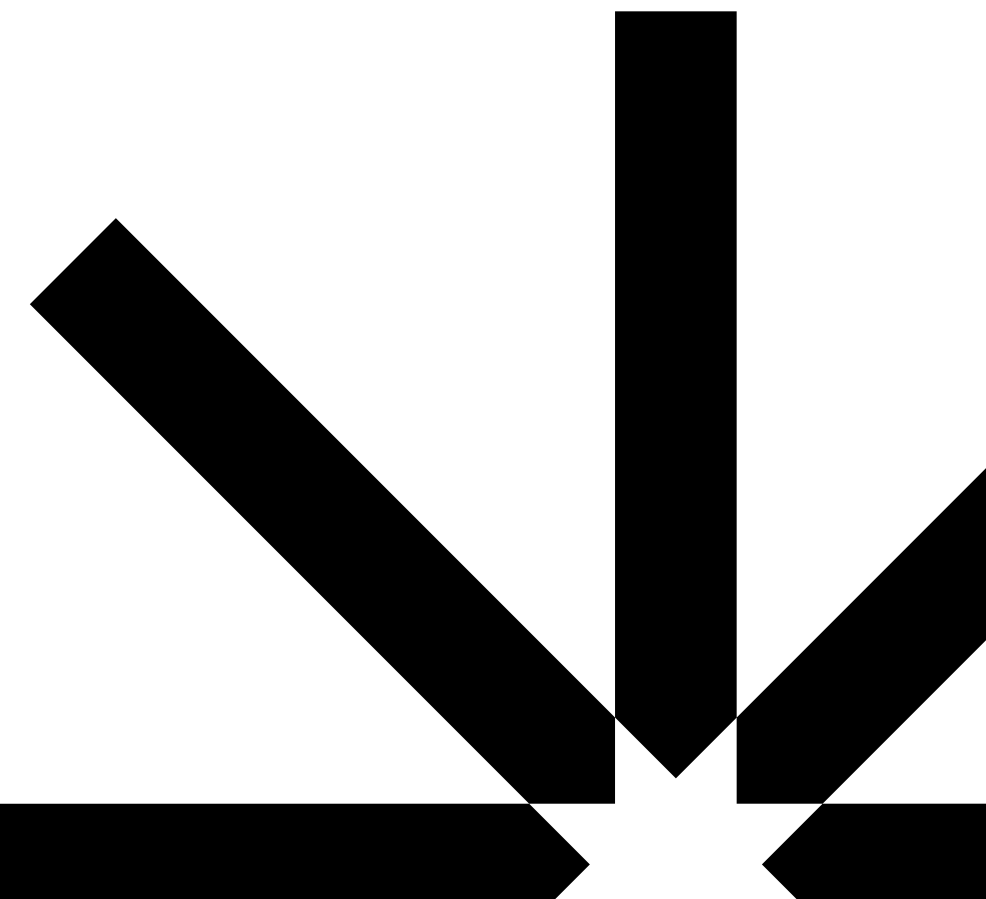
KUKA UK specialises in robot automation systems for the nuclear decommissioning industry. The KUKA competence centre for nuclear applications is based at our facility in the UK where all nuclear projects for KUKA are completed. We offer full design, build, test and installation of our systems. Supported 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 and headquartered 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.

Richard Pearson
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COMPANY DIRECTORY

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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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.

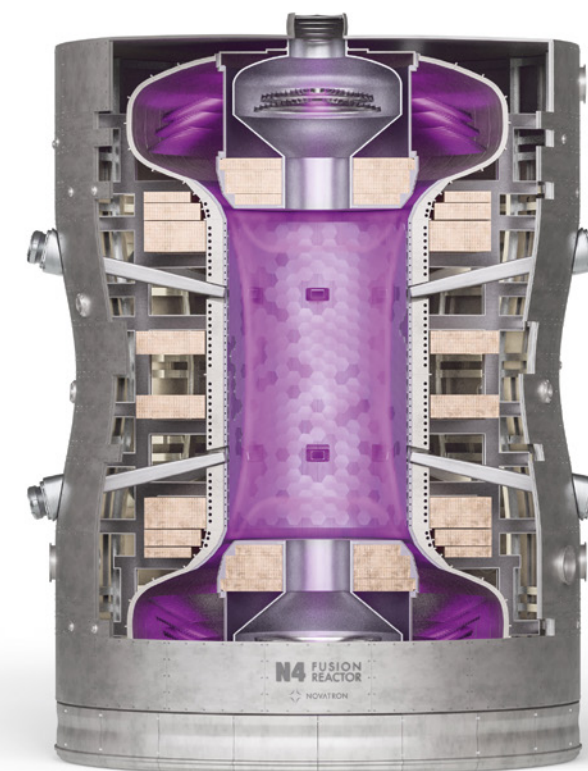
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FUSION PRIME

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

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 adaptation at the edge, will self-optimize 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.

Matthew Carr
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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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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

FUSION PRIME

Proxima Fusion



Francesco Sciortino, CEO
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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.

NEOS CONSULTANCY

NEOS Consultancy provides supply chain support to companies wishing to engage in the fusion sub-sector.

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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 focusing 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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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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COMPANY DIRECTORY

NUCLEAR AMRC

NAMRC is owned by the University of Sheffield and supported by the UK Government. Along with our sister organisation the AMRC, we are two of seven high-value manufacturing catapults targeted at bridging the gaps between academic research, commercial products, and solving manufacturing problems. We have capabilities in the following areas: machining, welding and cladding, metrology and inspection, visualisation, control and instrumentation. We also have two satellite centres: a modularisation centre and a digital/C & I centre. In essence, think large-scale rather than lab-scale, e.g. machining 80 tonne components, welding 150 mm steel in a single pass using power beam welding.

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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
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NUCLEAR SOUTH WEST

Nuclear South West is a public-private partnership of industry, academic and the public sector, established to champion new nuclear power 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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OPENSFDM

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 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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Director
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openSPDM.com

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.

Steve Armitage
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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

COMPANY DIRECTORY

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.

Shelley Furey
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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.

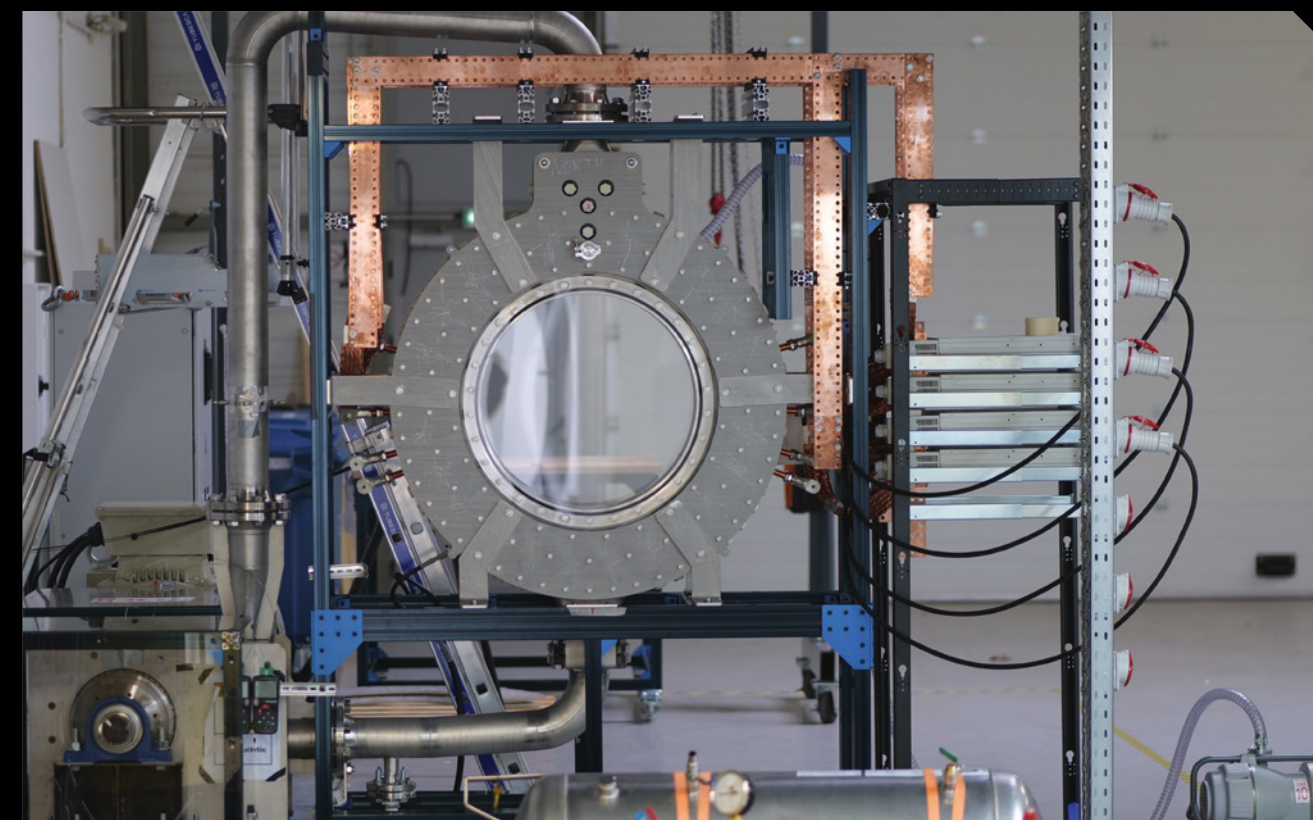
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FUSION PRIME

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 superconductor (HTS) manufacturing.

We use 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.

COMPANY DIRECTORY

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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President and CTO
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OXLEP

OxLEP's role is to champion Oxfordshire's economic potential, acting as a catalyst and convener to drive a dynamic, sustainable and growing economy. Oxford and 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 are a founding partner of the Ox to Zero Summit held in September 2022. We 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 businesses relocate in Oxfordshire and to help businesses secure international investment and trade.

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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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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 bespoke solutions to the power generation, fuel production, reprocessing, decontamination and decommissioning and waste packaging sectors. As an engineering company in the filtration industry, we are able to take an initial discussion to a fully optimised solution, meeting material, code, technical and quality requirements to provide a total solution to a specific problem. We have the capability to provide everything 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 also have the capability to 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 range of media surface treatments to further enhance the chemical, temperature and solids abrasion resistance of the media within a particular application.

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www.porvairfiltration.com

PRECISION CERAMICS

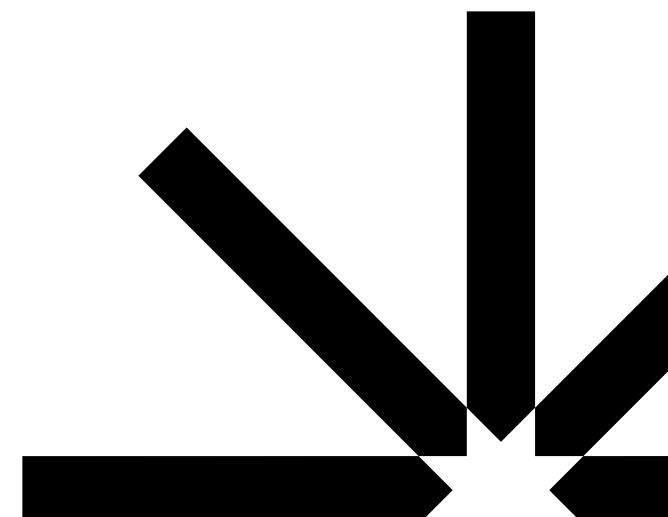
Precision Ceramics is a UK-based manufacturer that supplies advanced ceramics with expert advice on materials selection, and design. Precision provides ceramics for a range of demanding applications including medical, space, energy, industrial and defence sectors. Precision has supplied many ceramic 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.

Andy Duncan
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precision-ceramics.com/uk

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 eight 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.

Angus Horner
Founder
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COMPANY DIRECTORY

FUSION PRIME

Tokamak Energy



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www.tokamakenergy.co.uk

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.



Tokamak Energy 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.

QDOT TECHNOLOGY

Qdot Technology is an Oxford University spin-out. Our mission is to enable clean energy generation and use by leveraging thermal management expertise. The founding team's first innovation was a heatsink design for a fusion power plant divertor target, a component that must endure 100,000 times the power of the sun. Building on this background and the team's expertise Qdot has developed new IP in thermal management systems for high power density batteries and compact heat exchangers using advanced design and manufacturing methods. Qdot Technology provides engineering consultancy for high heat flux device development. Combining internationally renowned expertise in thermal design, modelling, and simulation with practical testing and verification to provide demonstrable performance. Then using specialised materials and manufacturing know-how with pioneering novel processes, test devices can be validated by at-scale full performance testing.

Alasdair Morrison
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www.qdot.tech

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
Business developer
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RTR GMBH & CO. KG

RTR GmbH & Co. KG is a steel material supply specialist working independently with a varied, 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.

Joe Bullimore
Sales manager UK and Ireland
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www.rtr-group.com



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.

John Shepherd
Client services director
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www.rullion.co.uk

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.

Charlie Stennett
Major pursuits leader
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SCIENCE AND TECHNOLOGY FACILITIES COUNCIL

The mission of the Science and Technology Facilities Council (STFC) is to deliver world-leading national and international research and innovation capabilities and, through those, discover the secrets of the universe. Our major research and innovation campuses at Harwell, Daresbury, and 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 science disciplines ranging from the physical and heritage sciences to medicine, biosciences, the environment, energy, and more. STFC holds expertise in 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 is collaborating with organisations in the fusion sector to make fusion energy a commercial reality. STFC is part of UK Research and Innovation, a non-departmental public body funded by a grant-in-aid from the UK Government.

Alexandra Bromhead
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Technology department
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www.ukri.org/councils/stfc/

SCX SPECIAL PROJECTS

SCX is a design and build engineering expert in mechanical handling systems for nuclear environments. We blend industry-proven components with bespoke mechanical, electric and hydraulic engineering to deliver an integrated solution, tailored to our customers' specific needs. Whether operating in irradiated environments, handling hazardous materials, or manipulating valuable equipment, SCX's mechanical handling solutions deliver the highest levels of reliability, performance, integrity, safety, and recoverability. SCX's capabilities in nuclear mechanical handling cover: front end engineering design (FEED), engineering detail design, mechanical, electrical (E&I), hydraulic, safety, project management & quality assurance, manufacture & fabrication, assembly & test, installation & commissioning, in-service support. 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 & Explosives Regulations. Our first nuclear crane, commissioned in 1997, handled high-active waste skips for the decommissioning of the Magnox power station at Berkeley. Twenty five years later, SCX has delivered handling solutions to dozens of nuclear licensed sites, including Sellafield, Dounreay, Magnox, Urenco, Ministry of Defence, Atomic Weapons Establishment (AWE), and for UKAEA at the European Spallation Source in Sweden.

Darren Falkingham
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STAINLESS METALCRAFT (CHATTERIS)

Metalcraft is a recognised manufacturer of safety critical equipment. We are a large sub-contract fabrication and machining company in the UK with capabilities in mechanical design, manufacture and installation. We can design and manufacture waste containers, vacuum, cryogenic & pressure vessels below 0.5 metres to over 35 metres long or a few kilograms to 140 tonnes in weight. We have significant knowledge in a wide range of materials and to a wide range of internationally recognised standards.

Stephen Buttriss
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www.metalcraft.co.uk

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
Business development manager
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www.steel-dynamics.co.uk

COMPANY DIRECTORY

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.

Abi Lewis
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SWMAS

At SWMAS we design and deliver programmes of support that enable ambitious businesses to increase their productivity, improve operational efficiency, develop skills and reach their growth potential. We work directly with manufacturers, delivering improvement programmes on the shop floor, as well as developing and refining strategy at board level. We provide consultancy services, run public funded programmes, deal with complex funding arrangements and support businesses to leverage UK and European funding for growth and innovation. Our work is supported by a team of specialists, many are recognised experts in their fields and all are experienced and passionate about the services we provide and the difference we make. We have expertise in both manufacturing and business support programme design and implementation. To help businesses get ready to tender for Hinkley Point C contracts, we deliver a range of support enabling them to develop their capabilities and meet the stringent requirements demanded when working in the nuclear sector. Currently focusing on the MEH phase, we're liaising with Tier 1 HPC contractors to identify the work packages and split them into opportunities of the appropriate size and scale for SME businesses. We link those opportunities to relevant businesses based in the South West and Wales.

Samantha Orchard
Nuclear supply chain specialist
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THALES

Thales's engineering capabilities include cyber, gyration, lasers, and innovation.

Andy Nicholson
Director RTI
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www.thalesgroup.com/en/countries/europe/united-kingdom

FUSION PRIME

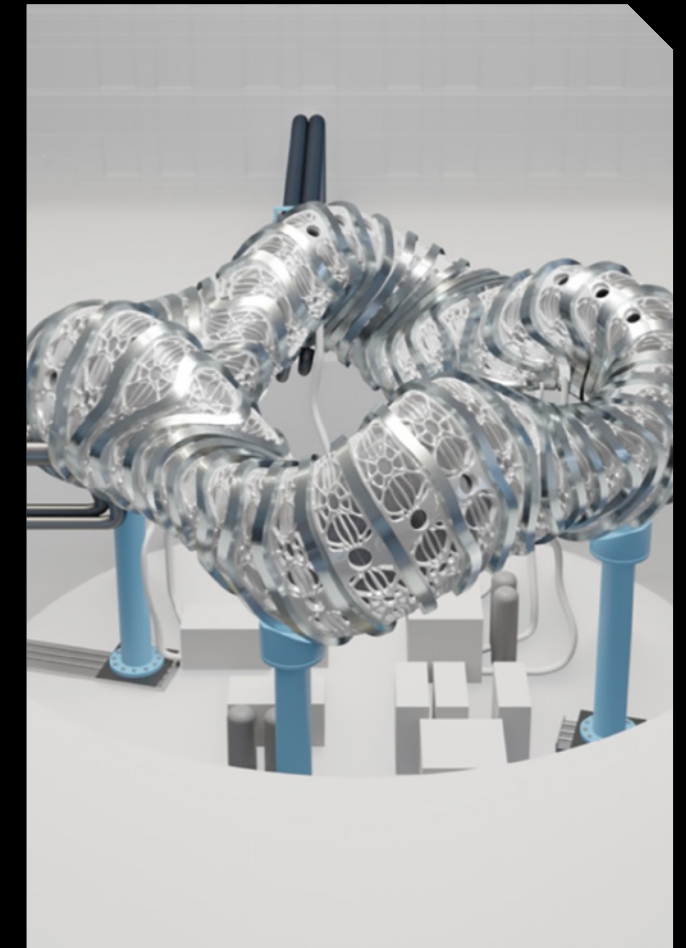
Type One Energy



Richard Beake, UK Representative
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www.typeoneenergy.com

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 Science Centre. 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.

Chris Dunkley
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TRACTEBEL

Tractebel is a global engineering company delivering game-changing solutions for a carbon-neutral future. Insights gathered during our 150+ years of experience in energy, water, infrastructure and nuclear projects combined with local expertise allow us to tackle complex future-oriented projects. By connecting strategy, design, engineering and project management, our global community of more than 5,000 imaginative experts supports companies and public authorities to move towards a sustainable world. With over 1,000 nuclear experts and projects developed in over 20 countries, we work across the full life-cycle from plant design and operation to radioactive waste and decommissioning. Operators, constructors and investors trust our internationally recognised expertise to support safe and profitable operations and design new plants and research reactors. We work hand-in-hand with a variety of nuclear players including technology developers, investors, future operators or constructors in nuclear new build, fusion, small modular reactors (SMR) and research reactor projects and lead innovation in advanced nuclear technologies. We have been actively supporting ITER since 2014 in a multitude of technical areas and are partnering with First Light Fusion providing specialist expertise to their reactor design.

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tractebel-engie.com/en

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. Our core capabilities are 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
Commercial director
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www.thermal-resources.com

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 decommissioning, existing fleet and the nuclear new build programme. Our experience across the UK nuclear fleet in nuclear ventilation and 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
Marketing executive
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www.turnbull-scott.co.uk

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 NORD

For over 150 years, TÜV NORD has been recognised for safety and technical competence. In the UK we are an accredited inspection and certification body working across five sectors: clean energy solutions, manufacturing technology, buildings, food, and systems certification. We also provide specialist nuclear and energy consultancy services for government and major industry clients. Our international and diverse teams of engineers and scientists provide neutral, independent, and reliable services focused on the client's needs. Our in-depth knowledge and understanding of international regulations and guidelines, codes and standards, as well as our experience from the licensing, operation, and decommissioning of nuclear facilities worldwide gives us a unique perspective of what nuclear safety needs to look like. In recent months we have delivered projects in the fusion sector focused on lithium flow loop designs, tritium recycling and carbon-14 management, and have a host of bespoke specialisms relevant to the sector. TÜV NORD stands ready to meet the challenges that new technologies in the energy sector bring. To this end, we collaborate with our partners to provide innovative solutions and specialist nuclear services support to ITER, STEP and other emerging fusion programmes. We are committed to an environmentally responsible, sustainable and clean energy future.

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www.tuv-nord.com

COMPANY DIRECTORY

FUSION PRIME

UKAEA



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www.gov.uk/ukaea

UK Atomic Energy Authority carries out fusion energy research on behalf of the UK Government. We believe fusion will be part of the world's future energy mix, and achieving this involves working at the forefront of science, engineering, and technology.



We oversee the UK's fusion programme, headed by the MAST Upgrade experiment. We also host the world's largest fusion research facility, JET, operated for scientists from around Europe at Culham Science Centre. Record results using JET, announced in February 2022, were the clearest demonstration worldwide of the potential for fusion energy to deliver safe and sustainable low carbon energy. We are now building on our long experience and expertise, and working on the design of power plants which will produce net electricity.

STEP is UKAEA's ambitious plan to accelerate the delivery of fusion energy. STEP is a staged programme to design and build the world's first compact fusion machine, based on the spherical tokamak, targeting 2040. UKAEA is also undertaking cutting edge work with academia, other research organisations and the industrial supply chain in all enabling areas, including robotics and materials.

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. Our 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.

Chris Cousins
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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 600 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.

Steve Dodds
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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.

Robbie Scott
Senior plasma physicist
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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

COMPANY DIRECTORY

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.

Mark White
Investment director
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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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www.ultima-forma.com

UNIVERSITY OF YORK

The nuclear physics group at the University of York has significant expertise in developing radiation detectors for bespoke applications. We have also generated commercial impact through our work via fruitful academia-industry partnerships. We would be happy to discuss any radiation detection challenges and opportunities relevant to the fusion industry.

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, focussing 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
Fusion CDT programme director
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fusion-cdt.ac.uk

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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VULCAIN ENGINEERING UK

Vulcain Engineering UK provides risk management activities related to the fusion industry.

Geoffroy Guillerme
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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 and superconductors.

Colin Turner
CEO
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www.weaf.co.uk

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
simon@woodruffscientific.com
woodruffscientific.com

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.

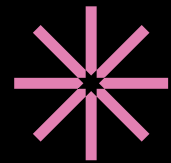
Matt Hunter
Associate director
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“Until The Fusion Cluster was a ‘thing’ it was a challenge to give the early-stage companies we support in the Innovation Centre, contact with the skills, knowledge, and collaboration opportunities the sector can now offer. This access, via The Fusion Cluster, has greatly advanced their opportunities.”

Wendy Tindsley
Innovation director
Oxford Innovation Space

JAMES WALKER UK + JCS NUCLEAR SOLUTIONS + JDC ELECTRICAL & COMMUNICATIONS + JGC CORPORATION + JOHN ELLISON ELECTRONICS + JOHNSON CONTROLS + KARLSRUHE INSTITUTE OF TECHNOLOGY + KBHF + KC CONTROLS + KIER + KLOECKNER METALS UK + KOGNITIV SPARK + KONECRANES DEMAG + KUKA SYSTEMS UK + KYOTO FUSIONEERING + LASER 2000 UK + LASER ADDITIVE SOLUTIONS + LEYBOLD + LUFFY AI + M5TEC + MACE + MAGDRIVE + MARVEL FUSION + METALCRAFT + MIRION TECHNOLOGIES + MOTT MACDONALD + NAMRC + NEARSTAR FUSION + NELSON TOOL CO + NEOS CONSULTANCY + NICHOLS GROUP + NIS + NOVATRON FUSION GROUP + NOVINTEC + NTTAU DIGITAL + NUCLEAR AMRC + NUCLEAR INDUSTRY ASSOCIATION + NUCLEAR SOUTH WEST + NUVIA + OCEM POWER ELECTRONICS + OMNISEAL SOLUTIONS + OPENS PDM + OPTIMA SYSTEMS CONSULTANCY + ORANO + OXFORD COMPUTER CONSULTANTS + OXFORD INNOVATION + OXFORD SCIENCE ENTERPRISES + OXFORD SIGMA + OXLEP + PETRONAS + PILLSBURY WINTHROP SHAW PITTMAN LLP + PORVAIR FILTRATION GROUP + POTENTIARY + PRECISION CERAMICS + PRORSUS + PROXIMA FUSION + QDOT TECHNOLOGY + QENIQ ADVISORY + RED ENGINEERING + RENAISSANCE FUSION + ROLLS ROYCE SUBMARINES + RTR GMBH & CO. + RULLION + SCHNEIDER ELECTRIC + SCX SPECIAL PROJECTS + SIKA + SIMIC + STEEL DYNAMICS + STFC + STUDSVIK + SWANSEA UNIVERSITY + SWIFTOOL PRECISION ENGINEERING + SWMAS + THALES + THE MANUFACTURING TECHNOLOGY CENTRE + TOKAMAK ENERGY + TRACTEBEL + TRM + TURNBULL & SCOTT + TURNER & TOWNSEND + TÜV NORD + TÜV SÜD + TWI + TYPE ONE ENERGY + UKAEA + UKI2S + ULTIMA FORMA + UNIVERSITY OF OXFORD + UNIVERSITY OF YORK + VEOLIA + VULCAIN ENGINEERING UK + WEST OF ENGLAND AEROSPACE FORUM + WESTINGHOUSE + WOODRUFF SCIENTIFIC + WSP + ZANON RESEARCH & INNOVATION + ZERO GLOBAL



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