A GIANT LEAP FOR HUMANKIND

UK INDUSTRIAL
FUSION SOLUTIONS
INFORMATION PACK

STEP

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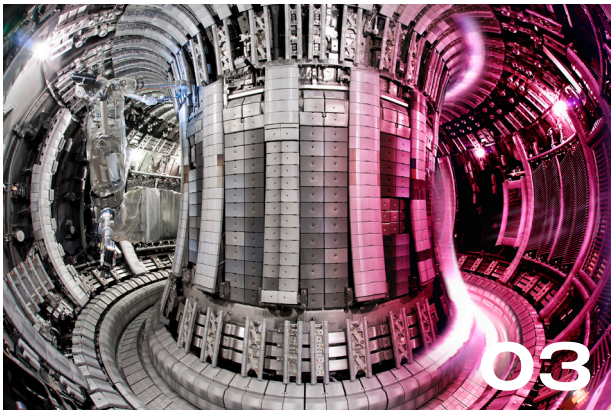
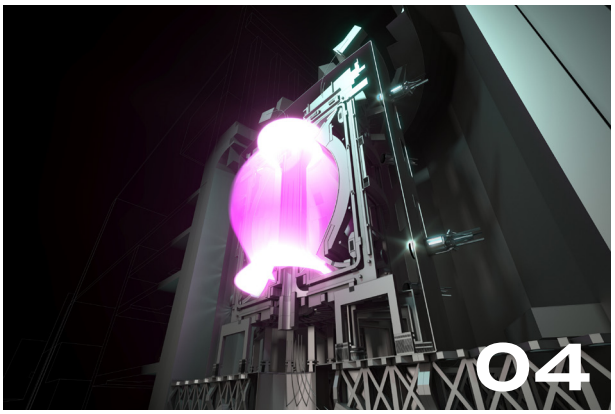




WHAT IS FUSION?

Fusion is the process that powers the sun and stars. When light nuclei fuse to form heavier atoms, huge amounts of energy are released. This is the opposite of nuclear fission – the reaction that is used in nuclear power stations today – in which energy is released when a nucleus splits apart to form smaller nuclei.

There are several ways to produce energy from fusion here on Earth and, in our work, we are pursuing magnetic confinement. This uses a combination of hydrogen gases – deuterium and tritium – which are heated to temperatures ten times hotter than the centre of the Sun (around 150 million degrees Celsius). At this temperature, atoms in a plasma state are energetic enough to fuse, releasing a huge amount of energy which can be used to generate electricity.

Why Fusion?

The UK government is committed to net zero by 2050 and, in order to achieve that and to sustain net zero beyond 2050 as global energy demand grows, we need new, better ways to meet our growing energy demands. Fusion offers the opportunity to produce virtually limitless energy that will power low-carbon economies across the world in the second half of this century.

Fusion can be one part of the long-term solution, taking its place alongside renewables and other low carbon generation sources.

David Gann
Chair of UKIFS

“The need for safe, sustainable energy is of paramount importance and this is the ‘moon-shot project’ to lead the world in commercialising fusion power.”

Paul Methven
CEO of UKIFS and Senior Responsible Owner of STEP

“This is a hugely exciting opportunity for someone that wants to make a meaningful difference at a global level, be part of shaping a new organisation that brings people together and gets the best from them.”

Advantages to fusion energy

With increasing energy demand globally, finite natural resources and challenges with energy security we need new, better ways to generate energy everywhere across the planet.

Benefits of Fusion

Low carbon
Fusion is low carbon, with low land usage

Safe
The fusion process is readily and safely controllable

Reliable
Fusion energy will be baseload and does not depend on seasonal variation, the sun, or the wind

Sustainable
Fusion fuel is potentially abundant in our seas and the Earth's crust

Energy-efficient
Fusion provides the most power-dense process available on Earth

Government Mission

Successful delivery of the STEP programme will build on the strong foundations of world class research to contribute to the Government's missions to sustain economic growth and make the UK a green energy superpower.

The programme directly contributes to two of the Government's missions:

- Kickstart economic growth: STEP could be central in developing the UK's industrial heartland around its site in Nottinghamshire by serving as an enabler of a new industrial sector, driving the development of the UK's fusion technology and supply chain. The programme will catalyse development of fusion skills and capability in the UK, encouraging growth, attracting investment and creating family-sustaining skilled jobs.
- Make Britain a clean energy superpower: fusion is a necessary solution to meet the growing long-term global clean energy demand. Fusion offers the potential to be a reliable base load energy source of the future, developed by UK companies, distributed worldwide. Although the impacts won't be felt until post-2050 it could make a huge impact in cutting bills and delivering energy security and long-term global net zero.

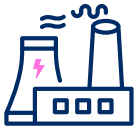
ABOUT UKAEA

United Kingdom Atomic Energy Authority (UKAEA), the national fusion research centre laboratory, is based at Culham Campus in Oxfordshire and has additional facilities in South Yorkshire and Cumbria.

UKAEA Mission

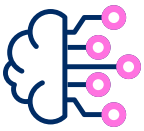
To deliver sustainable, low-carbon fusion energy with maximum scientific and economic benefit. And we've got four interconnected goals that will get us there:

Be a leader in world fusion research and development.



Enable the delivery of sustainable fusion power plants.

Drive economic growth and high-tech jobs in the UK.



Accelerate innovation and develop skilled people for the industry.

Integral to UKAEA's success is a world-class inclusive workplace, with employees from all backgrounds. To solve one of the toughest challenges on the planet they need real innovation, and so they are working hard to further improve diversity. UKAEA's welcoming culture and innovative benefits are built to bring out the best in everyone – giving everyone what they need to bring about the future of energy.

ABOUT UKIFS

The UK is world leading in the science and research of fusion energy with national fusion laboratory, UKAEA, at the heart of the UK's capability. The underpinning technology has been developed and is now at a stage where it is credible begin the delivery of a prototype fusion energy plant.

Taking on that scale of delivery challenge requires a new form of organisation and so UK Industrial Fusion Solutions Ltd. (UKIFS) has been created to do just that. UKIFS is bringing together and integrating the capabilities needed for fusion, by leading the design, build and operation of a cost-effective UK prototype.

We are now building UKIFS to be ready to lead this challenge, working in collaboration with the best of industry. The first programme UKIFS will deliver is STEP at West Burton in Nottinghamshire.

UKIFS has been set up as a subsidiary of UKAEA Group, but as company limited by shares will be capable of taking private investment in the future as we look to move from our first prototype plant work into supporting commercial plant development.

We believe fusion energy can be an environmentally responsible part of the world's energy supply in the second half of this century.

WHAT IS STEP?

STEP (Spherical Tokamak for Energy Production) is the UK's flagship fusion programme. STEP aims to pave the way for the commercial viability of fusion by demonstrating net energy, fuel self-sufficiency and a viable route to plant maintenance, and in doing that, stimulates a new industry with the UK in a leading commercial position.

The scale is immense. In terms of infrastructure under development, STEP will be closer to the scale of the Hinkley Point C power station in Somerset but based on new fusion technology. This is a true mega-project.

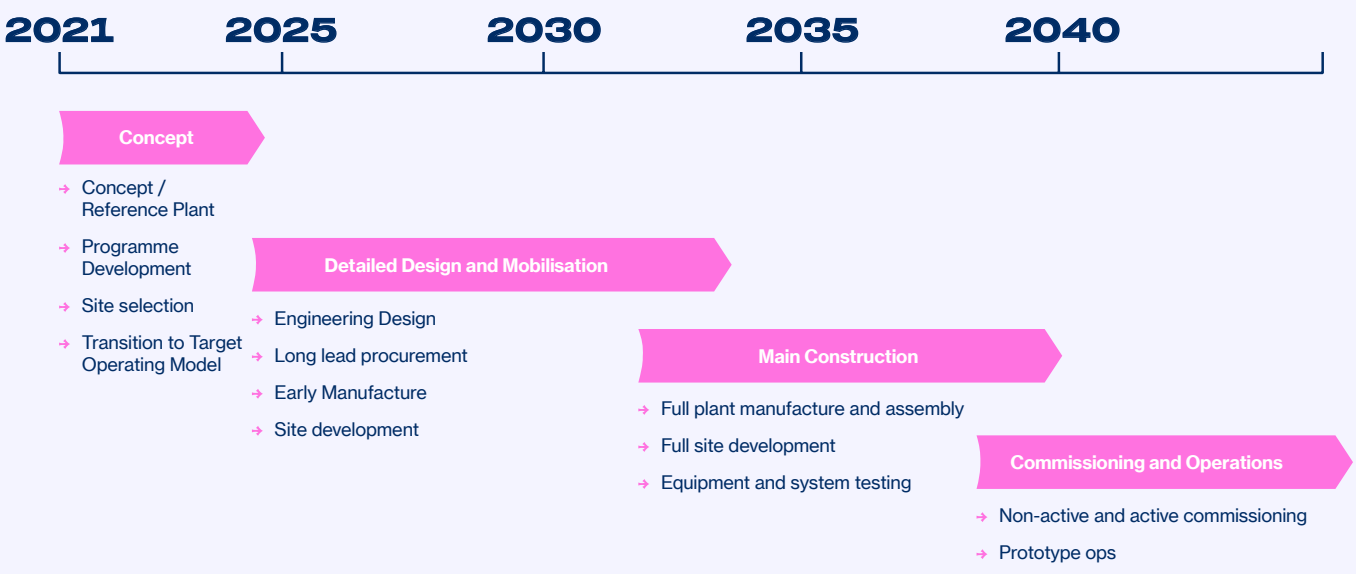
Through delivering a new prototype plant, STEP will develop a new fusion supply chain that is capable of supporting an emerging global fusion sector. We are not just building a plant; we are building an industry.

PHASES OF THE PROGRAMME

The STEP programme is divided into three phases (we call them tranches). In the first phase, to 2024, we've focused on a number of key activities. These include the concept design, development of the organisation to enable us to deliver a major technology and infrastructure programme, selection of a site, and getting the right regulatory framework in place. Tranche 1 ended on 31 March 2024 and we are now in a Transition Year (FY 2024-25) before Tranche 2a commences in April 2025.

DELIVER A UK PROTOTYPE FUSION ENERGY PLANT, TARGETING 204, AND A PATH TO COMMERCIAL VIABILITY OF FUSION.

STEP MISSION



Concept Design

STEP aims to pave the way for the commercial viability of fusion by demonstrating net energy, fuel self-sufficiency and a viable route to plant maintenance, and in doing that, will stimulate a new industry with the UK in a leading commercial position. It will demonstrate:

- Net power to the grid
- Self-sufficiency of tritium fuel
- Confidence in plant availability (on time vs maintenance time)
- Safety and environmental compliance of fusion energy scale plant

As a first-of-a-kind the STEP plant will also set the baseline for understanding schedule and cost of a commercial fusion plant, and as a government backed major programme, must deliver, at best, value for money for the taxpayer, managing schedule and cost effectively.

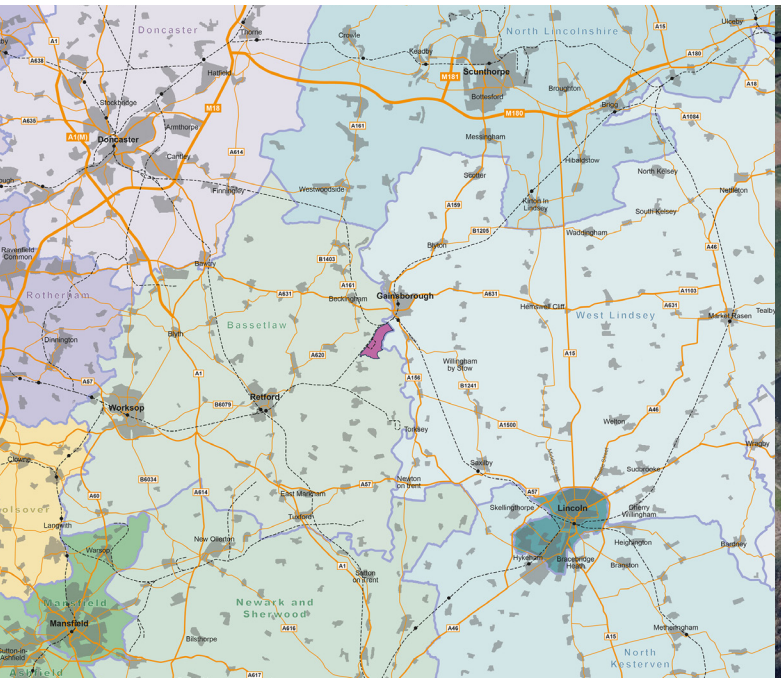
West Burton

In October 2022, the UK government announced that West Burton power station site in Nottinghamshire was approved as the home for 'STEP' the UK's prototype fusion energy plant. West Burton was chosen following a high-quality and competitive process that saw 15 self-nominated sites shortlisted to five, with the final decision made by the Secretary of State. West Burton is a former coal-fired power station site, and sits within Bassetlaw District in Nottinghamshire. It neighbours West Lindsey District in Lincolnshire. The nearest towns are Retford and Gainsborough. It is part of the East Midlands and falls within the East Midlands Combined County Authority.

The selection of this site will make a historic transition from 'fossil to fusion' building on the legacy of power generation in "Megawatt Valley" along the river Trent. The site is large, over 330Ha, and provides the opportunity for significant development alongside the opportunity for significant development alongside the STEP plant, creating a new fusion ecosystem in the region, with enormous social and economic benefits.

The Culham Campus, UKAEA's home in Oxfordshire, has been very successful in attracting spin-off and start-up companies to co-locate on the campus. It's envisaged that the community around the West Burton site, where the STEP prototype plant will be built, will do likewise.

However, the opportunities for the supply chain are not only within high-tech, adjacent industries. Once site development is underway, the programme will need all kinds of services, from catering to security. This will provide many additional opportunities for local companies to get involved and benefit from the development.



Developing the Vision for STEP at West Burton

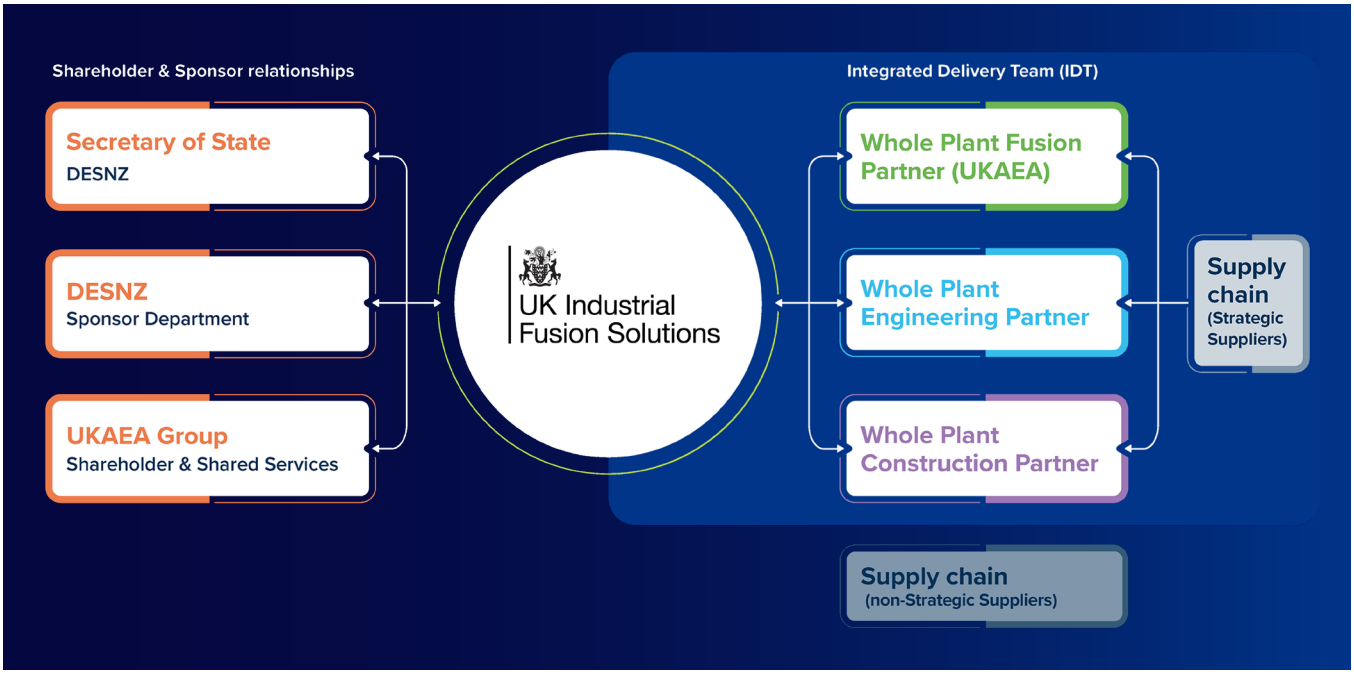
DELIVERING STEP: TRANSITION TO AN INTEGRATED DELIVERY TEAM WITH INDUSTRY

STEP will become one of the largest major programmes anywhere in the UK and is undoubtedly already the most technically challenging. Already on the UK's Government Major Projects Portfolio (GMPP), the STEP programme is expected to also become a Nationally Significant Infrastructure Project. This can only be delivered with the right mix and scale of capabilities.

STEP is transitioning from concept to delivery. Key to this transition is pivoting from the bulk of the work being done by UKAEA with some industry support, to the majority of the work being done by industry within a collaborative model under a new client organisation, UKIFS. The capacity and capability of industry is essential to deliver a programme of this scale, but it is also only through delivering an operating prototype plant that industry will become fusion capable and ready to support a new global sector with the UK at the forefront.

Work is underway to get the right organisations and capability ready for the next phase in our programme. This includes the STEP delivery organisation, UKIFS. The collaborative approach is at the heart of STEP delivery and will be formed to include people employed by UKIFS as well as people from our Whole Plant Partners, Systems Partners and other companies and organisations as required.

Target Operating Model

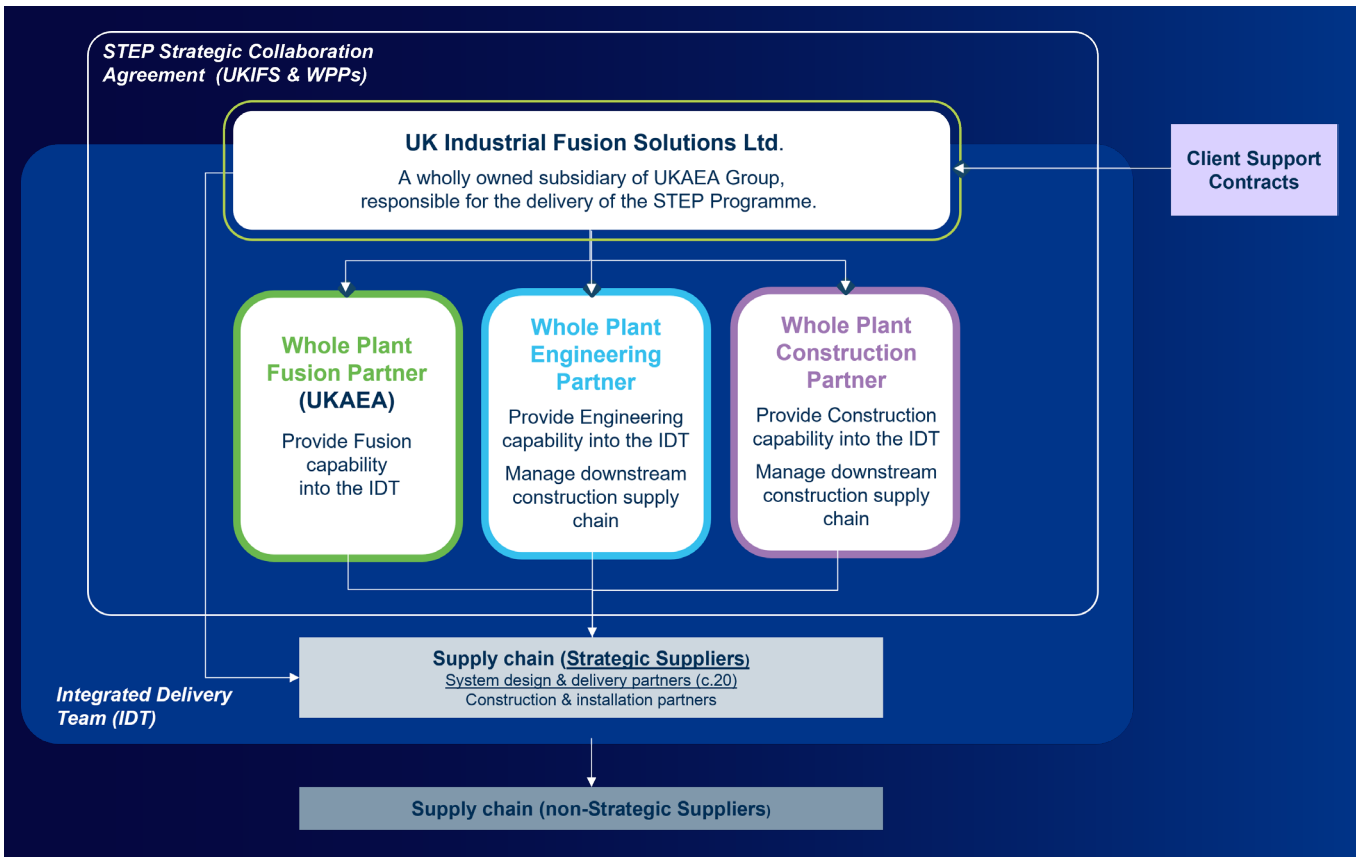


UKIFS AND THE INTEGRATED DELIVERY TEAM

UKIFS will partner with critical organisations to obtain the capability we need to deliver the STEP programme. We will have three Whole Plant Partner organisations that we will work with; the Fusion Partner, which is UKAEA (bringing deep fusion expertise); the Engineering and Construction Partners (industrial entities bringing capacity and experience in complex engineering integration and delivery and in construction management). Industry partners will be selected through a tender process during 2024 and 2025. The intention is that by early 2026, we will have the full capability of all partners onboard and operating in an Integrated Delivery Team.

The below image illustrates the commercial relationships as mentioned above between UKIFS and the three Whole Plant Partner organisations and their supply chain. These four parties will enter into a strategic collaboration agreement and together with their strategic supply chain will form the Integrated Delivery Team (IDT). The four parties will operate as an alliance to deliver the programme.

We are currently in the process of transitioning to this Target Operating Model for the programme that will be led by UKIFS. To drive the design of and transition to the new operating model, and to drive the move from the concept phase into the new delivery phase working with industry in a collaborative long-term partnering arrangement, we have appointed a number of senior executives including the UKIFS CEO, and Senior Owner for STEP. The UKIFS Board is operating, and UKIFS took responsibility for the STEP programme on 1 November 2024.



UKIFS Board

The UKIFS Board is now operating to provide strategic oversight of UKIFS ensuring delivery of the company's strategic objectives, compliance with regulatory and common law duties, and their responsibilities under the UKIFS Corporate Structure document.

The Board has a balance of skills and experience appropriate to directing the Company's business and a majority of independent non-executive members to ensure that executive members are supported and constructively challenged in their role.

UKIFS STRATEGIC OBJECTIVE

To lead and integrate the capability and know-how to deliver commercial fusion energy plants of the future, through leading the design, build and operation of a cost-effective UK prototype and to develop capability in the supply chain to support and service such activities.

STEP VISION AND VALUES

The STEP team have outlined the expected values and behaviours for all people involved in the delivery of the programme. These aim to establish the cultural tones crucial for the successful delivery of our mission and is crucial to our success.

These served us well in the early stages of our mission but as the programme nears the end of the first phase (2019 – 2024) there is a requirement for it to evolve in readiness for the inclusion of new industrial partners for engineering and construction. As the programme scales up with a site selected at West Burton in October 2022, and the creation of UK Industrial Fusion Solutions Ltd responsible for delivery of STEP in the next phase there is a responsibility to call out safety specifically as a value to embed an early safety mindset in the programme culture.

Therefore, we now have six values that all individuals working for STEP must embody and champion, irrespective of their employer badge. These changes resulted from team consultation, and these values and behaviours are designed to enhance our programme delivery. Our Values and Behaviours will consistently evolve with each iteration of the programme, and we should actively embrace this change in alignment with our culture.

We champion
SAFETY

We prioritise physical safety, making it fundamental in all our choices, fostering a culture of accountability and diligence with a safety-oriented approach.

We all
MATTER

We embody compassion, care for ourselves, colleagues, and those we engage with, embrace uniqueness, and promote inclusivity.

We act as
ONE

We foster a collective mindset through shared commitment, collaboration, and honest, transparent dealings, ensuring effective cooperation to achieve goals.

We embrace
CHANGE

We are adaptable and resilient, open to learning and evolving. We maintain balance in facing challenges, upholding well-being, unity, and efficiency.

We are
PIONEERING

We are bold in our thinking, embrace innovation, and act with courage.

We challenge norms, explore the unconventional, and strive for solutions.

We
DELIVER

As we evolve, we maintain a delivery mindset, staying focused and aligned with programme goals. We ensure optimal and timely delivery through efficient operations.

It is our vision that all people working on the STEP programme, regardless of their 'employer badge' will embody and champion these behaviours. We recognise that our charter will continue to evolve as we onboard our Whole Plant Partners and as the programme evolves over time.

We champion **SAFETY**

Safety-oriented

- We prioritise the physical wellbeing of all employees, ensuring a secure workplace.
- We make safety a fundamental aspect in all choices we make on the programme.

Accountable

- Every team member takes ownership for safety, leading by example, fostering a culture of accountability and diligence.
- We make safety a shared commitment in all that we do on the programme.

We all **MATTER**

Compassionate

- We show compassion for ourselves, our colleagues, and the communities we serve.
- Recognising our shared humanity, we foster a culture of care in all our endeavours.

Inclusive

- We embrace the uniqueness of everyone we engage with, recognising and celebrating contribution.
- We promote inclusivity to create a welcoming environment, ensuring diverse perspectives and voices are heard.

We act as **ONE**

Collaborative

- We foster a shared commitment to programme goals, maintaining unity, collaboration, and cooperation.
- We share resources and prioritise unified solutions to achieve programme objectives.

Communicative

- We engage in honest, open dealings, ensuring transparency and collaboration.
- We encourage open communication and speaking up when something isn't working.

We embrace **CHANGE**

Adaptable

- Embrace change with an adaptable, accepting, and responsive mindset.
- We are open to learning and evolving, actively seeking new knowledge and fostering a culture that embraces change as an opportunity for growth.

Resilient

- Demonstrate resilience in the face of challenges, maintaining a balanced reaction to change.
- We uphold wellbeing, unity, and efficiency, ensuring a strong foundation for the programme to thrive in evolving circumstances.

We are **PIONEERING**

Courageous

- We are courageous in our thinking, empowering the exploration of unconventional ideas.
- We are bold in our actions and decisions, make informed choices, and seize groundbreaking opportunities.

Innovative

- We cultivate an innovative mindset, encouraging each other to generate forward-thinking ideas.
- We foster innovative thinking that goes beyond conventional boundaries, inspiring groundbreaking outcomes.

We **DELIVER**

Focused

- We maintain focus on programme objectives, ensuring alignment with our strategy amidst challenges or changing conditions.
- Whilst being innovative and courageous, we remain unified, not losing sight of the end goal.

Efficient

- We operate efficiently, optimising resources and processes to ensure timely delivery of programme objectives.
- We streamline approaches, prioritise tasks, and adapt as needed to overcome obstacles and achieve successful outcomes.

OUR BENEFITS

LEADING THE WORLD IN SUSTAINABLE ENERGY

YOU'LL JOIN AN ORGANISATION THAT'S CARRYING OUT CUTTING-EDGE RESEARCH FOR THE FUTURE OF THE WORLD'S ENERGY.

Purpose-Driven Culture

At UKIFS, we're not just building a workplace – we're creating a culture that thrives on collaboration, innovation, and shared purpose. As part of the STEP programme, our mission is to demonstrate net fusion energy and to create a UK-led fusion industry. Every employee plays a vital role in this groundbreaking journey. We foster an environment that energises and inspires, where your ideas will help shape the future of a revolutionary low-carbon new energy source for the world. By aligning our values with a clear vision, we empower you to contribute to a culture where personal growth and collective success go hand in hand.

Empowering Talent

At the heart of UKIFS is our people. We believe that our strength comes from the diverse skills, backgrounds, and ideas of our team. As we expand, we are excited to welcome new talent who are passionate about making a real-world impact. You'll work on cutting-edge, challenging projects that push boundaries, create, and transform industries. With robust support systems, including mentoring, professional development schemes, and educational funding, we're committed to ensuring you have the resources to grow and succeed in your career while shaping a more sustainable future.

Join us on the journey

Our recruitment strategy isn't just about filling roles – it's about building a future-focused team with a breadth of capability. We go beyond standard benefits, offering a work-life balance that supports your personal and professional well-being. With a commitment to diversity, equity, and inclusion, our leaders and employee groups actively foster an environment where every voice is valued. At UKIFS, you're not just joining a team – you're joining a mission to revolutionise energy. Come be part of something bigger, where your talent and passion will truly make a difference.

If you're eager to contribute to a groundbreaking programme, we want to harness your skills to help realise one of the boldest endeavours humankind has ever faced.

- Hybrid working
- Emergency family leave
- Maternity, paternity and adoption leave
- A wide range of programmes for learning and development
- Health and wellbeing initiatives, including a gym membership and on-site Occupational Health Service
- Outstanding defined benefits pension scheme
- Social clubs and events
- Generous annual leave entitlements
- Annual bonus schemes

For further information about our wide range of **Employee benefits | UKIFS Careers** please visit our careers website.

Find out more
step.ukaea.uk

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