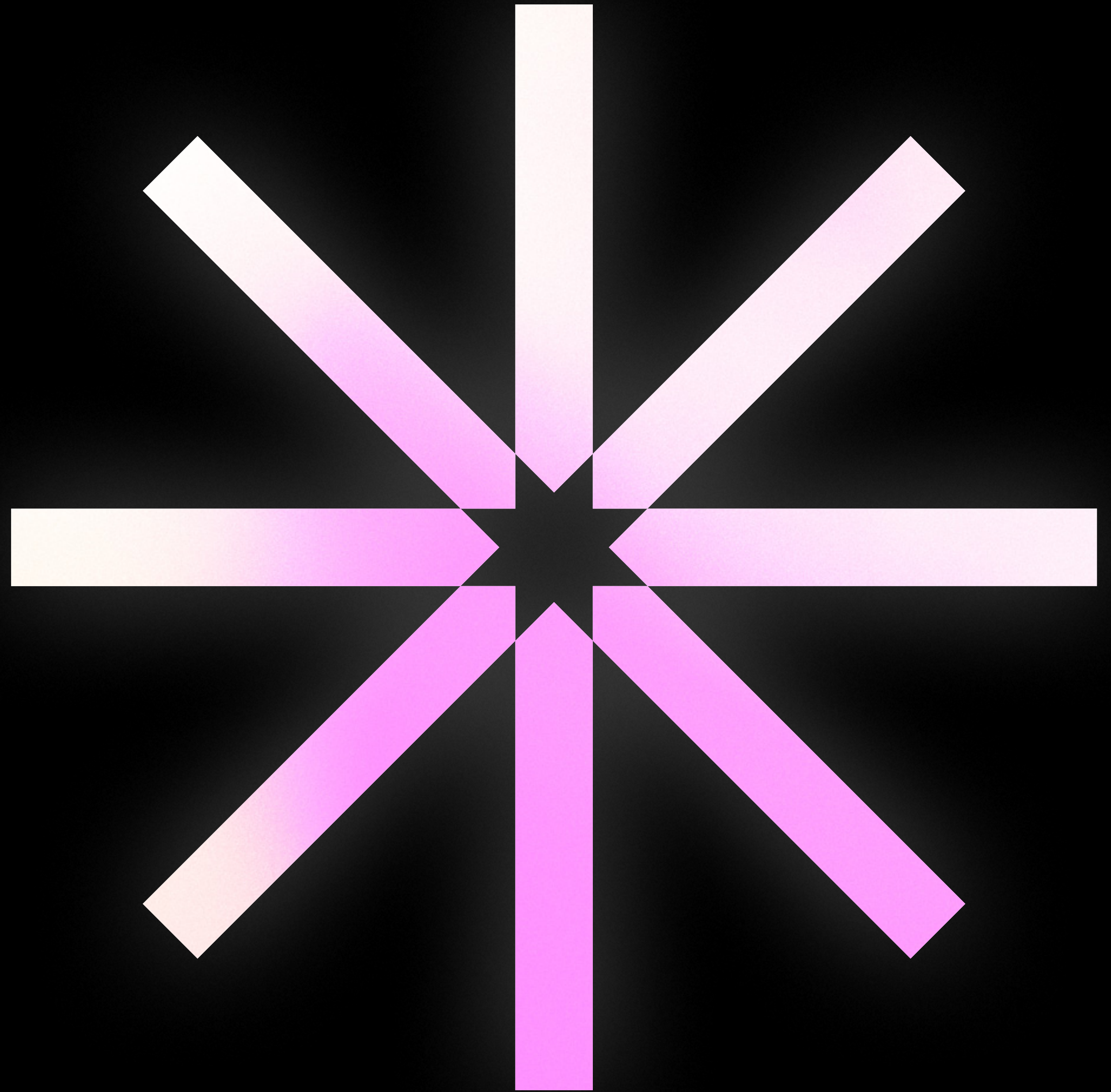
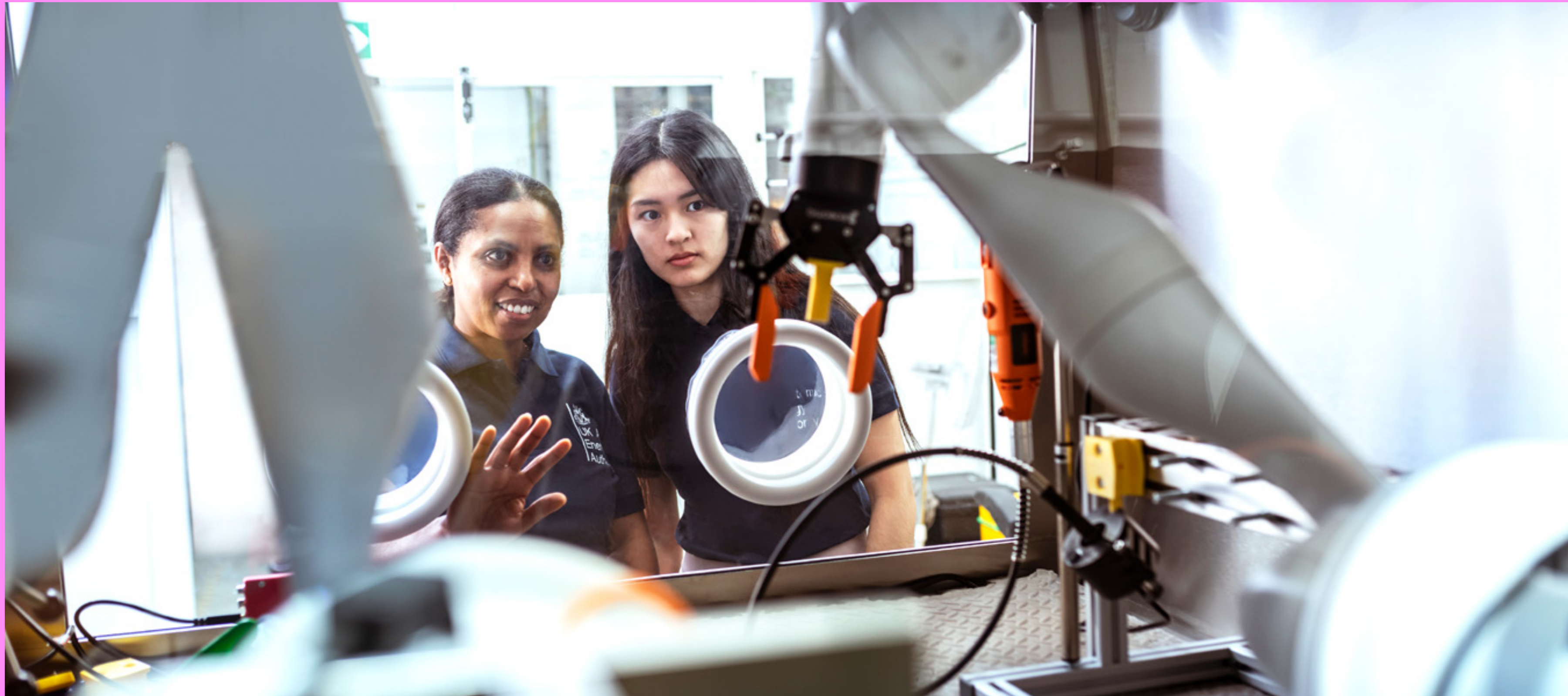


The future of
energy starts here...

THE
FUSION
CLUSTER



WHAT IS THE CLUSTER?



Fusion energy is within our reach but it's too complex for any one organisation to achieve on its own. The Fusion Cluster brings together fusion energy companies, the UK's national fusion energy research organisation, businesses in the supply chain, academia and investors. Bringing the right people and organisations together to get to fusion faster.

The Fusion Cluster is a national initiative and is free to join.

INNOVATION THRIVES IN CLUSTERS

The Fusion Cluster provides

- * access to national facilities that no company could build on its own
- * a pool of employees with a wide variety of skills and depth of experience
- * knowledge sharing
- * a showcase for UK fusion capabilities
- * support for start-ups
- * a dedicated development manager

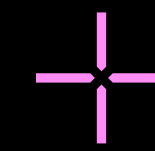
WHO IS IN THE CLUSTER?

Since November 2021, The Fusion Cluster has grown from a handful to more than 60 organisations working in fusion energy.

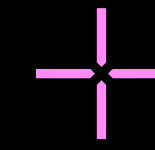
70
PLUS

organisations working
in fusion energy.

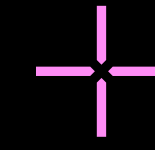
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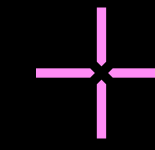
Oxford Sigma



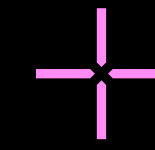
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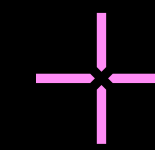
Tokamak Energy



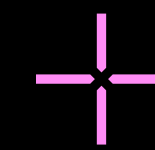
Jacobs



General Fusion



UKAEA



First Light Fusion

Visit TheFusionCluster.com for the full list

WHAT IS FUSION ENERGY?

Fusion takes place in the heart of stars like our sun and provides the power that drives the universe. Scientists and engineers all over the world are developing the technology to recreate this process on Earth to create a new course of sustainable energy.

How does it work?

A combination of hydrogen gases, deuterium and tritium, are heated to very high temperatures to create a plasma. Energy is released when deuterium and tritium atoms fuse together to form a helium atom and a neutron

A future fusion power station will need 400 kg per year of deuterium and tritium fuels – ten million times less than the amount of fossil fuels used to generate the same amount of electricity.

What next?

Many organisations worldwide are now actively designing powerplants to bring fusion to the power grid.



Hydrogen atoms deuterium and tritium - need to be heated to 150 million degrees Centigrade. Around 10 times hotter than the sun.

WHY IS THE WORLD INVESTING IN FUSION?

Low carbon

- * By 2040 the planet is predicted to be using twice as much electricity
- * Fusion can provide reliable, continuous electricity with no greenhouse gas emissions

Abundant

- * Fusion fuel reserves will last for many tens of thousands of years
- * Deuterium is extracted from small amounts of water
- * Tritium will be produced inside fusion machines from lithium which is abundant on Earth

Safe

- * The challenge of fusion is sustaining, not containing, a reaction
- * Unlike traditional nuclear fission, fusion cannot produce runaway chain reactions
- * Irradiated machine parts can be processed using technology already used successfully around the world



Efficient

- * A few hundred kilograms of fusion fuel could power a large powerplant for a whole year
- * The deuterium is a bathtub of water when fused with tritium will provide all energy use for one person for 60 years

Innovative

- * Spin off technology sectors include advanced computing, materials research and robotics
- * Bringing economic benefit, jobs and skills to markets around the world

CONTACT

Valerie Jamieson is development manager for The Fusion Cluster. She joined UKAEA in August 2021 to set up and manage the cluster. Previously she worked New Scientist where he held various editorial and commercial roles. She has a PhD in particle physics from the University of Glasgow.

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