About Us

Kyoto Fusioneering is at the forefront of creating cutting-edge, efficient, and market-ready technologies specifically tailored for the fusion energy sector. Our expertise encompasses critical components of commercial fusion power plants, including advanced gyrotron systems, tritium fuel cycle solutions, and breeding blankets essential for tritium generation and power conversion.

Our collaborative efforts with international fusion innovators, both public and private, are driving the quest to establish fusion energy as humanity's ultimate power solution.

Locations

Head Office
Distribution A Building, AW1-S, Tokyo Ryutsu Center, 6-1-1 Heiwajima, Ota-ku, Tokyo 143-0006, Japan

Kyoto Fusioneering UK Ltd. (UK)
First Floor, Building F11, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB, United Kingdom

Kyoto Fusioneering America Ltd. (US)
Plaza 600, 600 Stewart Street, Suite 400, Seattle, Washington, 98101, United States

Kyoto Fusioneering Europe GmbH (Germany)
An der RaumFabrik 29 im 3.Obergeschoss Raum Nr.3, 76227 Karlsruhe

Company History

- 2019/10
  Founded Kyoto Fusioneering
- 2021/07
  Inaugurated Tokyo Office
- 2021/10
  Founded Kyoto Fusioneering UK Ltd.
- 2022/09
  Founded Kyoto Fusioneering America Ltd.
- 2023/07
  Relocated the Head Office to Tokyo
- 2023/09
  Inaugurated Kyoto Research Centre
- 2023/10
  New Management Structure
- 2024/02
  Founded Kyoto Fusioneering Europe GmbH
- 2024/05
  Founded Fusion Fuel Cycles Inc.
- 2025/01
  Launched New R&D Centre in Tokyo
  Relocated the Head Office within Tokyo

KYOTO FUSIONEERING

FUSION for the FUTURE

Developing fusion technology to drive a new energy industry and impact major environmental challenges, leading to a sustainable future

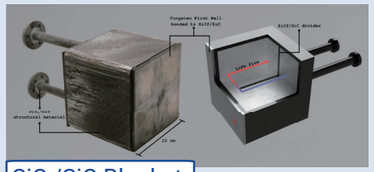
UNITY Projects

Kyoto Fusioneering is advancing the UNITY (Unique Integrated Testing Facility) projects that will construct two unprecedented test facilities, each focused on pivotal aspects of fusion power plant systems.

Fusion Thermal Cycle System

This system captures the energy generated by the fusion reaction as thermal energy and converts it into electricity and other utilizable forms such as hydrogen. Due to the unique environment of a fusion plant, such as high energy and flux neutron irradiation, elevated magnetic fields, and extreme temperatures, our equipment is specifically engineered to endure without compromising performance or safety, and achieves high thermal efficiencies required for effective power generation.

We are constructing the world's first fusion power generation test plant called UNITY-1, which is focused on demonstrating the fusion thermal cycle systems that will harness heat from fusion plasmas.



SiC_f/SiC Blanket

A new fusion-specific grade of Silicon Carbide Fiber-Reinforced Silicon Carbide (SiC_f/SiC) composite is being developed as a structural material with a focus on industrial scale up.

Fusion Fuel Cycle System

One of the most significant challenges is to secure a continuous fuel supply to the fusion plasma, to operate the machine in steady state. Various technologies are required to exhaust, separate, and circulate hydrogen isotope gases (most commonly deuterium and tritium), which are the fuels for the fusion plasma.

Kyoto Fusioneering is collaborating with Canadian Nuclear Laboratories through a joint venture, Fusion Fuel Cycles Inc. to demonstrate the technology that will make up the fusion fuel cycle system, through the construction of the "UNITY-2" demonstration facility currently underway in Ontario, Canada. UNITY-2 will serve as a platform to develop and deploy deuterium-tritium (D-T) fuel cycle systems for fusion plants through testing, verification, and demonstration. The facility will serve as a global hub for the development of commercial fusion fuel cycle systems.

Plasma Heating (Gyrotron) System

The gyrotron system is an enabling high-power, high-frequency heating device essential for providing power to and sustaining fusion plasmas in magnetic confinement-type fusion machines. Kyoto Fusioneering has successfully commercialized cutting-edge gyrotron technology and has deployed this to the global market in support of global development efforts, capitalizing on decades of research and development efforts from various national research institutes, and the efforts of world-leading engineers in Japan.

Our commitment to advancing R&D continues, with a focus on enhancing frequencies and extending output duration to optimize performance for industrial applications, supporting the scaling of this key technology for fusion power plants.

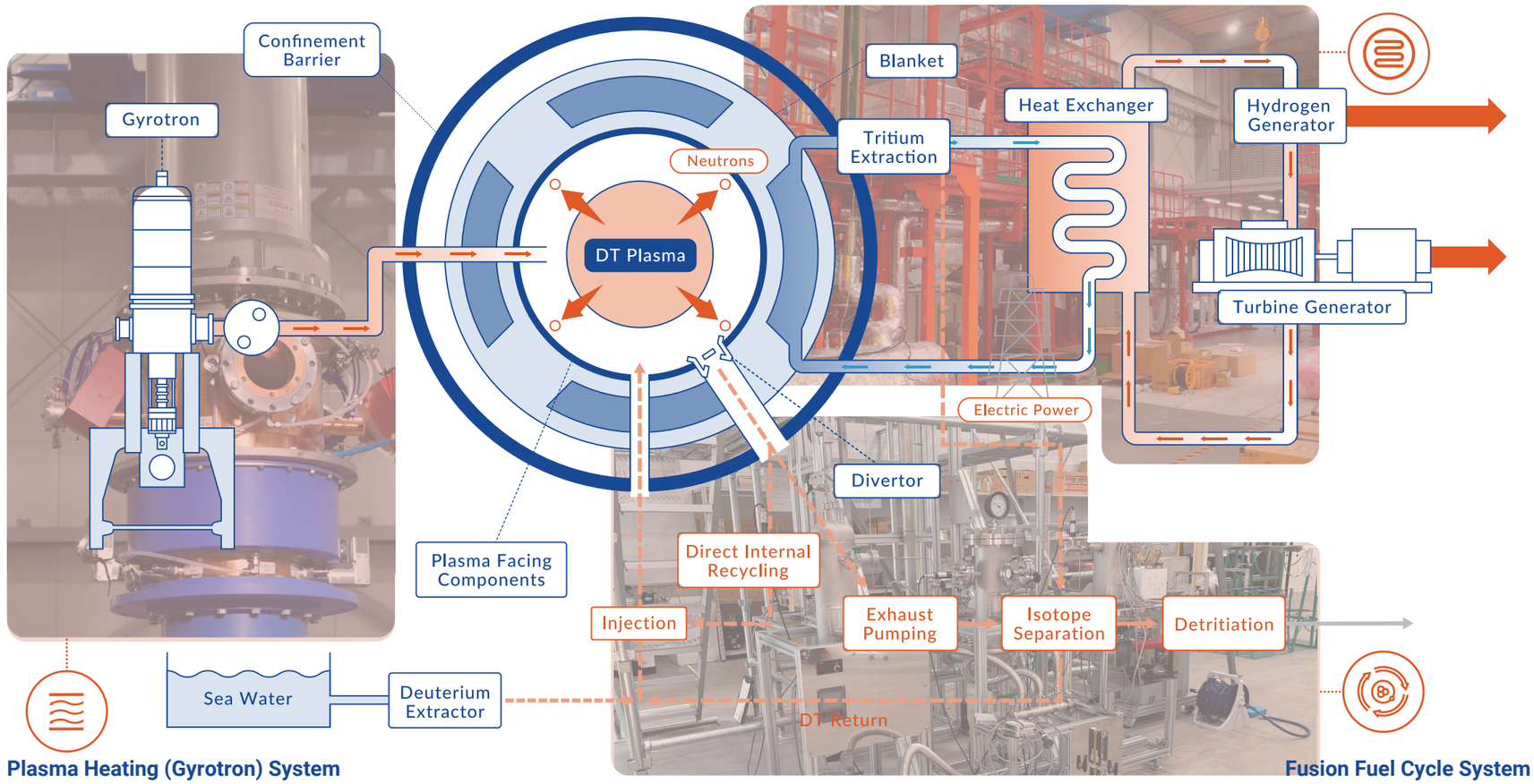
FAST Project

FAST (Fusion by Advanced Superconducting Tokamak) is a world first initiative to extract fusion energy from a power-producing plasma while addressing combined physics and engineering challenges in an integrated manner. The project aims to achieve the demonstration of fusion energy power generation by the 2030s, to lay the foundations for the deployment of a first fusion power plant.

FAST, to be sited in Japan, aims to generate and sustain a plasma of deuterium-tritium (D-T) reactions, coupled with the integrated plant systems that will surround the machine. FAST will therefore, in a world-first, combine a fusion plasma, energy conversion systems (including electricity generation demonstration), and fuel cycle systems.

Bringing together top researchers from prominent institutions, along with industrial and international partners from Japan, the UK, the U.S., and Canada, FAST is set to make a major impact on the global fusion energy landscape.

Fusion Thermal Cycle System



Plasma Heating (Gyrotron) System

Fusion Fuel Cycle System