

## SCIENCE AND TECHNOLOGY FOR FUSION

**Nuclear fusion, the power of the sun and stars**, has the potential to deliver firm, baseload energy for thousands of years and contribute to national security and technology leadership. ITER will deliver scientific foundations for practical fusion by producing and controlling a self-sustained fusion power source of up to 500 megawatts (MW) for hundreds of seconds. This has not yet been achieved by any fusion system. In addition, ITER will be a valuable R&D facility—much like test reactors are for nuclear energy—providing flexible operations, extensive measurement tools, and testing capabilities for fusion.

## 2026 STATUS

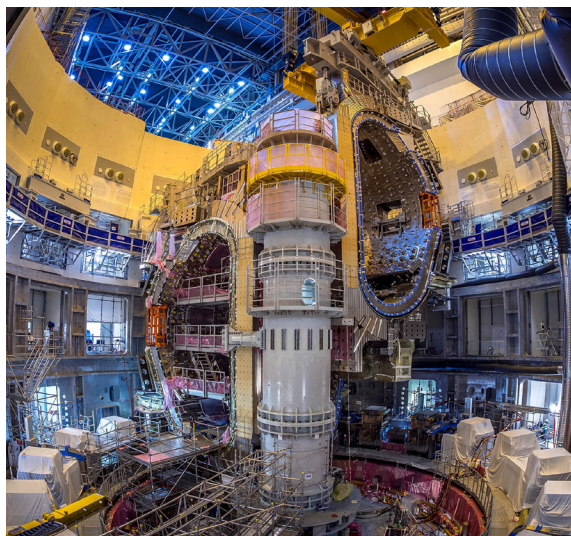
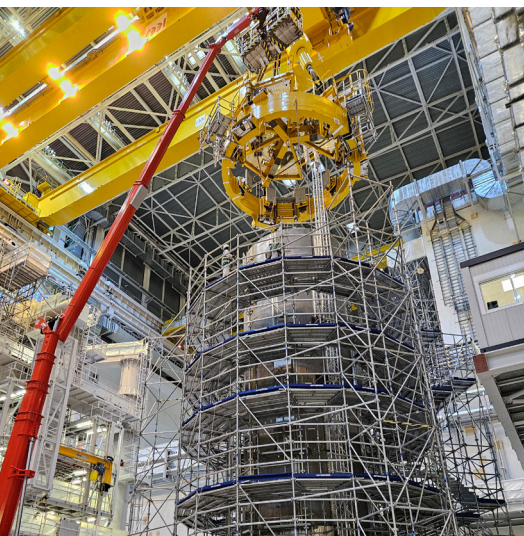
Civil construction of the international ITER project is largely complete, **machine assembly is in progress**, and all components of the U.S.-provided central solenoid superconducting magnet are on site for assembly. Overall U.S. scope for ITER is more than 54% complete, with plasma heating, vacuum, cooling water, and diagnostic systems in active fabrication. ITER members are actively pursuing complementary fusion investments in parallel with ITER progress.

ITER site, 2025.



## ITER WILL DEMONSTRATE

- Fusion gain up to a **Q of 10**
- Fusion power up to **500 MW**
- Durations of **400 seconds** at high power or **3,000 seconds** at lower power
- Deuterium-tritium fuel cycle** with fuel production testing
- Industrial-scale fusion** systems integration and operations



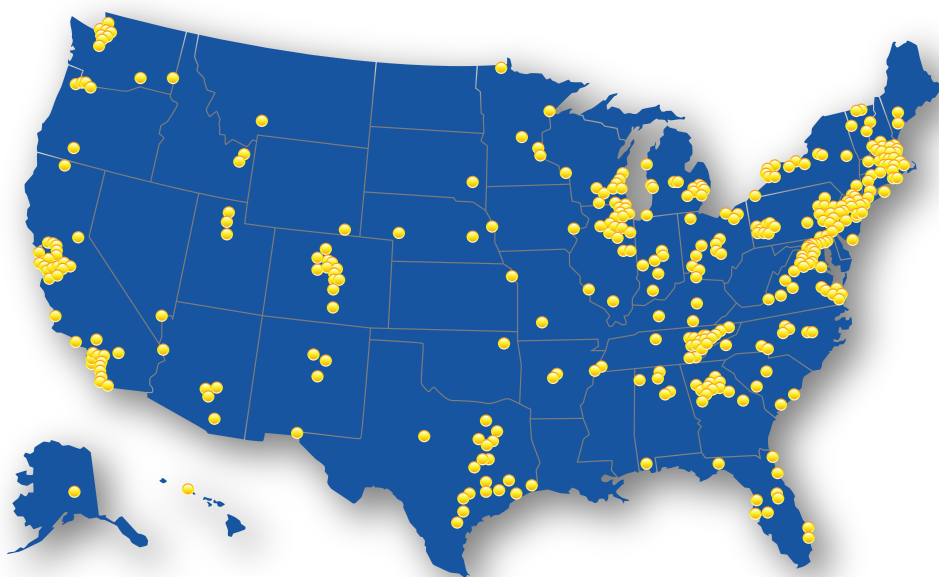
The superconducting central solenoid magnet (left) is one of 12 systems the United States is contributing to ITER. As assembly progresses, the central solenoid magnet will replace the center grey column (right) in the tokamak pit, where segments of the vacuum vessel are currently being lowered into place.

## PROJECT BACKGROUND

The seven ITER members are the United States, the European Union (host), China, India, Japan, the Republic of Korea, and the Russian Federation. Each member provides in-kind hardware and financial contributions to support project success. The ITER Organization manages and operates the ITER site on behalf of the members and serves as the nuclear-owner operator. As an ITER member, **the United States contributes ~9% to ITER construction and ~13% to ITER operations, for 100% of ITER science and intellectual discovery.**

The ITER project evolved from post-cold war discussions between the United States and the Soviet Union. After extensive planning and the addition of new partners, the ITER Agreement was signed in 2006 as a U.S. Congressional-Executive Hybrid Agreement with treaty-like status.

## 800+ COMPANIES IN 46 STATES HAVE CONTRIBUTED TO US ITER



Companies across the nation have established the capability to produce first-of-a-kind components and technology as they deliver innovative fusion engineering, testing, and manufacturing for ITER technical systems.

Credits: Front page: banner photo of ITER site, 2025, ITER Organization/EFJ Riche; photos inside facility, ITER Organization; tokamak illustration, Oak Ridge National Laboratory/Adam Malin. Back page: photo, Oak Ridge National Laboratory.

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## VALUE TO INDUSTRY

Industrial-scale **manufacturing and integration experience**

Specialized **supply chain development**

**Workforce development**

**Licensing experience** relevant for a fusion power plant

Access to **100% of ITER** information and science



US ITER is developing the nation's fusion workforce through design and fabrication of industrial-scale components. Photo: Oak Ridge National Laboratory

US ITER is managed by Oak Ridge National Laboratory in Tennessee, with partner labs Princeton Plasma Physics Laboratory in New Jersey and Savannah River National Laboratory in South Carolina.

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