

ITER is the only facility under construction that aims to demonstrate the production and control of a sustained fusion power source at power-plant relevant scale. Public and private fusion sectors agree that this is an essential step for establishing the scientific basis for practical fusion energy.

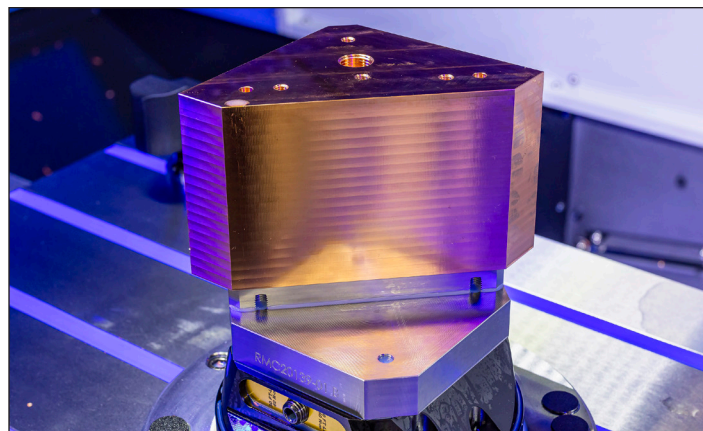
Science & technology leadership

ITER will deliver fundamental science and the necessary physics understanding of a self-sustained fusion power source (a “burning plasma”).

The industrial-scale experimental facility is already driving development of fusion technologies, including first-of-a-kind and next-generation components and systems.

Global engagement in fusion is intensifying. As an ITER member, the United States is at the forefront of technical and scientific advancements.

Since project inception, research on related ITER science and technology has also advanced the scientific basis of fusion energy.



U.S. specialty manufacturers are producing high-precision components for the electron cyclotron plasma heating of ITER. Photo: ORNL/Carlos Jones

Industry gains

U.S. manufacturers, suppliers, and businesses from across 46 states have contributed to ITER, resulting in multiple benefits for the nation:

- Proven manufacturing capability for fusion systems
- Development of national supply chains
- Practical experience building an industrial-scale fusion machine
- Know-how, intellectual property, and risk reduction for future devices
- Workforce training and growth
- Nuclear licensing
- Safety experience

Once assembly is complete, ITER will provide access to flexible operations and extensive diagnostics for R&D needs across U.S. fusion sectors.

Civil construction is largely complete at the ITER site in France, and machine assembly is underway. Photo: ITER Organization/EJF Riche



Fusion reactions power the sun and the stars. Developing fusion on earth is part of the next generation of nuclear power. Photo: Getty Images

“Fusion could yield abundant baseload energy, support energy security, and enhance U.S. technology leadership.”

Return on investment

For contributing 9.09% of construction and 13% of operations, the United States receives 100% of ITER science and intellectual discovery.

Status

Assembly of ITER is now well underway, and the United States continues to deliver essential hardware.

When first research operations begin in 2034, ITER will break new ground immediately through demonstration of new physics regimes at reactor scale, even before the achievement of a sustained fusion power source.

Contact

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ITER is advancing

- Tools for plasma control
- Superconducting magnets
- Plasma heating
- Fueling
- Fusion power handling
- Tritium processing
- Diagnostics for extreme environments
- Vacuum technology
- Remote handling
- Fusion materials

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U.S. participation in ITER was authorized by the Energy Policy Act of 2005. In 2006, the United States signed the Agreement on the Establishment of the ITER Fusion Energy Organization for the Joint Implementation of the ITER Project, a Congressional-executive international agreement, along with partners the European Union (project host), the Republic of India, Japan, the People's Republic of China, the Republic of Korea, and the Russian Federation.

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