



SUBSCRIBE AND SAVE 77%

Home | ITER: The way to a benign and limitless new energy source

ITER: The way to a benign and limitless new energy source

The contents of this page were originally published as a poster in the 17 October 2009 issue of New Scientist magazine. The poster was produced by New Scientist in association with ITER. You can also download the poster as a 5Mb PDF file.

Since the 1930s, thousands of scientists have been inspired by the sight of billions and billions of fusion furnaces – stars, like our own sun – that flare across the heavens, releasing vast amounts of light and energy.

ITER is the latest experiment to tap fusion power, and its name means "the way" in Latin.

The hope is that fusion could solve our energy needs by generating electricity from water, with no carbon dioxide emissions during operation and with relatively little nuclear waste.

ITER

ITER: How it works



By Roger Highfield, Valerie Jamieson, Neil Calder and Robert AmrouxIt's simple – in principle, at least. Take two forms (isotopes) of hydrogen, squash them together, and you get a helium atom and a very energetic subatomic particle called a neutron. The product of the reaction is a fraction lighter than its atomic ingredients, and by [...]

THE HISTORY

HOW IT WORKS

A step-by-step guide to producing nuclear fusion



ITER aims to tap the immense power of nuclear fusion. Find out how it will do so with this step-by-step graphical explanation

TOP TOKAMAKS

Joint European Torus (JET) in Culham, United Kingdom (in operation since 1983)

On 9 November 1991, JET achieved between 1.5 and 2 megawatts of fusion power – the first time a significant amount of power was obtained from controlled nuclear fusion. In 1997, JET established the current world record for fusion power of 16 MW for a limited duration and 5 MW for 5 seconds.

JT-60 in Naka, Ibaraki prefecture, Japan (1985)

In 1997, JT-60 set a world record for plasma temperature, density and confinement time.

T-15 in Moscow, Russia (1988)

T-15 is a Russian superconducting tokamak that operated until 1995. It is being upgraded to conduct fusion research to support the ITER and DEMO projects.

ADITYA at the Institute for Plasma Research in Gujrat, India (1989)