Menu

Search



Tokamak Cooling Water System

The US is responsible for 100% of the design, engineering, and procurement of the Tokamak Cooling Water System (TCWS).

ITER's fusion power will reach 500 MW during the deuterium-tritium inductive plasma operation with an energy input of only 50 MW, yielding an energy multiplication factor of 10. Heat will be transferred by the Tokamak Cooling Water System from client systems to the environment through the secondary cooling system. TCWS is designed to cool client systems, such as the firstwall/blanket, vacuum vessel, divertor, and neutral beam injector. Additional operations include baking of in-vessel components, chemical control of water provided to client systems, draining and drying for maintenance, and leak detection/localization.

For more information, contact Duke Hughes, US ITER Project Office Tokamak Cooling Water System Team Leader, Oak RIdge National Laboratory, hughesdd@ornl.gov | 865-241-3176

Fact Sheet

Tokamak Cooling Water System



Global team yields efficiencies for tokamak cooling water procurement

A joint TCWS Project Team—composed of staff from the ITER Organization and the US ITER Project Office—is making strong progress in the procurement of the tokamak cooling water system (TCWS).

July 8, 2019

Source: ITER Newsline



First US Components Installed in Tokamak Complex

Three drain tanks were the first US-supplied components installed in the ITER tokamak complex.

August 20, 2018



https://www.usiter.org/us-hardware/tokamak-cooling-water-system



Tokamak Cooling Water System Final Design Achieved

To remove the heat from the components closest to the plasma, the tokamak cooling water system will rely on over 36 kilometres of nuclear-grade piping and fittings as well as a large number supports, valves, pumps, heat exchangers and tanks—all integrated into the limited space of the Tokamak Complex. The final design review was held successfully held in November 2017 for the elements that need to be in place by First Plasma.

January 22, 2018

Source: ITER Newsline



Instrumentation and Controls Design Progresses for First Plasma

The I&C team has completed a number of design achievements in preparation of First Plasma deliveries, including: Ion Cyclotron Heating (RF Bldg.) I&C First Plasma Final Design Review (December 2017), Tokamak Cooling Water System I&C First Plasma Final Design Review (November 2017), Vacuum Auxiliary System (03) Conceptual Design Review (July 2017) and Roughing Pumps System I&C Conceptual Design Review (April 2017).

December 15, 2017



35km of Cooling Water Piping in Fabrication

Building a Sun on Earth requires not only extensive heating systems but also large cooling systems for the removal of plasma heat from the tokamak. Fabrication of tokamak cooling water system piping is now underway at Schulz Xtruded Products in Robinsville and Hernando, Mississippi (US), with management oversight by the US Domestic Agency and the ITER Organization.

March 6, 2017

Source: ITER Newsline



https://www.usiter.org/us-hardware/tokamak-cooling-water-system



US delivers multiple "firsts" for ITER site

US ITER is ramping up hardware deliveries to Europe. In January, the United-States delivered its first batch of production conductor for the super-conducting toroidal field magnet system; the US also completed delivery of the first highly exceptional load, a massive high voltage transformer for the steady state electrical system, to the ITER site. In March, the first components of the tokamak cooling water system, two large drain tanks, were shipped from Camden, N.J. for delivery to the ITER site.

March 19, 2015

US fabrication of early delivery components for ITER advances

"Neutronics" at Wisconsin, ORNL advances ITER shielding and international collaboration

Subscribe to Tokamak Cooling Water System



US ITER Project Office • 1055 Commerce Park • Oak Ridge, Tennessee 37830-6483

Tokamak Cooling Water System | US ITER







Ξ





Webmaster

Accessibility/508 Privacy Nondiscrimination/1557