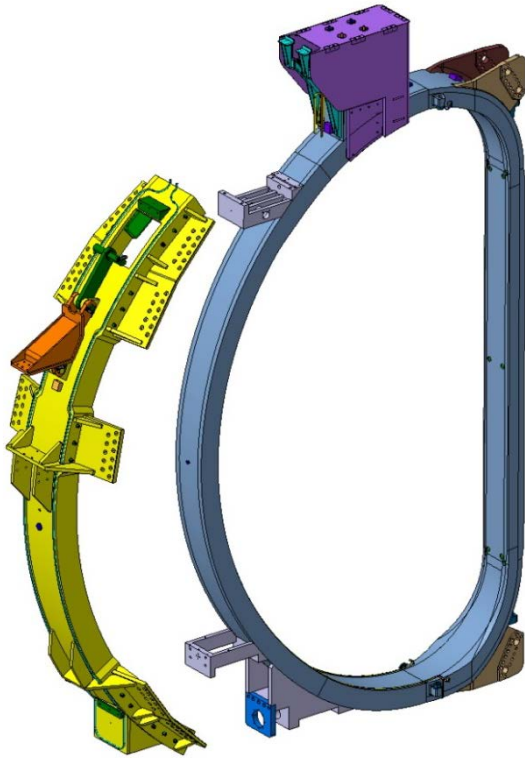
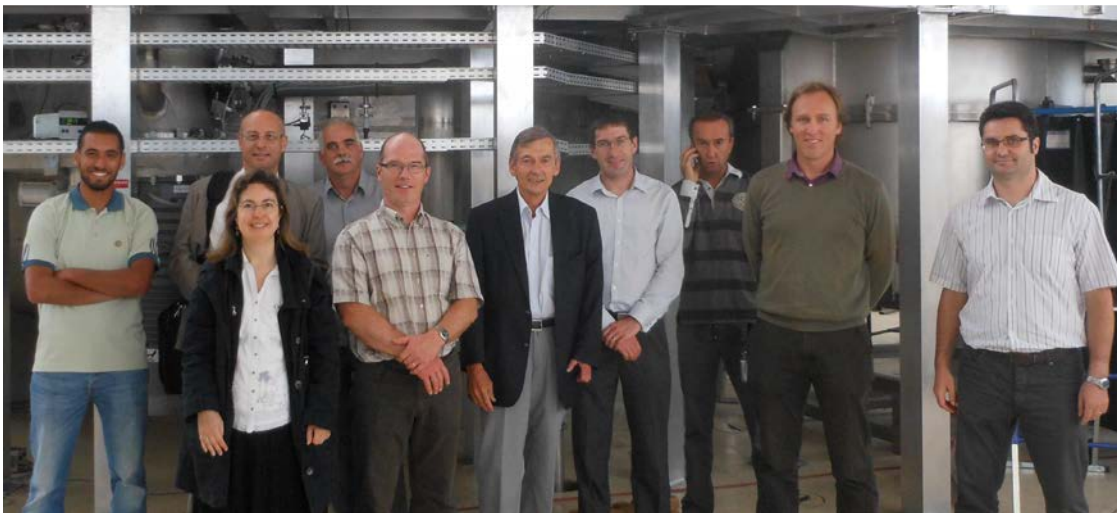


Headline

TF coil pre-assembly PA signed



The OIS (left) must be fitted around the curved outer leg of each TF coil (right)



CEA pre-assembly team and F4E staff at the cold test facility during a recent on-site meeting to discuss the pre-assembly process

The supply chain for the JT-60SA toroidal field (TF) coils is particularly complicated, with responsibility for manufacturing, testing and transportation shared between F4E, CEA and ENEA. Fabrication of superconducting cable, conductor, coil casings and coil support structures as well as coil winding and coil testing are all carried out by different organisations. All these processes must respect not only strict technical requirements of the magnet, but the schedule too!

The final piece in this complicated organisational jigsaw is the pre-assembly of each TF coil with its outer intercoil structure (OIS). Previously it was planned for F4E to perform this work on site in Naka, but now it will be done on their behalf by CEA at Saclay in France (near Paris). All of the TF coils will be carried there for cold testing at 4K after manufacturing, so it made sense for F4E and CEA to strike a deal.

After cold testing, CEA will move each coil to an adjacent building, fit the OIS around the outside of it and put them together for shipment to Japan by F4E. After final assembly in the tokamak, the OIS will form a rigid frame around the TF magnet able to withstand the electromagnetic forces generated when the magnetic field from the plasma and the equilibrium field coils cross the TF coil current.

Although the pre-assembly process itself is straightforward, the components are large, heavy and delicate and they need to be carefully aligned. Each of the 18 TF coils is 8.5 m long and weighs 19 t, while each OIS is 6.5 m long and weighs 5.7 t. Any damage requiring re-testing would cause serious schedule delays, so every operation must be carefully planned.

A successful design review on 6th February agreed the Procurement Arrangement (PA) text and associated technical specification and the signature process for the PA was completed on 6 June. Now CEA is preparing the necessary space and staff and the finer technical details of the pre-assembly will be agreed to allow special jigs and tools to be ordered to lift, move and align the components. Agreeing how to package the components together is also critical.

So when visiting Saclay in November, besides seeing the cold test facility sharp-eyed TCM-21 participants may also be able to spot some preparations for TF coil pre-assembly!

News

EF coil manufacturing restarted



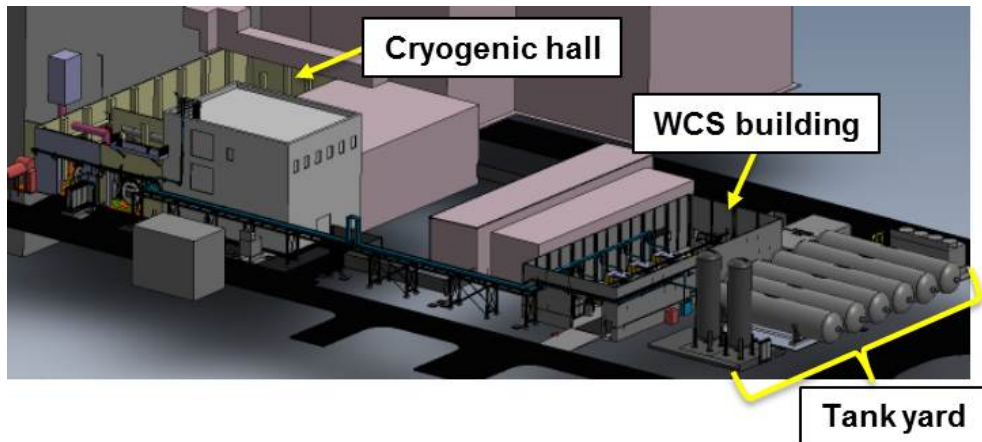
Press-cure tool assembly for EF2

A few months after the temporary installation of the completed lower equilibrium field coils (EF4, EF5 and EF6) on the cryostat base, the manufacture of the three remaining EF coils (EF1, EF2 and EF3), to be installed in the upper section of JT-60SA, has been restarted with the assembly of the press-cure jigs (turntables) on which the EF1 and EF2 coils are set to be wound (see figure).

In addition, the fabrication of the superconducting conductors is also in progress, with half of the required amount completed to date.

News

On-site preparations for cryogenic system started



Cryogenic system overview

The cryogenic system manufacturing is progressing well in Europe. In parallel with the manufacturing, the preparation of the Naka site and buildings to accommodate the components has been started.



Construction site for cryogenic system facility

As a first step, the construction of the warm compressor station (WCS) building, tank yard and cryogenic hall were started in July 2014. The work involves the pouring of a concrete foundation slab as well as foundations for the warm helium storage tanks, nitrogen tanks and cooling tower. The construction works will be completed in February 2015 in time for the very first delivery of the cryogenic system components.

News

VV assembly progressing well

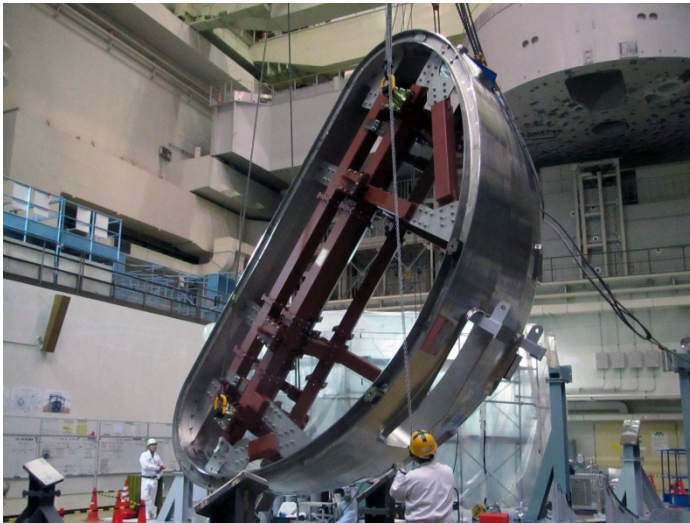


Figure 1: VV-D01 being raised to vertical

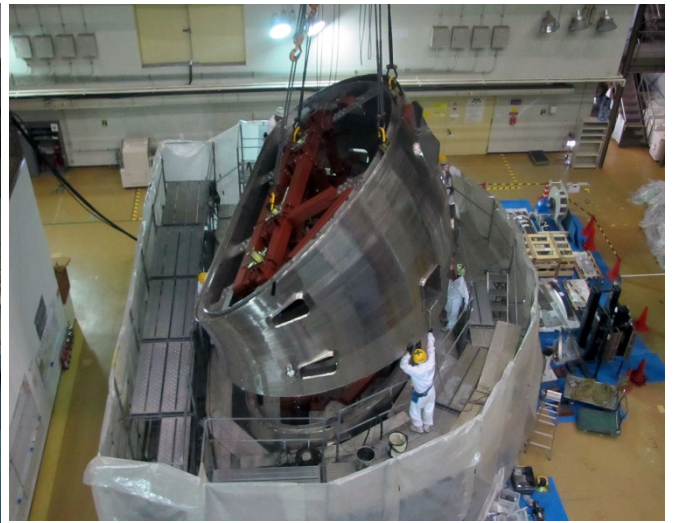


Figure 2: Temporary joining of VV-D01 and D07

After the installation of the vacuum vessel (VV) 40° sectors VV-D03 and VV-D04, their positions were checked using a laser tracker and adjusted to the appropriate installation position. A scaffold for the welding work access was assembled and the direct-joint welding of the first mating sectors was started at the end of July.

In parallel with the preparation of the welding, the end face correction of the next pair of VV sectors (VV-D01 and VV-D07) for direct-joint welding is being performed. The end face of VV-D01 was measured in the vertical position using a theodolite in order to define the VV centre (Figure 1), followed by VV-D07. The end face correction of the two sectors started after the check of alignment by temporarily joining them together (Figure 2).

News

JT-60SA is proud of its contributors



Panels hung on the wall in the JT-60 entrance hall

The fabrication of components of JT-60SA facilities and their assembly work are being steadily carried out and strongly supported by European and Japanese organisations, institutes, and companies. Without their strenuous efforts, the success of the Satellite Tokamak Programme project would be impossible. In order to commend their hard work and continuous development of the project, panels of the key contributors for JT-60SA construction have been set up in the JT-60 entrance hall (see figure). They are currently as follows.

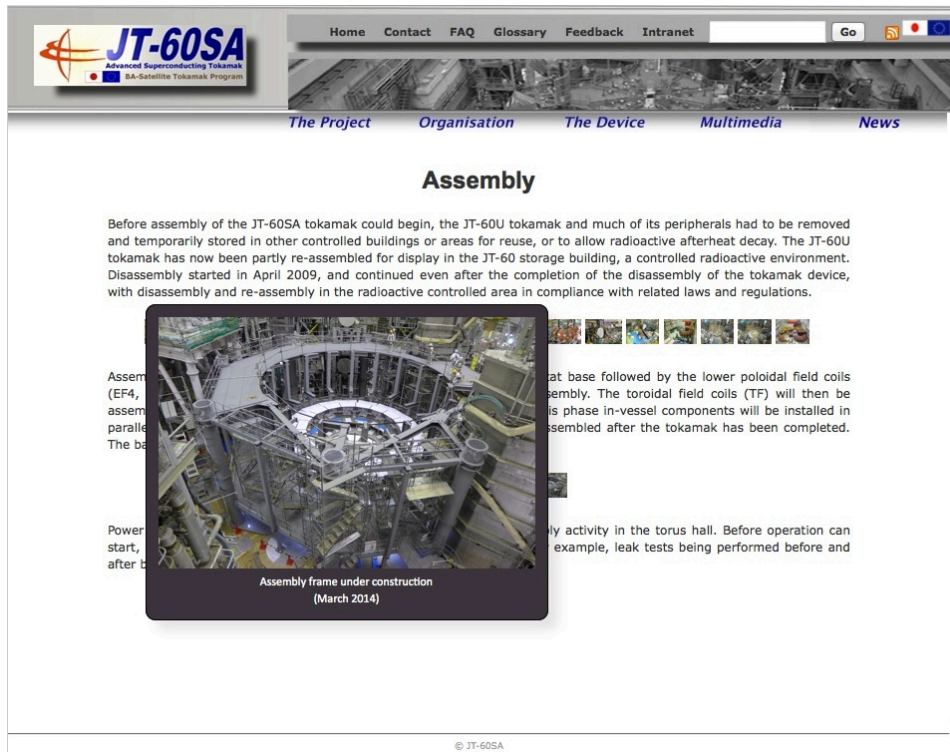
Japan Atomic Energy Agency (JAEA)
Fusion for Energy (F4E)
Hitachi, Ltd.
Mitsubishi Electric Corporation
Toshiba Corporation
Commissariat à l'Énergie Atomique (CEA)
Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (ENEA)
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (Ciemat)
Metal Technology Co., Ltd. (MTC)
Hitachi Power Solutions Co., Ltd.
Furukawa Electric Co., Ltd.
Consorzio RFX
Karlsruhe Institut für Technologie (KIT)

ALLOY Corporation
Toyo Tanso Co., Ltd.
Nippon Advanced Technology Co., Ltd. (NAT)
ALSTOM
Jema Energy S.A.
AIR LIQUIDE
Hitachi Chemical Co., Ltd.
Kawasaki Heavy Industries, Ltd.
IRIE KOKEN Co., Ltd.
ALSYOM
SDMS
Ingeniería y Diseño Europeo S.A. (IDESIA)
Kusakabe Electric & Machinery Co., Ltd.
Fuji Electric Co., Ltd.
Furukawa C&B Co., Ltd.
OCEM
A Silva Matos Metalomecânica S.A.
Italian Consortium for Applied Superconductivity (ICAS)
Hitachi Transport System, Ltd.
ARGO GRAPHICS Inc.
IBIDEN Co., Ltd.
POSEICO S.p.A.
Nidec ASI S.p.A.
KIND GmbH
Kobe Special Tube, Co., Ltd.
Okazaki Manufacturing Company
MTT Corporation
ASG Superconductors S.p.A.
Walter Tosto S.p.A.
Asturfeito, S.p.A.
Nuclear Engineering, Ltd. (NE)

Please check them out when you visit the JAEA Naka Fusion Institute.

News

JT-60SA Public Web Site updated



At the beginning of July the public web site of JT-60SA was updated to include a number of navigational improvements, pop-up pictures of the progress with component manufacture and assembly, and to mark the change in Project Leader, as well as generally to bring the existing site text and pictures up to date. This is the first major update to the web site since December 2011.

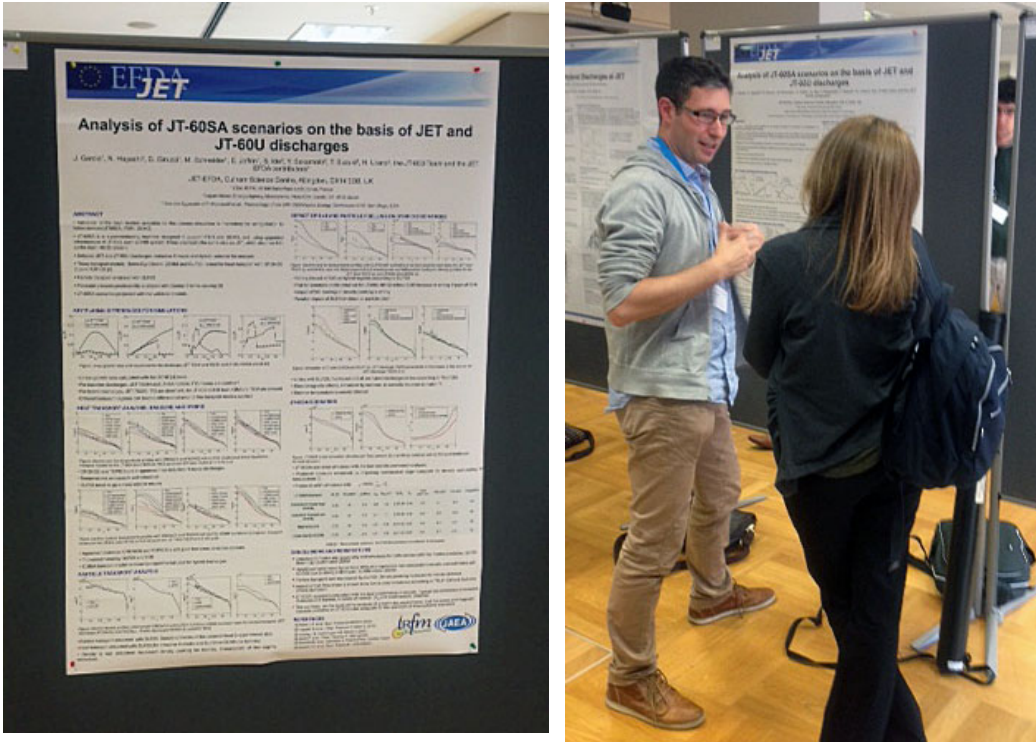
The challenge with advanced features such as popup pictures with captions is to give a good user experience irrespective of the browser or platform being used, while maintaining functionality, like the one-click ability to download the highest resolution pictures. Tablet devices add an additional dimension to be catered for, with touch and tap replacing mouse movement. Often the only code working on one device does not work at all on other devices or browsers, and this adds to the challenge to make the most compact code.

After some initial teething troubles during the changeover, not seen by most users, the site is now working well on all systems tested - unless of course your system proves different, in which case please let us know!

As the project evolves further, manufacturing and assembly progress will continue to be incorporated into the device description pages.

Meetings

41st European Physical Society Conference on Plasma Physics



The 41st European Physical Society Conference on Plasma Physics was held in Berlin, Germany on 23-27 June. During this conference, J. Garcia from CEA/Cadarache presented a poster on "Analysis of JT-60SA scenarios on the basis of JET and JT-60U discharges", performed in collaboration with JAEA, aiming at establishing a basis for future JT-60SA scenario simulations. Integrated modelling simulations, carried out with both the CRONOS and the TOPICS codes, were presented, using various transport models validated by selected JT-60U and JET discharges. The presentation attracted many participants and was well received.

Calendar

September 26 - October 3, 2014
28th Symposium on Fusion Technology (SOFT-28)
San Sebastian, Spain

October 7, 2014
15th Meeting of the STP Project Committee (PC-15)
Naka, Japan

October 13-18, 2014
25th Fusion Energy Conference (FEC 2014)
Saint Petersburg, Russia

November 4, 2014
15th Meeting of the BA Steering Committee (SC-15)
Karlsruhe, Germany

November 12-13, 2014
21st Technical Coordination Meeting (TCM-21)
Saclay, France

Contact Us

The JT-60SA Newsletter is released monthly by the JT-60SA Project Team.
Suggestions and comments are welcome and can be sent to newsletter@jt60sa.org.

For more information please visit the website: <http://www.jt60sa.org/>