JT-60SA Newsletter
No. 107, January 2019

Headline

VIPs visit QST Naka site

Ms. S. Günter (second from left) and Mr. J. Schwemmer (second from right)

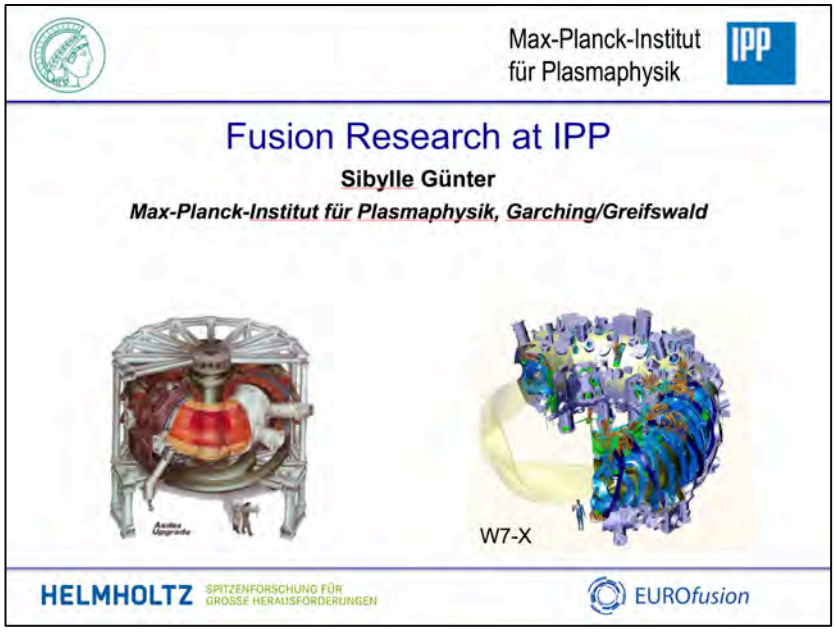
On 8–9 January 2019, Mr. J. Schwemmer (Director of F4E, Spain) and Ms. S. Günter (Scientific Director, Max-Planck-Institute for Plasma Physics (IPP), Germany) visited the QST Naka site to see the progress of JT-60SA construction.

Representatives of QST explained the JT-60SA status of assembly and commissioning, and then took them on a tour of the JT-60SA device, including the JT-60 storage building, N-NB power supply building, JT-60 main building, rectifier building, cryogenic hall, and so on.

On 9 January, Prof. Dr. S. Günter was invited to the Large Tokamak Seminar hosted by Naka Fusion Institute.

She gave an overview presentation entitled “Fusion Research at IPP”. IPP is the largest national centre for fusion research worldwide. The tokamak device “ASDEX upgrade” in Garching and the stellarator device “Wendelstein 7-X” in Greifswald were installed and have been operating for fusion energy research. She explained the present status of both devices related to their experimental results, modelling, improvement of hardware, joint exploitation, and so on.

The audience listened to her talk with great interest. After her talk, discussions on future collaboration were held with QST specialists in each field.



S. Günter making her presentation entitled 'Fusion Research at IPP'

News

JT-60SA torus peripheral components installed

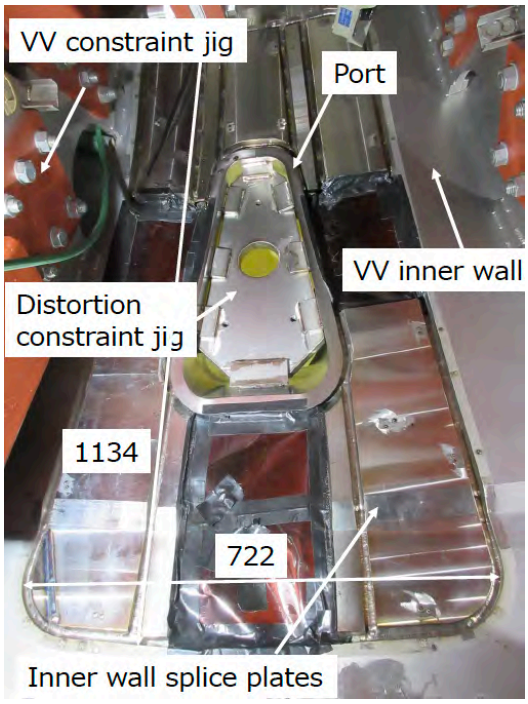


Figure 1: P18 lower port frame

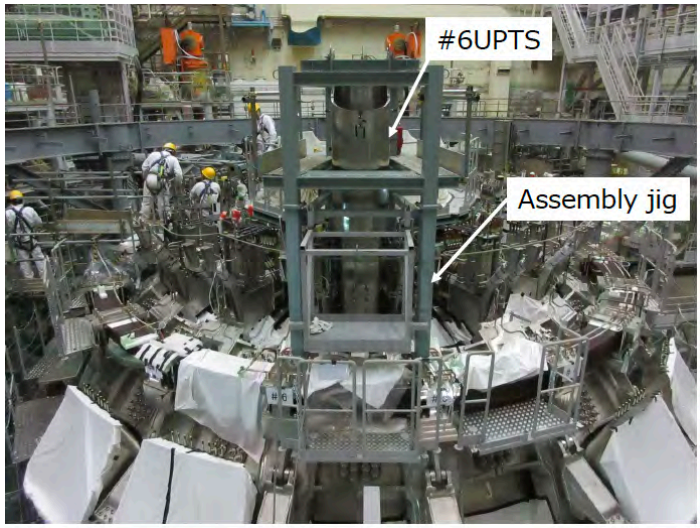


Figure 2: Assembly of UPTSs

In addition to the installation of the port frames of the vacuum vessel (VV) final sector, horizontal port thermal shields (HPTSs), and in-vessel components, described last month, the installation of the upper port thermal shields (UPTSs) has now started. The outer wall of the port frames of the VV final sector was welded and then the inner wall was welded. For welding, constraint jigs were arranged around the port frames to prevent weld distortion (Figure 1). The inner wall of all six port frames has now been welded.

The installation of all 18 HPTSs has also been completed.

The assembly jig for the UPTSs has recently been manufactured (Figure 2). The jig keeps the UPTS vertical without the need for a crane. Workers can then access the UPTS using a scaffold connected to the jig. So far 6 out of 18 UPTSs have been installed.

For the installation of the in-vessel components, in addition to the installation of the one-turn loop coils, a start has been made on installing the pedestal for the inner first wall.

In addition to the above, drilling processing of the outer intercoil structures (OISs) integrated with the TF coil cases has been finished by JA to help the subsequent work that EU is in charge of.

News

Cryostat thermal shields being manufactured

Figure 1: One cryostat middle TS manufactured

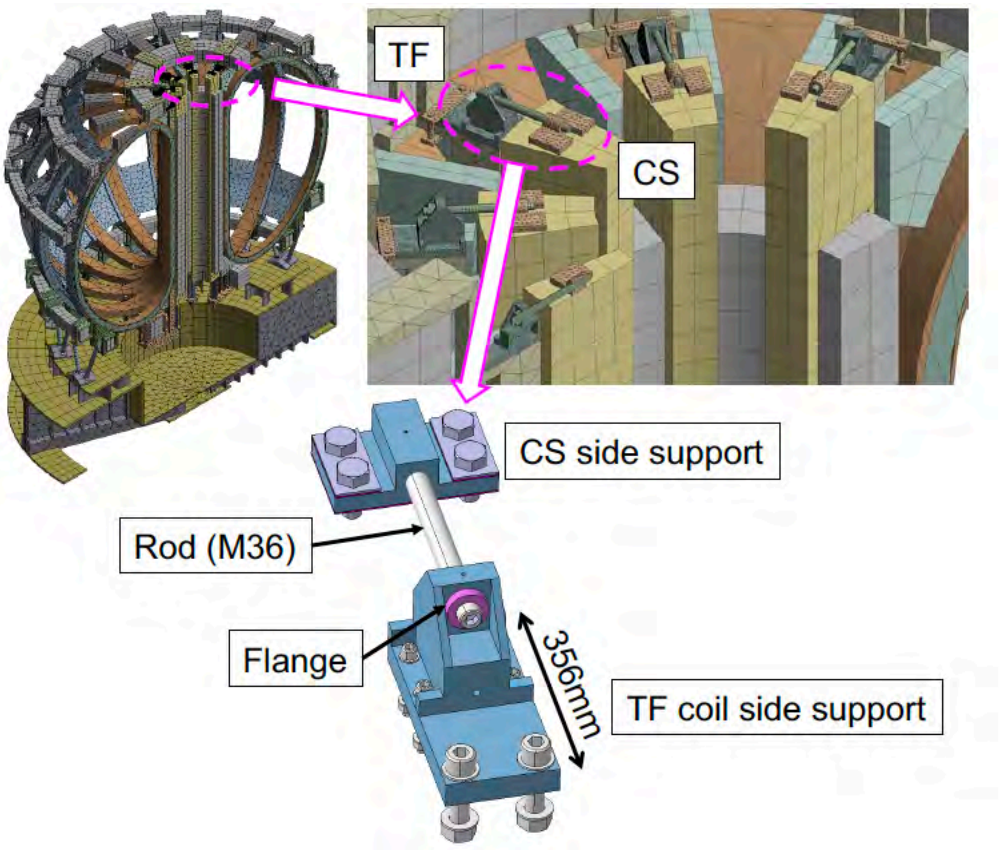
Figure 2: 17 out of 18 cryostat middle TSs manufactured

The cryostat thermal shields (TS) above and below the torus mid-plane have recently been in manufacture and by January 2019 (Figure 1) 17 out of 18 cryostat TSs have been completed (Figure 2).

For the cryostat thermal shields for the upper torus region by January 2019 14 out of 18 cryostat TSs have been manufactured. The manufacturing of all the thermal shields is progressing as scheduled.

News

CS vibration damper developed



CS vibration damper

A vibration damper for the central solenoid (CS) has been designed and manufactured.

As shown in the figure, the vibration dampers are arranged in a ring in nine places in the upper part of the inboard side of the toroidal field (TF) coils and the upper part of the CS.

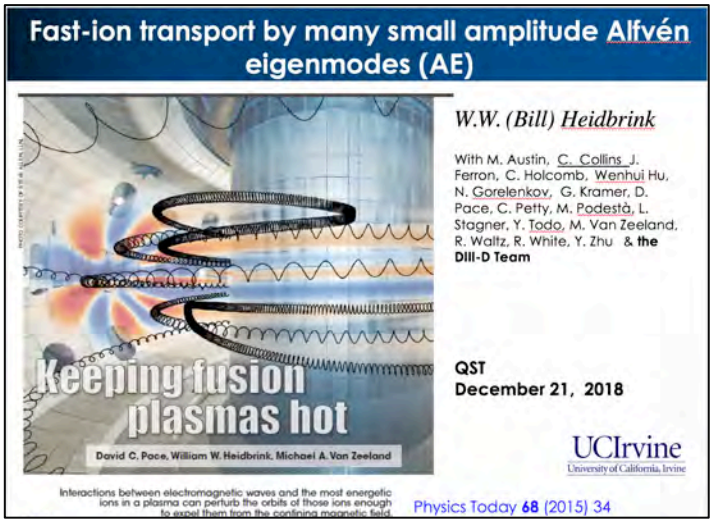
The vibration damper is an M36 rod made of stainless steel type SUS316LN connecting the CS and the TF coil, with a flange (stopper) at the end of the rod.

With this structure, if the CS is displaced ≥2 mm from the TF coil, the stopper acts and prevents further displacement. The maximum stress generated on the stopper and rod is 265 Mpa, less than the permissible value (294 Mpa).

The manufacturing of the vibration dampers of the CS was completed in December 2018 and they have been delivered to the QST Naka site. The vibration dampers will be installed on the CS after April 2019 when the assembly of the CS is completed.

News

W.W. Heidbrink visits QST Naka site



W.W. Heidbrink making his presentation entitled ‘Fast-ion transport by many small amplitude Alfven eigenmodes’

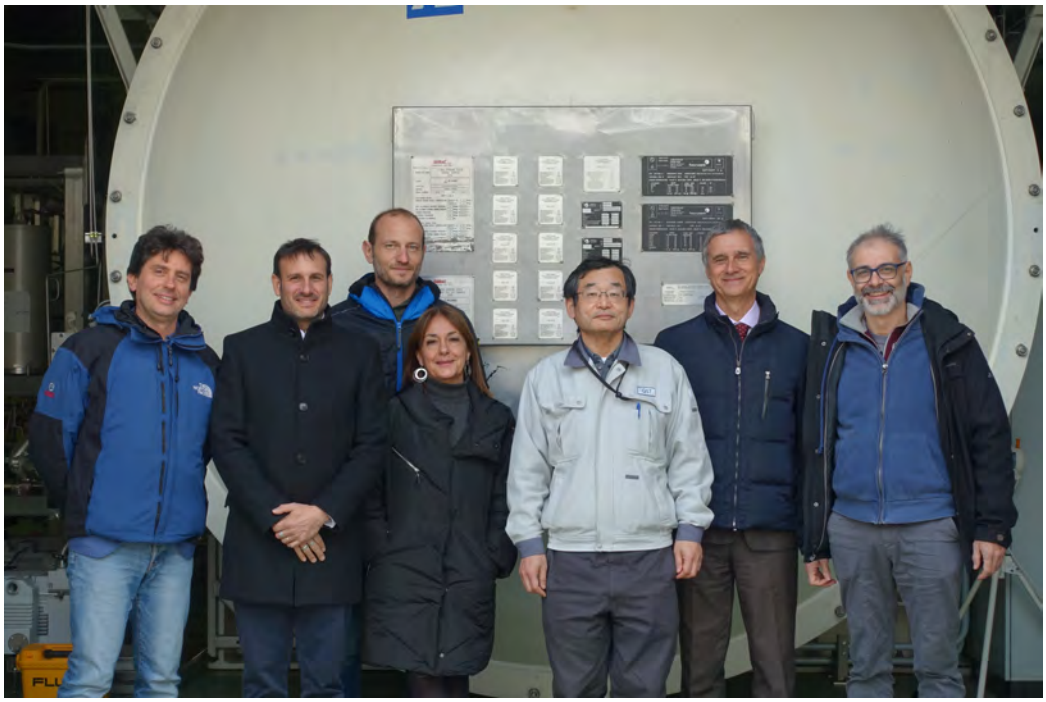
Prof. W.W. Heidbrink (University of California, Irvine, USA) visited the QST Naka site on 21 December 2018. He was invited to the Large Tokamak Seminar hosted by Naka Fusion Institute.

He gave a presentation entitled “Fast-ion transport by many small amplitude Alfven eigenmodes”. To manage fusion-product transport in future devices, control of phase-space gradients and flows will likely be required. In this lecture, after a brief introduction to fast ions and Alfven eigenmodes, he explained (1) how fast-ion flows in different parts of phase space are measured, (2) what fast-ion transport is measured in the DIII-D tokamak when there are many small-amplitude Alfven eigenmodes, (3) why the observed transport has a threshold in Alfven eigenmode amplitude, and (4) how it is planned to use this understanding to improve performance in DIII-D and future devices. The audience were interested in his talk and asked many questions.

He toured the JT-60SA facilities, and then discussed possible areas of collaboration with JT-60SA.

News

ENEA experts visit QST Naka site

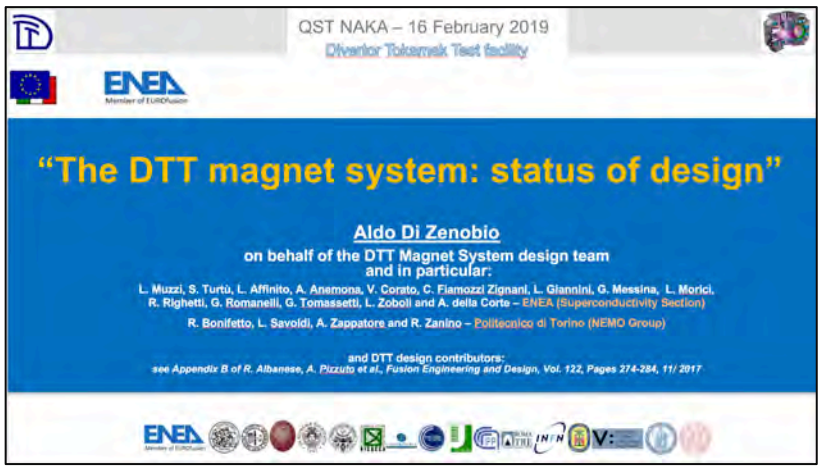


Group photo in front of the refrigeration cold box in the JT-60SA cryogenic hall. From left to right: Mr. A.D. Zenobio (ENEA), Mr. L. Muzzi (ENEA), Mr. A. Anemona (ICAS S.c.r.l), Ms. S. Turtu (ENEA), Mr. T. Isono (QST), Mr. A.D. Corte (ENEA), and Mr. L. Affinito (ENEA)

On 16 January 2019, five ENEA and one ICAS S.c.r.l exeprts (Figure) visited the QST Naka site to see the progress of JT-60SA construction. The representatives of QST explained the JT-60SA status of assembly and commissioning, and then took them on a tour of the JT-60SA device, including the JT-60SA cryogenic hall, JT-60 main building, engineering experiment building, and so on.

Dr. A.D. Zenobio was invited to the Large Tokamak Seminar hosted by Naka Fusion Institute.

He made a presentation entitled “The DTT (Divertor Tokamak Test facility) magnet system: status of design”. An overview of the current design and procurement status of the superconducting magnet system on the DTT was given. The audience were interested in his talk and asked many questions.



A.D. Zenobio making his presentation entitled ‘The DTT magnet system: status of design’

Meeting

23rd BA Steering Committee Meeting

Group photo of BASC

On 5 December 2018, the 23rd Broader Approach Steering Committee (BASC) meeting was held in Grenoble, France with attendance of representatives and experts from Europe and Japan. In the meeting, the Project Plan and Work Programme 2019 of the three projects (IFMIF/EVEDA, IFERC and the Satellite Tokamak Programme (STP)) implemented under the Broader Approach Agreement were submitted and approved.

Concerning the STP Project, the Project Leader (PL), Y. Kamada, mentioned that since the last SC the project has achieved steady progress in both EU and JA procurements in manufacturing, delivery, assembly and commissioning activities on time toward the completion of tokamak assembly.

The next BASC meeting will be held in Rokkasho, Japan on 11 April 2019.

Calendar

5–7 March 2019
32nd Technical Coordination Meeting (TCM-32)
Padua, Italy

13 March 2019
24th Meeting of the STP Project Committee (PC-24)
Naka, Japan

11 April 2019
24th Meeting of the BA Steering Committee (SC-24)
Rokkasho, Japan

2–6 June 2019
28th IEEE Symposium on Fusion Engineering (SOFE 2019)
Georgia, USA

22–27 September 2019
14th International Symposium on Fusion Nuclear Technology (ISFNT-14)
Budapest, Hungary

Contact Us

The JT-60 Newsletter is released monthly by the JT-60SA Project Team.

Suggestions and comments are welcome and can be sent to newsletter@jt60sa.org.