

Headline

VIPs visits QST Naka site

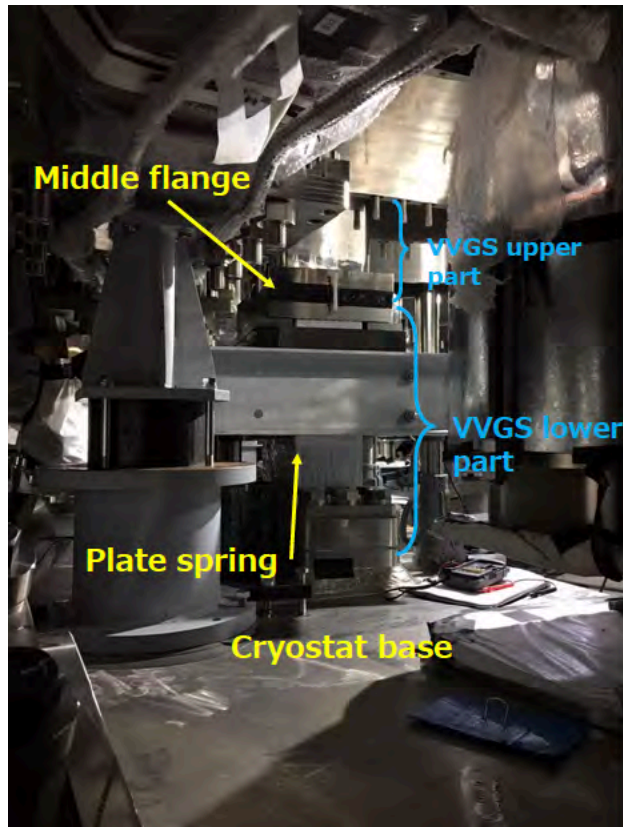


Group Photo taken in the JT-60SA torus hall with Ms. Keiko Nagaoka, State Minister of MEXT (front row fourth from right)

Ms. Keiko Nagaoka, State Minister of Education, Culture, Sports, Science and Technology (MEXT), visited the QST Naka site on 24 January to inspect the progress of the JT-60SA construction, which has been supported by the collaboration between Europe and Japan. She was accompanied by five Education Ministry officials.

Six representatives of QST—Toshio Hirano (President of QST), Kenkichi Ushigusa (Managing Director of the Fusion Energy Research and Development Directorate of QST) and Kenichi Kurihara (Director General of Naka Fusion Institute)—welcomed them and took them on a tour of the present JT-60SA device and upgraded inverter building.

JT-60SA torus peripheral components installed



In addition to the installation of the port frames of the vacuum vessel (VV) final sector, upper port thermal shields (UPTSs) and in-vessel components, the final positioning of the VV has been carried out.

As for the port frames of the VV final sector, radiographic tests have been carried out at a total of 127 places in the all-welded parts of the six vertical and horizontal port frames. This has completed all the work to install the port frames.

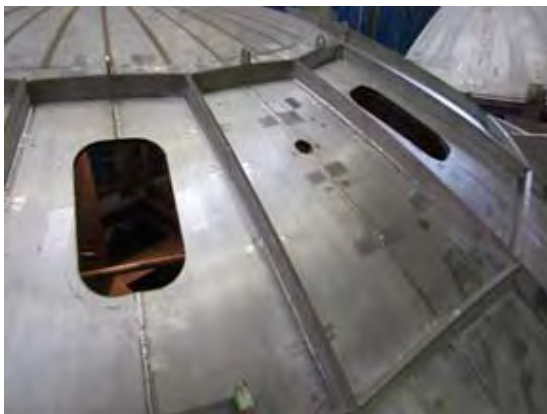
One UPTS has been newly installed and 7 out of 18 UPTSs have been assembled.

For the in-vessel components, the installation of one-turn loop coils and the pedestal for the inner first wall has been continued.

For the final positioning of the VV (see figure), the gravity support (GS) with its two-stage structure (VV–middle flange and middle flange–cryostat base) has been installed with thin shim plates to adjust its position. The tolerance of the height of the VV centre after the installation of the GS was within the range from -0.3 mm to +1.2 mm, well within the design requirement (± 5 mm).

Vacuum vessel gravity support

Cryostat top lid being manufactured



The cryostat top lid in JT-60SA is being manufactured at the factory in two 180° modules. They will be transported to the QST Naka site and integrated in the assembly hall. For the first module, following the welding of the reinforcing ribs, boring of the opening for the upper port has been carried out.

Distortion is caused by the welding of the reinforcing ribs in the spherical shell part, which would contribute to a reduction in the height of the top lid. This will be compensated by a flange planned to be installed on the outer circumference of the top lid.

The reinforcing ribs and stiffening rings have been welded to the second module and its manufacturing is progressing steadily.

Port opening in spherical shell part of cryostat top lid

CEA SCMPs PA Ceremony



Signature at Saclay



Signature at Naka



Toast at Saclay

On 22 January 2019, CEA transferred to F4E and simultaneously F4E transferred to QST the ownership of the five power supplies for the TF as well as EF2, EF3, EF4 and EF5 superconducting magnets, which is the last part of the French contribution to the JT-60SA project construction.

On this occasion, a short ceremony gathering the senior representatives of the parties (QST, F4E, CEA and JEMA) was organised by video-conference between CEA Saclay, F4E Garching and QST Naka, including Project Leaders, Project Managers and Technical Responsible Officers under the patronage of Bernard Salanon, CEA's senior representative for fusion activities.

All participants had the opportunity to express their great satisfaction with the success of this joint enterprise started more than 10 years ago and managed in a strong spirit of mutual understanding, efficient collaboration and friendship.

The high quality of the transferred power supplies and of their technical documentation as testified by the skill of the manufacturer (JEMA), the full power factory tests performed in Spain under the tight control of CEA and F4E, and finally the on-site acceptance tests performed in Naka under the supervision of the QST team, was emphasised by every Technical Responsible Officer. These power supplies, part of a coherent set of components, have fulfilled the most stringent requirements and are now ready for the preparation of the integrated commissioning and for the successful start-up of JT-60SA.

As a concluding remark, Bernard Salanon recalled the long road covered since 2006 and the implementation of the Broader Approach agreement and how it has fostered the collaboration and friendship between France, EU, and Japan. He also expressed the wish that beyond the closure of the French commitments taken in the framework of the Broader Approach for JT-60SA construction, a new way of collaboration for the operation and scientific exploitation of JT-60SA can be found.

All this being said and well said, the time came for enjoying some green tea or champagne according to local traditions!

ENEA experts visit QST Naka site



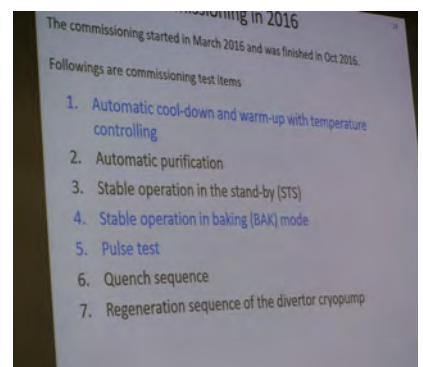
Group Photo in front of the JT-60SA key contributor panels

From left to right: Mr. M. Hanada (QST), Mr. K. Natsume (QST), Mr. A. Frattolillo (ENEA), Mr. G. Mazzitelli (ENEA) and Mr. T. Isono (QST)

Two ENEA experts, Mr. A. Frattolillo and Mr. G. Mazzitelli who are well versed in cryogenic systems for large devices visited the QST Naka site on 17 January 2019.

Mr. T. Isono of QST explained to them the JT-60SA cryogenic system which is almost completely installed. They discussed the detailed specifications.

After that, representatives of QST explained the JT-60SA status of the 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.



Explanation and discussion on the JT60SA cryogenic system

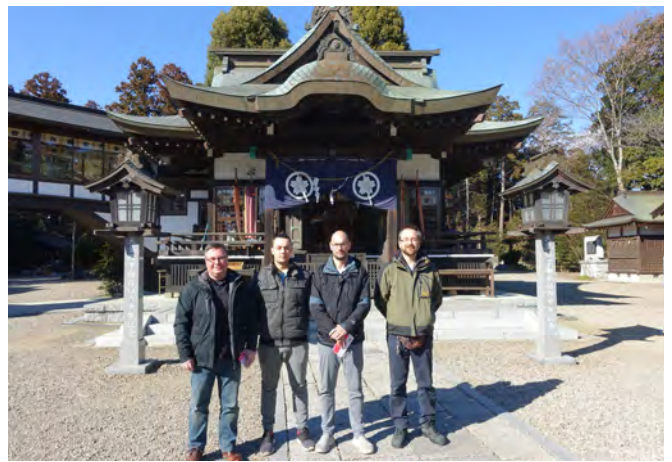
Praying for JT-60SA construction safety



Participants in New Year's ritual at Shizu Shrine



Priest reciting a Shinto prayer



European team members participated

The annual ritual of praying for safe JT-60SA construction was held at the Shizu Shrine in Naka, Japan on 21 January 2019. About 50 representatives including K. Ushigusa (Managing Director of the Fusion Energy Research and Development Directorate of QST), H. Takenaga (Head of Research Planning Office), JEMA engineers (to install SCMPs), and members of F4E and the contractors attended the ceremony. The ancient Japanese ceremony proceeded solemnly. First, the priest recited a Shinto prayer, and then the participants purified their mind and body with sacred wine or sake.

They prayed for the safe and steady progress towards the JT-60SA construction, which is coming to a close in 2019.

Meeting

1st DRM for MGI of JT-60SA



Participants in 1st DRM for MGI of JT-60SA

Massive Gas Injection (MGI) was chosen as the primary method for disruption mitigation for JT-60SA at the [fifth Research Coordination Meeting](#) (RCM-5) in Naka in 2016. The design of the MGI system has matured since then and the first Design Review Meeting (DRM) for MGI was held in February 2019 to agree the technical specifications. The meeting was attended by participants from QST, F4E and the EUROfusion consortium.

The system will be supplied by EUROfusion member IPP (Garching, Germany) under the leadership of Mathias Dibon. IPP will provide the in-vessel MGI valves, vacuum feedthroughs, gas preparation system and control electronics. The system will be installed during Maintenance & Enhancement period 1 in 2022.

The two MGI valves will be installed in toroidally opposite positions within the tokamak vacuum vessel. Thanks to their large internal gas reservoirs and short discharge pipes through the stabilizing plate, mitigation gas can reach the plasma extremely rapidly. Installation and maintenance are expected to be straightforward.

The system design at this point includes a detailed design of the MGI valves themselves and schematics of the gas preparation and control systems, as well as documentation on expected system performance, disruption loads and gas dynamics. By operating at up to 8.0 MPa, the system allows high experimental flexibility. A preparatory meeting with Ibaraki Prefectural staff held earlier in the week helped to optimise the design with regard to the High Pressure Gas Safety Law.

During the meeting, technical details such as testing procedures, scope sharing and overall quality assurance were discussed and several short-term actions were agreed.

Calendar

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

4–8 November 2019
3rd Asia-Pacific Conference on Plasma Physics (AAPPS-DPP2019)
Anhui, China

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.