JT-60SA Newsletter



Headline

First on-site meeting on quench protection circuit installation



Figure 1: Discussion during the QPC WSSM

The manufacturing and routine testing of the components of the thirteen units of <u>the quench protection circuit (QPC)</u> of JT-60SA, procured by the Italian National Research Council acting through Consorzio RFX by means of a contract awarded to Nidec ASI S.p.A. (formerly Ansaldo Sistemi Industriali S.p.A.) in 2010, have been recently completed. After the assembly of the sub-systems and the packaging, the units will soon be ready to be shipped to Japan. The arrival in Naka is expected in October 2014. The QPC units will be installed and commissioned there by Nidec ASI before performing the on-site acceptance tests.

The installation, commissioning and testing of the QPC represents the first occasion in which activities are directly performed by European personnel at the Naka site for JT-60SA. The related organisation, including safety-relevant issues, represents a new and important topic that is under preparation by all involved stakeholders.

The formal agreement detailing roles, responsibilities, terms and conditions for the QPC on-site activities was signed in December 2013, representing the reference document for the organisation.

On 13th March 2014 the Work Site Survey Meeting for the QPC took place at Naka, with the participation in person of representatives from JAEA, F4E, Consorzio RFX and Nidec ASI.

During the meeting the practical implementation of the requirements included in the formal agreement were discussed. The safety guidelines, including requirements about seismic events, and the training foreseen for European workers, were presented. The preliminary installation procedure for the QPC was discussed, in order to obtain an expected schedule of QPC installation and commissioning activities taking into account the interaction with other concurrent on-site work directly managed by JAEA (such as installation of bus-bars, cooling system, auxiliary power supply systems, ...).



Figure 2: Visiting the QPC installation area in the rectifier building

Finally the location of working areas, temporary storage places and offices were agreed during a visit to the installation area, giving the opportunity for Nidec ASI to get a clear picture of the area where the QPC will be installed.

Recognising that the installation of the QPC will be the first example of on-site activities for JT-60SA performed by a European supplier, and since there is no previous experience of a similar event, all those involved sought to reassure the others that this activity would be managed in the usual spirit of constructive and sincere cooperation.



Figure 3: Visiting the torus hall, where the lower equilibrium field coils, which will be protected by the QPC, are already located

News

The last 20° sector for VV delivered





Figure 1: Outboard segment being unloaded onto the base

Figure 2: Completed 20° sector

The outboard and inboard segments of the tenth 20° sector, the very last <u>vacuum vessel (VV)</u> sector manufactured, were delivered to the Naka site in March. The welding, and tests and inspections (ultrasonic test for outer wall welding, visual and dimensional inspections), were performed in the VV assembly building. After passing all the tests and inspections, the tenth 20° sector was completed as scheduled. This means that all the work of the VV sector manufacturing has now been completed.

After the completion of the <u>end face correction</u>, each sector will be erected on <u>the cryostat base</u> using the assembly frame, and welded to its neighbours.

<u>News</u>

Delivery of all VV port bellows completed





Figure 1: Delivered port bellows

Figure 2: Vacuum vessel port bellows

Since the JT-60SA Project Leader's <u>visit</u> to the manufacturer's factory, <u>the vacuum vessel (VV)</u> port bellows manufacturing had gone on as scheduled, and finally all the 57 bellows including two prototypes were delivered to the Naka site in March 2014 (Figure 1).

There are thirteen types of bellows and they will be welded to the VV in order to absorb thermal expansion and vibration of the VV, including seismic vibration (Figure 2). The ranges of the bellows size are 0.7 to 2.2 m in height, 0.3 to 1.0 m in width, and 0.3 to 0.6 m in length and they are made of SUS316L (low cobalt stainless steel).

<u>News</u>

Modification work for secondary cooling system completed



Figure 1: Cooling towers completely installed on the new base frames



Figure 2: Replaced pumps

As reported already <u>last month</u>, the modification work for <u>the secondary water cooling system</u>, which was started in 2012 with dismantling, was nearing completion, and was finally completed by the end of March 2014. The secondary water cooling system will be used for JT-60SA to remove heat of approx. 41 MW during a plasma discharge.

The construction work involved the modification and replacement of the base frame of the cooling tower, the installation of the cooling tower, and the replacement of the water treatment equipment and the pumps.

The connections are now being made to the control system and the pump piping system, which will be the interface between the cooling system and this peripheral equipment in the future.

Meetings

14th STP Project Committee Meeting



Figure 1: Group photo in the conference room

On 18 March, the 14th Meeting of the Satellite Tokamak Programme (STP) <u>Project Committee</u> (PC-14) was held by videoconference between EU and Japan. 32 participants in total joined the meeting: 5 members from the Project Committee, the Project Leader (PL), 4 Experts from the Project Team, and 22 experts from the EU and JA Home Teams (Figure. 1).

At the meeting, the PL overviewed the project status and presented the "Annual Report 2013" and "Project Plan", to be submitted to the Broader Approach Steering Committee to be held on 10 April, and the latest status of procurement and assembly was also reported in detail by the Project Managers of the EU and JA Home Teams. The PC members expressed their satisfaction for the progress in both EU and JA procurements and assembly activities.

In addition, before the meeting, some PC members who had come to the Naka site to join the meeting also visited the torus hall to see the actual progress of the assembly under EU and JA experts' guidance (Figure 2).





Figure 2: Visiting the torus hall

Meetings

Design Review Meeting for Magnet PS WCS first design report





The 19th Design Review Meeting on magnet power supply (DRM-MPS19) was held by videoconference on 28th March 2014 with attendance of 23 experts from Germany (F4E Garching), France (CEA), Italy (ENEA, Consorzio RFX) and Japan (JAEA Naka).

The purpose of the meeting was to agree the First Design Report (FDR) of the magnet power supply (PS) water cooling systems (MPS-WCS). During this meeting, JAEA made a presentation describing the FDR on behalf of the supplier of the MPS-WCS, explaining the main specifications, heat and water flow diagram, outline drawings and layout plan. The control system, fault recovery, factory and on-site tests, and overall schedule, were also presented. A number of details of the technical specification were discussed and many points were clarified including the operation of the two motorised valves, the recovery time for the pump fault, variation of the flow rate, overpressure protection, air vent valves, and connection flanges.

As a conclusion of the meeting, it was agreed that the revised documents of the FDR (English ver.) would be finalised for formal review and approval within the next two weeks.

<u>Local</u>

Hitachi Sakura Festival



Hitachi Furyumono © Hitachi City Tourism Association

From the beginning to the middle of April, the Hitachi Cherry Blossom Festival is held in Hitachi-city located 17 km to the northeast of the Naka site. Along the high street called "Heiwa" (meaning peace) Street, more than 100 cherry trees are planted and approx. 14,000 cherry blossoms are in full bloom every year. When the flowering season comes, the scenery is so magnificent that it is designated as one of the 100 most beautiful cherry blossom viewing spots of Japan.

One of the highlights of the Festival is called "Hitachi Furyumono", a huge float with five tiers on which a traditional Japanese puppet show is performed. The float is 15 m high and 8 m wide, and its front part is concealed by a large door. When the doors are opened to the left and right like extended wings, the puppet show begins. People can enjoy the beautiful cherry blossoms and the cultural heritage at the same time. Hitachi Furyumono was registered as a UNESCO "Intangible Cultural Heritage" site in 2009.

For more photos and information, please visit <u>Hitachi City Tourism Association</u>.





Cherry blossoms in full bloom © Hitachi City Tourism Association

Illuminated at night © Hitachi City Tourism Association

Calendar

May 26-30, 2014 21st International Conference on Plasma Surface Interactions (PSI-21) Kanazawa, Japan

June 4-5, 2014 20th Technical Coordination Meeting (TCM-20) Naka, Japan

June 23-27, 2014 <u>41st European Physical Society Conference on Plasma Physics</u> (EPS-CPP-41) Berlin, Germany

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

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

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 <u>hisato.kawashima@jt60sa.org</u>.

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