

Headline

Cryostat base final machining begins



Machining of a lower structure sector

Since [the last article](#) on the fabrication of [the Cryostat Base \(CB\)](#), the manufacturer IDESA (Ingeniería y Diseño Europeo S.A.), along with the main subcontractor for the machining, ASTURFEITO, have made significant progress.

The three sectors of the lower structure (LS) are already welded, and are now being machined in ASTURFEITO's workshop. IDESA has made partial dimensional inspections to ensure that the sectors are within tolerances, with enough material, where needed, for the machining. In theory, there is 10 mm extra material on the top and bottom side of the LS sectors. The same situation occurs with the connecting flanges between the LS sectors and those with the double ring (DR) sectors. Machining of the LS sectors began in mid-May. The progress on the machining will increase in speed with the experience gained on the positioning, measuring and machining.



Welding of a double ring sector



The Project Leader and staff from F4E and JAEA visit the IDESA factory

The double ring (DR) sectors are in the process of being welded, with a higher speed than that planned in the manufacturing schedule. One sector is almost finished, another one is well advanced and the third one with the main ribs is being welded. Machining of the first DR sector will be started on 10 July.

The inner cylinder (IC) is finished and ready for machining. To determine the exact machining references the IC must be positioned on the three LS sectors already assembled. The two ports of the IC will be welded after the machining of their corresponding openings. A helium leak test will be performed afterwards.

The conclusion is that the manufacturing of the cryostat base is progressing well according to the manufacturing schedule.

The cryostat base is the very first machine component to be delivered from Europe to Japan, and bids for the transport to Japan are currently being evaluated. The transportation contract, from the Hitachi port to the Naka site, has been placed. The transportation permit procedures and the explanation to the road administrator (Tokai village) will be carried out over the coming months, and finally, at the end of the year, the cryostat base will actually be transported from Hitachi port to the Naka site.

News

EU TF strand and TF conductor production status

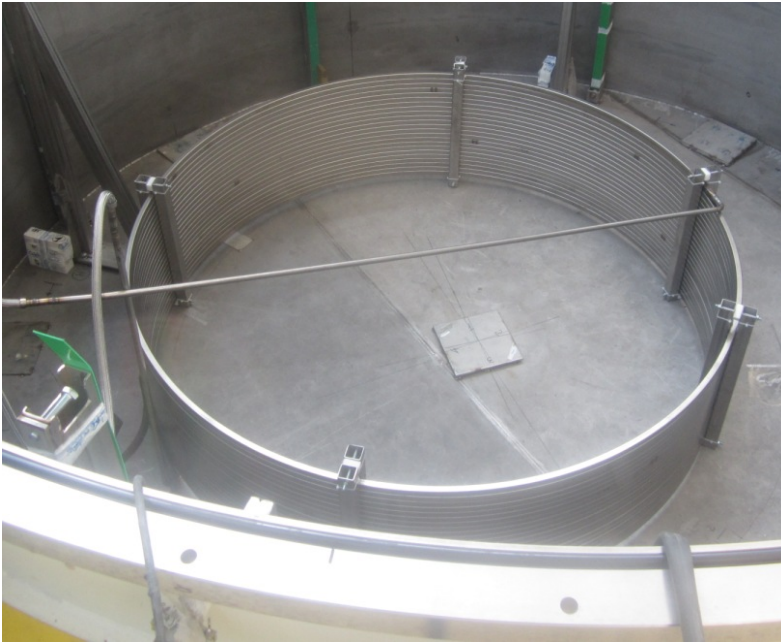


Figure 1: JTF-001 conductor placed in vacuum chamber before acceptance tests



Figure 2: JC-003 cable completion (cable under spooled protection cover)

The NbTi TF strand production by Furukawa Electric Co (FEC) in Japan is progressing well in line with the schedule. About 4,300 km of strand have been approved by F4E, while a batch of about 2,000 km is now under F4E review for approval. The first payment milestone will be passed and delivery to the cabling company (Tratos) in Italy is under control with 5 sea shipments achieved and an amount stored at Tratos fulfilling about 20% of the total TF conductor production.

All NbTi critical performance statistical cross-checks conducted confirmed that the current sharing temperature in operational conditions will be above 6.2 K. An F4E visit to FEC Nikko plant took place in April for Progress Meeting #13. The Cu mass production was restarted and a new batch will be submitted to F4E for approval soon.

Regarding the TF conductor, many important stages have been passed:

- the two “superdummies” JTF-001 and JTF-002 were jacketed at the end of May and the acceptance tests were performed (see figure 1).

This manufacturing step closes the Jacketing Qualification phase, and after documentation by ICAS (Italian Consortium for Applied Superconductivity) is reviewed by F4E the production phase will officially commence.

- the Cabling Qualification phase is officially closed and production has commenced with the JC-003 cable completion (see figure 2), which will be used for the TF coil feeders. The fabrication went smoothly and the QC documentation will follow for passing the cabling control point.

- the first TF SULTAN conductor sample TFCS2 (hairpin-type) was completed at CEA and sent to CRPP (Centre de Recherches en Physique des Plasmas) Villigen (Switzerland) in early June. The second sample (TFJS2) will be delivered in early July.



Figure 3: PL and EU DPM, visiting the cable manufacture facility at Criotec.



Figure 4: Jacketing lines with 300-metre-long and rectangle shape for JT-60SA and with 800-metre-long and domed shape for ITER at Criotec

On 18 June, the Project Leader (PL), S. Ishida, and the EU Deputy Project Manager (DPM), E. Di Pietro, visited the cable manufacture and jacketing facilities at Criotec in Chivasso near Turin, Italy (see figure 3). They confirmed that the jacketing line dedicated to the JT-60SA TF coil conductors, right next to the ITER jacketing line, was ready for production (figure 4) and the jacketing qualification was progressing to the final stage.

Next stages are the JTF-003 jacketing at Criotec (using JC-003 cable) and JC-004 & JC-005 cabling at Tratos. Both JTF-001 & JTF-002 will be delivered to the Tauring company to allow them to set up the TF coil winding lines. The SULTAN tests for TF conductor samples are scheduled for the end of July.

News

On-site equilibrium field coil manufacturing started



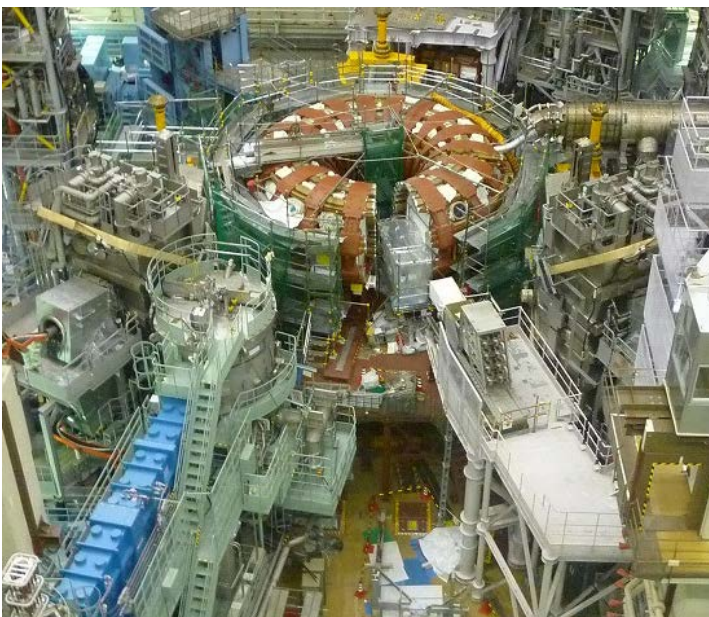
Winding machine set up in the superconducting coil winding building

Setting-up of the winding machine and the resin coating equipment in the superconducting coil winding building at Naka was completed for winding of the equilibrium field coils No.5 (EF5) and No.6 (EF6). Considering the diameter of these coils completely manufactured (approx. 8 m (EF5) and 11 m (EF6)), it was decided to manufacture them at the Naka site and not to transport the completed coils from the manufacturer's factory. The winding of EF5 using dummy conductors was started in June.

As for the central solenoid (CS), the first conductors (one 466 m long, the other 238 m long) were supplied to the manufacturer, and a sample of the joints between CS pancakes was completed for contact resistance measurement at the National Institute for Fusion Science (NIFS) in June.

News

Disassembly of vacuum vessel started



Disassembly progress on JT-60 at the end of May

An important stage of the vacuum vessel (VV) disassembly after removal of the toroidal field coil (TFC) is the cutting the vacuum vessel in half (approx. 180 t/half) and lifting to remove them. To prepare this work, a cradle was set up to provide seismic strengthening during the disassembly work. Cutting of the vacuum vessel in half using a precision diamond wire saw was started in the middle of June. Metal welded sealing of all the ports of the vacuum vessel was also started to avoid spreading tritium. Furthermore, disassembly of the peripheral parts is progressing well (see figure).

Meeting

100th Project Coordination Meeting



A memorable 100th project coordination meeting (PCM) was held by videoconference between the Naka Fusion Institute, Japan and Garching, Europe in a very friendly atmosphere as usual.

However, as the European and Japanese proverbs say, "Rome was not built in a day", "Step after step goes far", the road to the 100th meeting was not always smooth.

The PCM arose from the review of the functional specifications of JT-60SA requested by the Steering Committee (SC) because of the cost. In response to this, the Project Leader (PL) opened the very first PCM on 23 October in 2007. Based on the agreement in this meeting, the following week the PL and Project Managers (PMs) gathered to discuss the design review and the implementing organization for two days, and directed the project rebaselining. In addition, to immediately build a consensus, it was decided to hold the PCM every one or two weeks.

In the early days of the PCM, the majority of the time was spent on technical discussions to accelerate the redesign, and often there were heated debates for many hours. As the technical coordination meeting and the design review meeting became established as the proper forum for the technical discussions, the PCM was able to spend more time to discuss subjects for the Project Committee/Steering Committee meetings, the implementation of PAs, the holding the meetings and project quality management, and became the main vehicle for tracking progress and resolving any issues with project integration.

Since the project rebaselining was approved by the SC in December, 2008, the project activities have further visibly converged through the development of a common quality management system (CQMS). A topic discussed in the PCM is an issue, and the three persons (the PL and PMs) obtain a consensus for the solution. If no consensus is possible at the time, the topic will be discussed again in the next meeting or later, until consensus is reached. The PCM is conducted in an extremely effective way and has functioned very well to permit prompt top-level decision-making which is respected project-wide.

Visits

PL's visit to divertor cassette manufacturer



On 21 June, the Project Leader (PL), S. Ishida visited the divertor cassette manufacturer's factory in Chiba prefecture, located about 15 km southeast of Narita Airport, to inspect the manufacturing progress. In this spacious facility, there are various large machines used for advanced metal processing technology for the aerospace industry. The divertor cassettes are being manufactured in a part of this facility. Three divertor cassettes are currently being completed with the preliminary assembly of heat sinks. Furthermore, the manufacturing and machining of more than half the parts (36 in total) are underway. IMass production of the divertor cassettes is now ready to begin. On the day of his visit, the PL inspected the welding work for the cassette frame, confirmed the state of the stored divertor cassettes, the cassette frames and parts in production, and also discussed the future schedule.

Local

Hitachi Seaside Park



Rose garden



Sunflowers and zinnias with the Ferris wheel in the background

Hitachi Seaside Park, located along the Pacific Ocean, is a national government park in Hitachinaka city, Japan. The area of the park is 190.9 ha and is divided into seven areas, each of which has its own name and a different attraction. The park and its attractions have developed to be in tune with nature. People can then enjoy the various attractions in spacious and beautiful natural surroundings.

The most popular attractions in the park are the flower gardens, which often appear on TV news. Under the influence of the ocean currents, many kinds of flowers and plants glow in different seasons. From spring through summer, so many blossoms are a feast for the eyes: roses, lavender, oriental poppies, azaleas, zinnias, sunflowers, and lilies are fully in bloom. Furthermore, *chimaphila umbellata* ("wintergreen"), which is listed as a "near threatened plant" in the IUCN Red List, can be seen in this park.

In May, five spot flowers (baby blue eyes) bloom all over the "Miharashi" (means "a view") hill. This "blue world" view, in conjunction with the blue sky (see below), is breathtaking. So many people visit the park and are fascinated by the fantastic view every year.



The blue world

For more flower garden photos, please visit the Park's [website](#) (Japanese version only).
All flower photos are copyright Hitachi Seaside Park.

Calendar

July 2-6, 2012

39th European Physical Society Conference on Plasma Physics & 16th International Congress on Plasma Physics (EPS/ICPP)
Stockholm, Sweden

July 30-August 3, 2012

20th International Conference Nuclear Engineering/ASME 2012 Power Conference
Anaheim, USA

September 19-20, 2012

15th Technical Coordination Meeting (TCM-15)
Padua, Italy

September 24-28, 2012

27th Symposium on Fusion Technology (SOFT 2012)
Liege, Belgium

October 7-12, 2012

Applied Superconductivity Conference (ASC 2012)
Portland, USA

October 8-13, 2012

24th IAEA Fusion Energy Conference (IAEA FEC 2012)
San Diego, USA

Contact Us

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

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