

THE 2ND VACUUM VESSEL DEPARTS FOR ITER

The second sector of the vacuum vessel has shipped for France where it will serve as one of the key components of the ITER. *(continued)*

*Photo: Vacuum vessel after complete assembly
(nine main bodies with upper, middle and lower ports)*

WHAT'S INSIDE THIS ISSUE:

Participation in FEC2020

KFE hosted HWS-15

*New Research Agreement
between KFE and HFIPS*

Issue & Focus

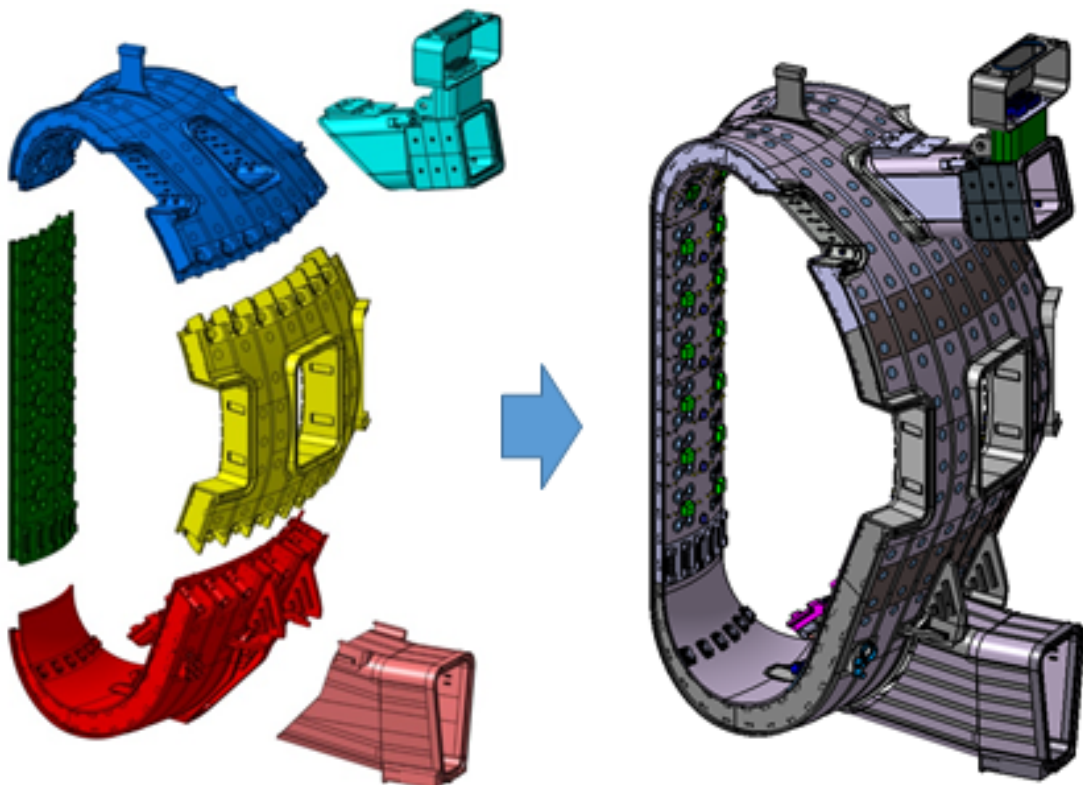
(continued from previous page) The vacuum vessel is where the high vacuum environment is created, to discharge and maintain the super-hot plasma whose temperature is over one million degrees. The ITER's vacuum vessel consists of nine sectors, and each of them is 11.3 meters tall, 6.6 meters wide and weighs approximately 400 tons. When assembled all together in a doughnut-like shape, this monumental structure weighs around 5,000 tons. Korea is in charge of procuring four of the vacuum vessel sectors out of the nine, and completed and delivered the first sector (sector no. 6) in 2020.

Previous experience with the first sector production helped in making this second sector (sector no. 7). The second sector took only 75 months to accomplish, which was 25% faster than the 101 months needed to produce the first sector.

Once the second sector arrives, the very heart of the ITER structure will start to be assembled – the assembly of the tokamak. First the “sector sub-assembly” will be completed by attaching one thermal shield and two TF superconducting magnets outside the vacuum vessel. Then each of the “sector sub-assemblies” will be connected in a circle like a doughnut. That is why the delivery of the second sector is necessary before the assembly can actually begin.

The shipment will arrive at Marseille-Fos Port in the end of July and will finally arrive at the ITER site at the end of August by land and canal.

Now only two sectors remain to be produced by Korea. The two sectors will be delivered to the ITER site by 2022.



Vacuum vessel (in delivery unit)

"We are pleased to have the second sector shipped safely to France, despite the unexpected difficulties we had, such as the Suez Canal accident. We will stay alert for any incidents that may happen until it finally arrives at ITER," said Hyunsoo Kim, the team leader of the Vacuum Vessel Tech Team of ITER KODA.

ITER KODA Director-General Kijung Jung added, "ITER KODA and Korean industries are collaborating and focusing their capabilities to meet the strict quality standards, as well as the deadline. We will do our best to successfully complete the remaining two vacuum vessels for the ITER construction."

NEWS Brief

PARTICIPATION IN THE FIRST ONLINE FEC 2020



The official webpage of IAEA FEC2020

KFE has participated in the 28th IAEA Fusion Energy Conference (FEC2020), which took place from 10th to 15th May 2021. This international fusion conference was originally planned for October, 2020 in Nice, France, but was then postponed and transformed into an online conference due to the COVID-19 pandemic. This is the first time it was held online since the first FEC began, in 1961.

During the conference, twenty researchers from KFE shared their recent research results including the KSTAR's latest experiments. In addition, the KFE's online booth was set up to introduce institutional activities and news. The e-booth will remain accessible via the FEC conference website until the 10th of August.

IAEA FEC 10-15 May 2021 - Conference



Overview of KSTAR

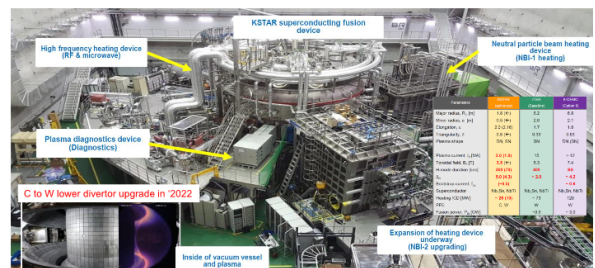
S. W. Yoon^a, J. G. Kwak^a, W. C. Kim^a, W. H. Ko^a, M. J. Choi^a, H. Hahn^a, J. Lee^a, B. H. Park^a, J. Chung^a, W. Lee^a, G. Y. Park^a, H. H. Lee^a, J. Kang^a, S. H. Hahn^a, Y. In^a, H. Park^a, Y. S. Na^a, J. M. Park^a, J. Park^a, Y. S. Park^a, and the KSTAR Team^a

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KSTAR

KFE 한국핵융합에너지연구원
KOREA INSTITUTE OF FUSION ENERGY

KSTAR is to address key physics and technical issues for ITER and DEMO



KSTAR

4

"Overview of KSTAR" presentation in FEC2020

Director Si-Woo Yoon of KSTAR Research Center, KFE, who made an oral presentation, "Overview of KSTAR", during the conference commented, "We are thrilled to share the KSTAR's latest outcomes at this FEC2020 despite the pandemic. We expect the KSTAR will play a significant role in paving the way to fusion energy."

KFE HOSTED HWS-15

KFE hosted the 15th International Workshop on Hydrogen Isotopes in Fusion Reactor Materials (HWS-15) online from 27th to 28th May. HWS is a platform where experts in the field gather to discuss the effects of hydrogen isotopes on fusion materials, and present recent scientific outcomes. The workshop is held as a satellite meeting to the International Conference on Plasma Surface

Interactions in Controlled Fusion Devices (PSI), as HWS-15 was to PSI-24, which was also hosted by KFE last January. During the workshop, fifty-three experts from across the world attended and thirty-three papers were presented on fusion materials (tungsten and others), tritium removal techniques, the effects of plasma impurities, as well as models and simulations.

KFE AND HFIPS SIGN RESEARCH AGREEMENT FOR TRITIUM BREEDING



KFE and HFIPS (Hefei Institutes of Physical Science) of CAS (Chinese Academy of Science) concluded a Research Agreement in the field of Tritium Breeding Research in June, 2021. Under the agreement, KFE will cooperate with HFIPS for the next five years regarding tritium breeding, making use of the



HINEG (High Intensity D-T Fusion Neutron Generator) facility in China. Further collaborations are expected in potential research areas including DEMO concept studies, fusion materials, safety technologies, etc.



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