

IFERC Newsletter

IFERC

IFERC-N-2011-16~22 (No. 3, 31 December, 2011)

International Fusion Energy Research Centre, Rokkasho, Aomori 039-3212, Japan

CSC Activity



The CSC supercomputer is installed in time

All the parts of the CSC computer were in Rokkasho at the beginning of December. After the installation, configuration and tuning of all the equipment, the machine was deemed ready for the acceptance tests. These included the verification that all the components of the site were working as well or better than the agreed specifications. Performance tests were also performed. The last test was the famous "Linpack" benchmark, used to order the computers in the Top500 list. It is an interesting test

DEMO Design Activity

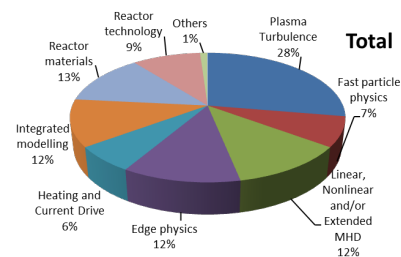
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IFERC-N-2011-16 (No. 3, 31 December, 2011)

CSC Activity

The CSC supercomputer is installed in time

All the parts of the CSC computer had arrived in Rokkasho by the beginning of December. After the installation, configuration and tuning of all the equipment, the machine was deemed ready for the acceptance tests. These tests included the verification that all the components of the site were working as good, or better, than the agreed specifications. Performance tests were also performed. The last test was the famous "Linpack" benchmark, used to rank the computers in the Top500 list. It is an interesting test in that it involves the highest number of nodes and the largest amount of memory in each node. The Bull team started with only 10 % of the memory per node and increased this value gradually, thus improving the performance. Eventually the memory usage was set to 80 % and the performance reached its target.

To sum up the installation, starting from an empty building:

- May 19th : final layout of the piping
- August 23th : First delivery of IT equipment
- October 13th : Delivery of the first computer racks
- December 22nd : Signature of acceptance

Installing a world class supercomputer including a brand new computer centre in this amount of time is a testimony of the excellent cooperation between all the persons involved in this challenging project.

Now that the installation is finished, the supercomputer is eagerly waiting for its first users to arrive at the beginning of January.



IFERC-N-2011-17 (No. 3, 31 December, 2011)

DEMO Design Activity

DEMO Design Activity in 2011

DEMO Design Activities (DDA) started a joint working stage, Phase Two, after the organisation of the DDA unit of the Project Team (PT) in January 2011. The activities have been conducted jointly by the union of the DDA unit of IFERC, EU-HT and JA-HT. Although some of the activities were interrupted for about one month, due to the earthquake in the East of Japan, a delay in the implementation of the work programme has been minimized and the progress of DDA in 2011 has been satisfactory.

A Procurement Arrangement (PA) for DDA was signed by F4E and JAEA and entered into force on 4 August 2011, which is valid until the end of BA period (31 May 2017). This PA defines the joint work in Phase Two as follows:

Phase Two-A (Jan 2011-Dec 2012):

Consolidation of knowledge for DEMO design

Phase Two-B (Jan 2013-Dec 2014):

Detailed studies on key design issues, options and DEMO parameters

Phase Two-C (Jan 2015-May 2017):

Development of pre-conceptual design options for DEMO

In order to define the procedure and responsibilities for the implementation of the PA, the PA Management and the Work Breakdown Structure (WBS) of the Common Quality Management System (CQMS) for DDA were signed and entered into force on September 2011.

The main research activities conducted in 2011 include:

- (1) the development and test of system codes and the review of the underlying physics and technology assumptions,
- (2) the analysis of the problem of the power exhaust and the definition of a modeling strategy,
- (3) the review of key engineering topics (e.g., divertor, blanket, remote maintenance).

An example of fruitful joint work has been the benchmark of systems codes, which was reported in the second edition (No.2) of this newsletter. Since the results of the benchmark calculations showed a good agreement for an initial test case, the benchmark has been extended to different test cases

including some example parameters of DEMO designs.

Another important set of activities in Phase Two are the Technical Coordination Meetings (TCMs), where specific technical and programmatic issues for DEMO design are discussed by experts from EU and Japan. The first TCM (TCM-1) was held as a kickoff meeting for the DDA activities in Kashiwa-Campus of the University of Tokyo on 19-20 January 2011, in the form of a joint DEMO Design and R&D Workshop. In addition to design topics it also included a status report on the progress on DEMO material R&D activities in the frame of the BA. Regarding DEMO design, the presentations and discussions covered the scheduled timelines and key DEMO design issues foreseen in the activities. The second TCM (TCM-2) was held in Garching on 24-25 May. The technical reviews in this TCM-2 included breeding blanket, divertor physics and power exhaust, remote maintenance, materials and H&CD as well as systems codes. The joint work for the second half of 2011 was also discussed.

Management Coordination Meetings (MCM), where the DDA leader and both EU and JA Project Managers discuss various management issues via remote video system, intend to stimulate the collaboration activity. Eighteen Management Coordination meetings were held in 2011. A collaboration between DDA and Satellite Tokamak Programme (STP) Project [JT-60SA] in BA has also been conducted, and the critical issues raised in the DEMO Design activity will be reflected in the research plan of JT-60SA.

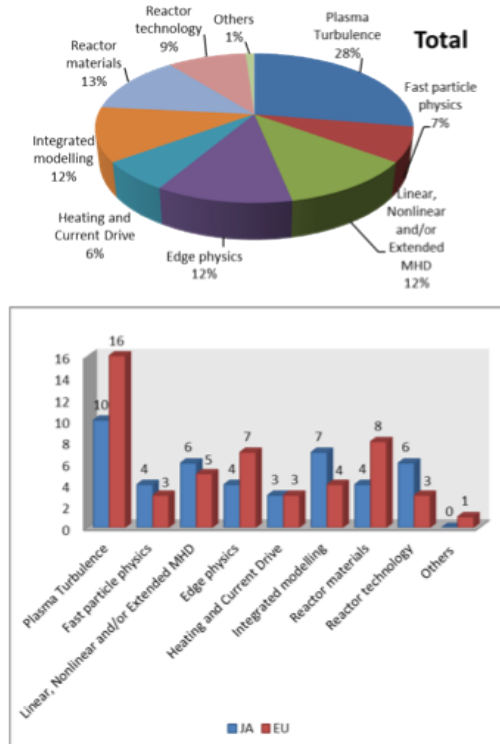


IFERC-N-2011-18 (No. 3, 31 December, 2011)

CSC Activity

We received 63 Proposals for the use of the CSC

The "Call for proposals for the use of the IFERC-CSC" for the first cycle was closed on 1st December 2011. We received 63 proposals. The details are shown below. The proposals are now under review and the final selection will be made at the Standing Committee meeting on 20th and 21st February 2012.



IFERC-N-2011-19 (No. 3, 31 December, 2011)

Meetings

BA Project Leaders discuss common issues

On 28th November, three Project Leaders (IFMIF: H. Matsumoto, STP: S. Ishida, IFERC: N. Nakajima) met at the 28th Project Leaders Meeting (PLM-28) to discuss and to share common issues among the three Broader Approach Projects. Main items discussed at the meeting were the public website development, the document management and the collaboration among the projects. In addition to the collaboration between the IFERC-DDA and the STP, the preparatory working group for the IFERC-REC will start discussing the overall plan in collaboration with the STP.



IFERC-N-2011-20 (No. 3, 31 December, 2011)

Staff Corner

Kunihiko Okano reviews the first year of DDA

I have worked for IFERC as a DDA leader since January 2011. I have two concurrent positions as a senior researcher of Central Research Institute of Electric Power Industry (CRIEPI) and as a visiting professor of the University of Tokyo. The former is a unique institute operated by contributions of the electric power companies in Japan. Therefore the future perspective for fusion plants in commercial use has always risen to the surface of my consciousness. Any commercial plant must be reliable, sound and competitive with other power sources. At the University of Tokyo, on the other hand, I am directing young students, who will support our boundless future. I do not want to restrict the freedom of their ideas as they work towards the completion of their course. Throughout both positions, it has always been important to consider a well-balanced view between "what is possible" and "what is desired". Such a flexible but well-balanced consideration for future possibilities is no doubt the key point in our Demo Design Activity in IFERC. Throughout this first year of DDA, we have discussed widely the various key issues toward DEMO plants. After this year, we are going to search for the most sound guiding principle for the DEMO design based on the reliable perspective of R&D.

My personal research field is MHD stability and current drive physics. The current profile in plasma should be consistent with the MHD stability condition of the plasma. But this consistency is often neglected in the conceptual designs because the consistent calculation is so sophisticated that it is difficult to introduce it in the system design code which is usually used in conceptual design work. But in some cases with high performance plasmas, the current profile consistency becomes one of the essential parts in reactor designs. In the high performance plasma, an electrically conductive wall might be required to keep the MHD stability. In such a case, the MHD stability and the current profile are deeply in relation to the blanket design, and building up a closer connection between the physical point of view and the engineering point of view is required in the conceptual design of fusion plants. Simplification of current drive models and introduction of such synergistic or combination effects in the system design have been my work up to this day.

Listening to classic music via an audio system is my hobby. I have a music system in my flat of Rokkasho. Every evening, I minimise my dinner time and spare a lot of time to listen to the music in front of a pair of the German speakers, which are driven by a British amplifier and a Japanese digital player. I have found their compatibility to be very good. In addition, since the Rokkasho area is much more silent than the Tokyo area, I have found the overall Signal to Noise ratio of the music system in Rokkasho to be much higher than a larger scale system in Tokyo.



K. Okano and his audio system with German Speakers.

Amazingly Heavy Snow! The highest recorded in the past 7 Years!!

We have had very much snow this winter season. In December the Aomori Prefecture recorded its highest quantity of snow in the past 7 years. You can see it in the photographs below. During this time of year we usually have much less snow in Rokkasho. But even with such heavy snow, we don't have that much trouble when driving, as the snow removal service is very good on the roads in Rokkasho.



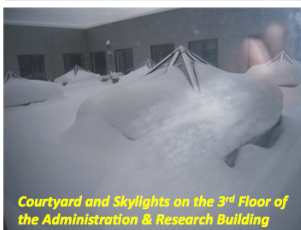
View of the Administration & Research Building in the IFERC Site



Chiller Units for CSC just Constructed



A Car mantled with snow, in the Parking Area of the IFERC Site



Courtyard and Skylights on the 3rd Floor of the Administration & Research Building

IFERC Site Christmas Party in Rokkasho

An International Christmas Party of the IFERC site was held on Friday, 16th December in "Swany" (the Cultural Exchange Plaza) in Rokkasho. Over 50 people attended, including EU visitors such as Susana-san from F4E, and EU/foreign staff living in Rokkasho, such as Mr. and Ms. Noé-san, and also families with children. We had a very good time enjoying the dishes from the Italian Restaurant "La Pesca". Children, as well as grown-ups, were pleased to get Christmas presents from Santa Claus.

