

Manufacturing the Largest Magnet in the World

The Newest Advanced Technology and Nurturing Young Engineers and Experts

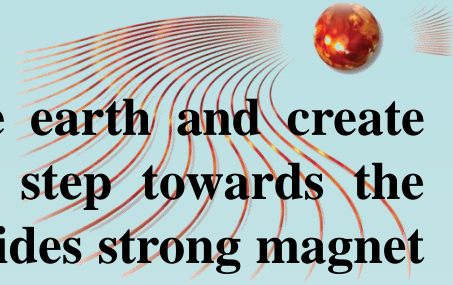
Moderator:

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ITER Organization**

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Back Ground



A fusion reactor will provide a new energy source on the earth and create possibility of a new energy system. The ITER is the first step towards the construction of a commercial reactor. The magnet system provides strong magnet field to confine the D-T reaction plasma and control the plasma position.

The world largest magnet system requires a lot of new developments and the advanced technologies. In the session entitled with “Manufacturing the Largest Magnet in the World,” **some newest advanced technologies will be introduced.**

The ITER project is one of the largest research projects underway in the world, and scheduled to last over 20 years. The success of this project is hugely dependent on the workers, and quality of their skills and experience.

To pursue this long term project keeping the high level technologies, thousands of technicians and engineers are needed. Special knowledge and experience are required to design and manufacture the large scale fusion magnet system. Wide expertise not only in the areas of superconducting and cryogenics but also in welding and complex integrations is necessary. We believe that Industry / Institute / University will educate, train and nurture the young engineers and technical experts. Therefore, we would like to **discuss on the importance of the nurturing the young generation.**

Speakers and Content

SPEAKERS

- > Dr. **Masahiko INOUE**: He is Director of Fusion Engineering Office. MHI and responsible for the project management of the ITER TF Coil manufacturing and acts as the leader of the ITER TFC consortium of MHI, MELCO and HHI.
- > Dr. **Vincenzo GIORI**: He is CEO of ASG Superconductors and responsible for the entire Superconductivity Business Unit of the Malacalza Group that includes the two subsidiaries Columbus Superconductors and Paramed.
- > Mr. **Akira OZAKI**: He is a Senior Fellow of Nuclear Division of Toshiba Corporation and supervises Toshiba's Advanced Energy Technology. He has engaged in nuclear fusion system development in Toshiba since 1979.
- > Dr. **Alessandro BONITO-OLIVA**: He is responsible for the European Procurement of Superconducting Magnets and Conductors for ITER. He is acting Head of the Magnets Unit within F4E.

The content of each speaker will include the following items.

- (1) Introduction of the supplier. (Main Works and Products)
- (2) Outline of contribution to ITER magnet system.
- (3) Introduction of the newest advanced technology. (One or two items)
- (4) Introduction of the education, training, nurturing program in the supplier.
- (5) How to keep and promote the new technology?

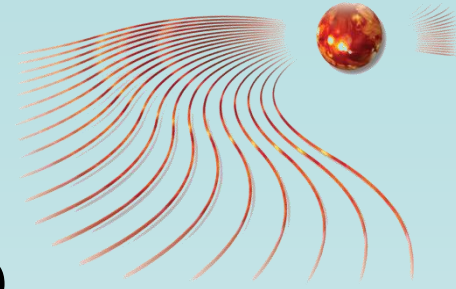
List of Memorandum of Understanding in IO (I)

| Title of agreement | Parties | Date |
|--|---|------------|
| MoU between IO and CEA | CEA / IO | 2007/8/23 |
| MOU on Technical Cooperation | NFRI / IO | 2010/4/20 |
| MOU between the Max-Planck-Institut fur Plasmaphysik (IPP) and the IO on Feasibility Study for the ITER Cryogenic System using the W7-X Cryogenic System | Max-Planck-Institut fur Plasmaphysik (IPP) / IO | 2010/9/20 |
| MOU on Technical Cooperation | NIFS / IO | 2011/2/2 |
| Memorandum of Understanding on Cooperation between the CEA and the IO | CEA / IO | 2011/5/17 |
| MoU on Cooperation Project for the ITER Organization | NIFS / IO | 2011/6/27 |
| MOU on Academic and Scientific Cooperation | University of Science and Technology of China (USTC) / IO | 2011/12/2 |
| Memorandum of Understanding on the organisation of the design, construction and operation of the Neutral Beam Test Facility (NBTF) | F4E / IO | 2011/12/13 |
| MOU for Collaborative support to Allow F4E to establish a harmonised project management system and to ensure an efficient implementation of the ITER Project | F4E / IO | 2011/2/7 |
| MoU for Research and Development Activities | European spallation Source (ESS AB) / IO | 2012/8/15 |
| MoU on Technical Cooperation | Max-Planck-Institut fur Plasmaphysik (IPP) / IO | 2012/8/8 |
| MoU on scientific and technological cooperation | MOST, China / IO | 2012/8/13 |
| MoU on academic and scientific cooperation | Politecnico di Torino / IO | 2012/10/30 |

List of Memorandum of Understanding in IO (II)

| Title of agreement | Parties | Date |
|---|---|------------|
| Amendment to the MoU on Cooperation Project for the ITER Organization | NIFS / IO | 2012/1/19 |
| MoU on Scientific and technological cooperation | ITER-India, IPR / IO | 2012/12/11 |
| Memorandum of Understanding on Academic and Scientific Collaboration | Université Aix-Marseille / IO | TBC |
| Memorandum of Understanding on Scientific, Academic And Educational Cooperation | Tohoku University / IO | TBC |
| MoU on Scientific Cooperation | United Kingdom Atomic Energy Authority (UKAEA -CCFE) / IO | 2013/4/8 |
| Memorandum of understanding on Academic and scientific cooperation between the Dutch Institute for Fundamental Energy research (DIFFER) and IO | Dutch Institute for Fundamental Energy Research (DIFFER) / IO | 2013/8/14 |
| Memorandum of understanding on Academic and scientific cooperation with Forschungszentrum Juelich GmbH Institut fuer Energie- und Klimaforschung | Forschungszentrum Juelich GmbH (FZJ) / IO | 2013/8/21 |
| MoU on Academic and scientific Cooperation | Department of Electrical, Electronic, Telecommunications Engineering and Naval Architecture (DITEN) - University of Genoa / IO | 2013/5/2 |
| MoU on Academic and Scientific Cooperation | The Department of Civil and Industrial Engineering- University of Pisa / IO | 2013/6/14 |
| MoU on academic and scientific cooperation between the Eindhoven University of technology and the IO | the Eindhoven University of Technology (TU/e) / IO | 2013/11/ |

Program of the Session



1. Introduction of the magnet session (5 minutes)
2. Brief reports from speakers
 - Dr. Masahiko INOUE (11 minutes)
 - Dr. Vincenzo GIORI (11 minutes)
 - Mr. Akira OZAKI (11 minutes)
 - Dr. Alessandro BONITO-OLIVA (11 minutes)
3. Discussion (11 minutes)
 - Questions and comments.