



IAEA FEC 2020

	Technical Tour
	IAEA Side Event
	Webinar

Exhibition Program – Auditorium 2 (unless stated)

CEST	Monday, 10/5	Tuesday 11/5	Wednesday 12/5	Thursday 13/5	Friday 14/5	Saturday 15/5
9.00 - 10.00	Conference Opening (9.00 - 13.00) Auditorium 1	WEST	Air Liquide	IFMIF	DIII-D	
10.00 - 11.00		LMJ-PETAL	ITER Organization	Ansaldo Nucleare	Tore Supra-WEST	Stellar Energy Foundation (replay)
11.00 - 12.00			US National Academy of Science(NASEM)	Consorzio RFX		HL-2M
12.00 - 13.00						
13.00 - 14.00	Press Conference Auditorium 1 *	Presentation of IAEA textbook "Fusion Physics" (12.45 - 13.45)	"Women in Fusion" (12.45 - 13.45)			Celebrating the 60th Anniversary of FEC
14.00 - 15.00	Exhibition Opening		Air Liquide	IFMIF		US National Academy of Science (NASEM) (replay)
15.00 - 16.00		LMJ-PETAL	ITER Organization	Ansaldo Nucleare	Tore Supra-WEST	HL-2M
16.00 - 17.00		WEST	Stellar Energy Foundation	Consorzio RFX	DIII-D	

* will be held in on a dedicated platform, access for registered journalists only (register here: <https://indico.iter.org/event/22/overview>)

** all videos will be made available on this website after the conference



IAEA FEC 2020

Press conference:

A virtual press conference will take place on Monday, 10 May, 13:00 CEST with IAEA Director General Rafael Mariano Grossi, ITER Director-General Bernard Bigot and CEA Director for International Affairs and Governor to the IAEA Board of Governors Anne Lazar-Sury. Journalists are requested to register for the press conference here:

<https://indico.iter.org/event/22/overview>.



IAEA FEC 2020

Exhibition Opening ceremony:

The Chairman of the Local Organizing Committee and Head of the ITER Engineering Domain, Alain Bécoulet, will open the virtual exhibition and welcome FEC2020 sponsors and exhibitors. He will introduce the IAEA side events program, as well as the exhibition program with its booths, video presentations and webinars.

The exhibition opening ceremony will be held on Monday, 10 May, from 14.15 to 14.45 CEST.

The audience will have the chance to interact with Alain Bécoulet live.



IAEA FEC 2020

Virtual technical tours:

LMJ-PETAL: This event is a mix between technical tour and presentation of the main achievements of the CEA Inertial fusion facility LMJ-PETAL.

It reviews the whole activities contributing to this program, from the construction phase of this very large fusion facility to plasma diagnostic and target developments. Several experiments ranging from radiative hydrodynamics to inertial fusion have already been carried out and will be reviewed. LMJ is also open to academic experiments covering a wide spectrum of topics, from planetology to laboratory astrophysics and fusion energy.

Don't miss this unique opportunity to update your background on high-energy-density science and inertial fusion!

The LMJ-PETAL technical tour/webinar is scheduled on Tuesday from 11.00 to 12.00 and from 15.00 to 16.00 (CEST). Written chat for questions and comments are available during these periods

Questions will be answered live by: Erik Lefebvre, LMJ Project Leader



IAEA FEC 2020

Virtual technical tours:

Air Liquide: A technical tour of various Air Liquide cryogenic facilities and a short combined webinar will highlight **How Air Liquide contributes to making the future of fusion energy projects successful!**

The Air Liquide Combined event is scheduled on Wednesday from 9.00 to 10.00 and from 14.00 to 15.00 (CEST). Written chat for questions and comments are available during these periods.

Questions will be answered live by: Domenico d'Andrea, Senior Business Developer for Big Science and Fusion market.



IAEA FEC 2020

Virtual technical tours:

ITER: Over the past year, the ITER project has made some very impressive and tangible progress. In this extensive tour around the worksite, recorded over the past two weeks especially for FEC2020, we invite the audience to explore the current state of work.

The IO site tour is scheduled on Wednesday from 10.00 to 11.00 and from 15.00 to 16.00 (CEST).

Questions will be answered live by Alain Bécoulet, Head of the ITER Engineering Domain, and Kirsten Haupt and Julie Marcillat from the ITER Communications Office.



IAEA FEC 2020

Virtual technical tours:

IFMIF: The IFMIF Technical Tour shows the most prominent components and utilities of the Linear IFMIF Prototype Accelerator (**LIPAc**), assembly challenges, commissioning operations and first beam sessions associated with scientific and technical comments. The role of LIPAc towards the development of future Fusion Neutron Sources (**DONES, A-FNS**) and their expected contributions to the progress of the development of resilient material for fusion reactor leading to a faster track to **DEMO** is also addressed. The tour will highlight the common work and collaborative spirit developed jointly by Europe and Japan in the framework of the **Broader Approach** and the effort and recognition of the industrial companies involved. IFMIF is settled at Rokkhasho-Mura, Japan.

The IFMIF technical tour is scheduled on Thursday from 9.00 to 10.00 and from 14.00 to 15.00 (CEST). Written chat for questions and comments are available during the tours.

Questions will be answered live by: Philippe Cara, Head of the IFMIF project.



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Virtual technical tours:

West technical tour: The CEA Fusion Research Institute (CEA-IRFM) is located on CEA Cadarache Centre. It gathers around 300 people involved in Fusion research. CEA and its partners operate the WEST tokamak in the purpose of preparing ITER experiments. WEST is the acronym for W (tungsten) Environment in Steady-state Tokamak and it is the transformation of the Tore Supra tokamak from a carbon limiter to a tungsten divertor configuration.

Tore Supra was the first large tokamak equipped with superconducting magnets and actively cooled plasma facing components designed for long pulse operation.

WEST is targeted at supporting ITER construction and operation and contributing to DEMO conceptual studies. Its key missions are twofold:

- Operating and testing ITER grade Plasma Facing Components in tokamaks
- Progressing towards long pulse H mode and steady state operation in full tungsten environment

IRFM offers you a complete virtual tour of the WEST facility. You will discover its particularities and all the systems required for its operation (superconducting coils, cryomagnetic system cooled at 1.8K, power supplies, heating system, cooling system, diagnostics, plasma facing components laboratory and the control room).

After the virtual visit, a chat with IRFM researchers and engineers will allow asking questions on the device and its program.

The WEST site tour is scheduled on Thursday from 11.00 to 12.00 and from 16.00 to 17.00 (CEST). Written chat for questions and comments are available during these periods.

Questions will be answered live by: Ph. Moreau, Alberto Gallo, Sylvie Gibert and Emmanuelle Tsitrone.



IAEA FEC 2020

Virtual technical tours:

DIII-D technical tour: The DIII-D National Fusion Facility, operated at San Diego, California, by General Atomics for the U.S. Department of Energy, is a world-leading research facility that is pioneering the science and innovative techniques that will enable the development of nuclear fusion as an energy source for the next generation.

DIII-D is the product of evolving fusion research at GA going back to the 1950s. Early tokamak designs, starting in the 1960s, were circular in cross-section, but GA scientists developed the “doublet,” a configuration with an elongated hourglass-shaped plasma cross-section. The Doublet I, II, and III tokamaks in the 1970s and 1980s showed that this approach allowed for a hotter and denser stable plasma. Further research led to a modification of Doublet III in the mid-1980s to DIII-D’s current D-shaped cross-section. Successes with this configuration inspired many other devices to adopt the D-shape, including JET (UK), TCV (Switzerland), ASDEX-U (Germany), JT-60U (Japan), KSTAR (Korea), and EAST (China).

DIII-D technical tour is scheduled on Friday from 09.00 to 10.00 and from 16.00 to 17.00 (CEST). Written chat for questions and comments will be made available during these periods.

Questions will be answered live by:

First slot: Nick Logan, Tyler Abrams and Julie Harris ,

Second Slot: Theresa Wilks, Adam McLean, David Eldon and Julie Harris



IAEA FEC 2020

Webinars:

U.S. National Academies of Science, Engineering, and Medicine (NASEM)

(recorded on February 17th , 2021)

Title: Bringing Fusion to the U.S. Grid

Description: Fusion energy could provide a future source of non-carbon emitting electricity generation for the United States and play a role as the nation decarbonizes its electricity infrastructure. Using the technological and research results from U.S. investments, including the international fusion experiment known as ITER, the United States has the opportunity to begin planning for its first fusion energy pilot plant.

A new National Academies' report, *Bringing Fusion to the U.S. Grid*, presents a strategic plan for the scientific and technical innovations that will lead to the design, construction, and operation of a fusion pilot plant with the goal of producing electricity in the 2035-2040 timeframe and paving the way for commercial development.

It will be followed by a Q&A session with Rich Hawryluk and members of the committee

A written chat will be available for questions and comments during these periods.

This webinar is scheduled on Wednesday from 11.00 to 12.00 and will be rebroadcasted on Saturday from 16.00 to 17.00 (CEST).



IAEA FEC 2020

Webinars:

Stellar Energy Foundation (SEF)

(recorded on January 13th , 2021)

Title: Energy, Environment, Innovation: Fusion's Promise for our Climate

Description: The event will discuss the alarming realities of trying to reduce carbon dioxide emissions and explore fusion's potential for helping to overcome the little-discussed challenges we face. Laban Coblentz, Head of Communications at ITER will share his views on the urgency of acting quickly with long term solutions to how to provide power to the planet. Dennis Whyte, Director of MIT's Plasma Science and Fusion Center, will discuss why we ought to believe that fusion energy can play a large role in providing such power. Chris Gadomski of Bloomberg New Energy Finance News will moderate a spirited and candid panel discussion of these topics.

It will be followed with a Q&A session with Matt Miller (SEF), Laban Coblentz (ITER), Dennis Whyte (MIT) and Steven Cowley (PPPL).

A written chat will be available for questions and comments during these periods.

The SEF webinar is scheduled on Wednesday from 16.00 to 17.00 and will be repeated on Saturday from 11.00 to 12.00 (CEST).



IAEA FEC 2020

Webinars:

Ansaldo Nucleare Webinar

Title: History in the making: Ansaldo Nucleare contribution to the Fusion Era

Description: Ansaldo Nucleare has contributed for over 30 years to the Nuclear Fusion Research Programs and to the main European Fusion Reactors development. This webinar will show the peculiarities of some of its main projects: from the supply of the Vacuum Vessel sectors to the design and engineering of the TB13. Our key resources will explain the achieved milestones and opportunities related to these projects as well as their contributions to the Fusion Era. Also, we will have a look at what the future holds, including front end engineering activities for Fusion Power Plant commercial deployment.

The Ansaldo Nucleare webinar is scheduled on Thursday from 10.00 to 11.00 and from 15.00 to 16.00 (CEST). Written chat for questions and comments are available during the tours.

Questions will be answered live by:

Gianpaolo Sanguinetti, *Fusion Business Leader*; Andrea Basso, *Managing Director*, Francesco Orzelli, *Engineering Manager*, Dario Galbiati, *Sales Manager*, Maurizio Mancino, *Engineering Manager*, Marco Palmero, *Project Manager*.



IAEA FEC 2020

Webinars:

CEA/IRFM webinar

Title: From Tore Supra to WEST : the long road to technology and physics integration in a tokamak

Presenter/Moderator: André Grosman, CEA/IRFM deputy head

Description: The early focus on adequate plasma performance to achieve a significant fusion reaction rate, limited the required technology developments and their integration in a consistent tokamak design on those necessary to obtain the adequate plasma conditions, irrespective of their relevance for future fusion reactors.

When the Tore Supra proposal was initiated in the late 1970s, its major novelty was the production of the main magnetic field with a superconducting magnet. However, it became clear for the Tore Supra promoters that this opened the way to the realisation of long plasma discharges with a first goal set at 30s. This required a continuous heat and particle exhaust, and thus active cooling of all in vessel components and continuous gas pumping. The involved technology developments proved to be very specific and very challenging. Even more, the components had to integrate the technologies into designs that were relevant not only by themselves but once combined into a tokamak.

The superconducting toroidal field coils and their ancillary cryogenic system have now been operated for more than 30 years, without major developments. The actively cooled plasma facing components exhibited a strong evolution either on the technology side (CIEL project with a full set of carbon actively cooled components and WEST with a full set of ITER grade W divertor Plasma facing components) or on the plasma wall interaction implementation: limiter, ergodic divertor and x-point divertor, being successively implemented. The necessary plasma heating and current drive is realized with radio frequency waves coupling in vessel, which proved to be uneasy. The full integration of the technologies and the implementation of adequate plasma control tools allowed the realisation of long discharges up to 6 minutes, providing essential results and preparation for paving the way to ITER.

The CEA/IRFM webinar is scheduled on Friday from 10.00 to 11.00 and from 15.00 to 16.00 (CET).

A written chat will be available for questions and comments during the sessions.



IAEA FEC 2020

IAEA side events:

IAEA Learning Resources in Fusion: Educating the Next Generation of Fusion Experts

Virtual Side Event, Tuesday, 11 May 2021, 12:45-13:45 CEST

Description: Over the last years, fusion has been advancing quicker than ever before and more experts are needed now in this field to help accelerate scientific and technical progress to achieve the goal of commercially viable fusion energy. An IAEA publication entitled “Fundamentals of Magnetic Fusion Technology”, established in cooperation with the European Fusion Education Network (FuseNet), provides information on the basics and recent advancements in fusion technology and will contribute to educating the next generation of fusion experts.

The textbook addresses recent scientific and technological progress in fusion and features specialized chapters written by experts in the field, presenting the main research and development concepts and design options in fusion technology. This publication is a comprehensive reference for Master and PhD students and complements another IAEA textbook entitled “Fusion Physics”.

The speakers at the event will make brief presentations on why advancing fusion technology is key to achieving commercially viable fusion energy and will highlight how this textbook can inspire students to follow a career in fusion.

Speakers at the event include:

- Mr Alexis Devitre, Student, Massachusetts Institute of Technology, United States
 - Mr Christian Day, Head of the Department of Vacuum, Karlsruhe Institute of Technology, Germany
 - Mr Gianfranco Federici, Head of the Technology Department, EUROfusion, Germany
 - Mr Guido Van Oost, Professor, Emeritus of Ghent University, Belgium (Editor of the book)
 - Mr Roddy Vann, University of York, Chair of the Board of Governors of FuseNet, United Kingdom
 - Mr Samuel Jimenez, Lead Research Engineer, UK Atomic Energy Authority, United Kingdom
- Ms Sehila Gonzalez De Vicente, Nuclear Physicist at the IAEA and Editor of the Book, will moderate the event.

Written chat will be available for questions and comments during that time.

This event is scheduled on Tuesday 11 May 12.45 to 13.45 (CEST).



IAEA FEC 2020

IAEA side events:

Women in Fusion

Virtual Side Event Wednesday, 12 May 2021, 12:45-13:45 CEST

Description: Women account for less than 30% of the world's scientists and researchers and this percentage is even lower in fields such as nuclear physics and nuclear engineering, including fusion science and technology development. The IAEA is committed to achieving gender equity in nuclear sciences and applications and this side event is part of the ongoing efforts of the Agency to increase the representation of women in this field.

The virtual event will feature four female fusion experts, who will highlight their own career paths and discuss the institutional and personal support needed to help women excel in fusion research and development and ultimately close the persistent gender gap in this field. The panel discussion will be followed by a question and answer session with the audience.

Speakers at the event include:

- Ms Gabriella Saibene, Head of Unit of Antennas and Plasma Engineering, Fusion for Energy
- Ms Liao Min, Section Leader in Magnets, ITER Organization
- Ms Simona Breidokaitė, PhD Student in Fusion, Lithuanian Energy Institute
- Ms Zabrina Johal, Strategic Development Executive, General Atomics, USA
- Ms Najat Mokhtar, IAEA Deputy Director General and Head of the Department of Nuclear Sciences and Applications, will give opening remarks.
- Ms Sehila Gonzalez De Vicente, Nuclear Physicist at the IAEA, will moderate the event.

Women in Fusion event is scheduled on Wednesday, 12 May 2021, 12.45-13.45 CEST.

Written chat will be available for questions and comments during that time.



IAEA FEC 2020

IAEA side events:

Celebrating 60 Years of Fusion Energy Conferences

Virtual Side Event Saturday, 15 May 2021, 12:45-13:45 CEST

Description: The IAEA's Fusion Energy Conference (FEC) series was established in 1961 and has since then shaped the field of nuclear fusion. The FEC has become the main platform for discussing key physics and technology issues as well as innovative concepts directly relevant to the use of nuclear fusion as a future energy source.

The number of papers submitted for the FEC has increased significantly over the years, from 100–150 papers in the 1960s to over 700 in the last decade, and the number of participants has doubled from 500 to over 1000. Today, more than 40 countries and international organizations attend the FEC.

The side event will be the premiere of a short film celebrating the FEC 60th anniversary. The film will feature historic photos and video footage from previous FECs as well as interviews with fusion pioneers, including:

- Mr Boris Kuteev, Professor in Tokamak Physics, Kurchatov Institute, Russian Federation
- Mr Friedrich Wagner, Former Head of the ASDEX tokamak experiment, Max Planck Institute for Plasma Physics, Germany
- Mr Jean Jacquinot, Scientific Adviser to the CEA and Senior Adviser to the ITER Organization Director General
- Mr Mike Forrest, Former Head of Advanced Fusion Diagnostics, UK Atomic Energy Authority, United Kingdom
- Mr Richard Hawryluk, Associate Director for Fusion, Princeton Plasma Physics Laboratory, USA

The video will also feature an interview with Rafael Mariano Grossi, IAEA Director General.

Mr Matteo Barbarino, Nuclear Plasma Fusion Specialist at the IAEA, will moderate the event.

This event is scheduled on Saturday, 15 May 2021, 12.45-13.45 CEST.