

French CEA-ICERR description

1] General presentation of CEA

The CEA is the French Alternative Energies and Atomic Energy Commission (Commissariat à l'énergie atomique et aux énergies alternatives). It is a public body established in October 1945 by General de Gaulle. The CEA mission statement has two main objectives: to become the leading technological research organization in Europe and to ensure that the nuclear deterrent remains effective in the future.

In 2017, the total CEA workforce consisted of about 16,000 employees. Across the whole of the CEA (including both civilian and military research), there were about 1500 PhD students and 300 post-docs. In the field of Nuclear Energy for civil purpose, CEA branch has a workforce of about 4400 people and a long tradition since more than 50 years of being a world-class R&D organisation in support for the nuclear industry, the academics and the regulator.

Its scientific and technical skills are covering all the major topics required such as:

Corephysics, Thermo-hydraulics, Metallurgy, Mechanics, Instrumentation, Physico-Chemistry, Safety and Security, Fuel cycle and Waste Management.

For these topics, CEA has developed its own reference simulation tools when required (often within Industrial Partnerships) and has the advantage to operate various nuclear facilities and experimental units mainly in support of validation and qualification of codes.

2] Short description of facilities included in the ICERR perimeter

The perimeter (facilities and associated scientific and technical skills) proposed by CEA to be included in this ICERR is centered on its future international Material Testing Reactor; the Jules Horowitz Reactor (JHR) under construction in Cadarache. It will represent a major research infrastructure for scientific studies dealing with material and fuel behavior under irradiation. Consequently, the JHR facility will become a major scientific hub for cutting edge research and material investigations (multilateral support to complete cost effective studies avoiding fragmentation of scientific effort, access to developing countries to such state of the art research reactor facilities, supra national approach...).

Ancillary facilities around JHR are also a very important part of the ICERR; they include:

- ORPHEE research reactor in Saclay, neutron beams reactor used for science, academic and industrial research, training and education to the use of neutrons scattering,
- ISIS a reference tool for IRL (Internet Reactor Laboratory), EOLE and MINERVE zero/low power reactors located in Saclay and in Cadarache, dedicated to Core Physics and Education & Training in nuclear engineering and nuclear instrumentation,
- LECA-STAR and LECl hot laboratories for fuel and Material Post Irradiated Examination, located in Cadarache and in Saclay.

3] Description of the opportunities the ICERR is offering to Affiliates

CEA-ICERR has been labeled ICERR in the 3 following domains: Education & Training, Professional Training also called Hands-On Training and R&D projects.

JHR: CEA has started five years ago a "Seconde program" welcoming scientists, engineers in the CEA team to prepare the first experimental capacity. This hosting possibility within JHR team will be enhanced using the ICERR designation in the domain of Professional Training and R&D Projects.

ORPHEE Research Reactor has a long tradition of welcoming foreign visiting professors, scientists but also post-doctoral students and such hosting capacity is proposed here through this ICERR designation in the domain of Professional Training and R&D Projects.

ISIS as an Internet Reactor Laboratory is dedicated for Education & Training

EOLE and MINERVE have stopped their operation end of 2017; but still R&D projects (core physic for example) and Education & Training especially on instrumentation could be proposed

LECI and LECA: these 2 Hot Laboratories have a long tradition to perform R&D programs within an international framework and consequently are ready to welcome scientists for Professional Training and/or R&D projects.

4] Information relevant for the purpose of the ICERR scheme

Following this designation, CEA has established a generic template as an agreement to be signed between CEA and any institutes, organization from Member State wishing to become Affiliate to CEA through this ICERR Scheme (it is question here of a bilateral agreement, the IAEA being only a facilitator). This template indicates rights and duties of both parties willing to collaborate through this ICERR scheme.

Consequently, CEA is ready to welcome scientists, engineers within its facilities described above in the framework of this ICERR designation.

In a practical point of view, for welcoming scientists from Member States at CEA through this ICERR designation, a bilateral agreement using the template quoted above has to be signed between the assigning party (organization from which the scientist belongs to) and CEA. Such agreement will indicate the scientific/technical topic of collaboration, and rights and duties of both parties including the financial issues.

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