Symposium on ENEA ReseArch For Innovative Nuclear application

The 2nd ENEA Nuclear Energy System Division (NUC-ENER) Division Workshop – SERAFIN – is a key event, in collaboration with the University of Bologna, highlighting the latest research and activities from the Division.
This workshop is designed to bring together researchers, professors, PhD candidates, and students, offering a space to connect, exchange ideas, and showcase innovative work in nuclear science and technology.
SERAFIN is a unique chance to explore the latest developments in nuclear technology, connect with key players in the field, and hear from experts shaping the future of the sector.

June 17 – 18, 2025

Aula Magna Enrico Mattei, Faculty of Engineering
Viale del Risorgimento 2, 40136 Bologna (BO) – ITALY

Workshop hosted by
University of Bologna

TUESDAY, JUNE 17, 2025 | DAY 1

08.30 Registration

09.00 Opening remarks

Alessandro Dodaro – *Head of Nuclear Department*
Mariano Tarantino - *Head of ENEA NUC-ENER Division*
Matteo Gherardi - *University of Bologna*

09.15 Safety and Risk Assessment in Nuclear Installations

Chair: Simone Gianfelici

- Deterministic Analyses to Support Small Modular Reactor Safety Demonstration - Fulvio Mascari, *ENEA*
- Integral effect tests in the CIRCE-THETIS facility: experimental LFR accident investigations and prototypical components characterization - Alessandro Bellomo, *University of Pisa*
- Application of the REPAS methodology to assess the reliability of the EHRS in a generic iPWR SMR - Erik Cilia, *University of Bologna*
- Supporting the ESFR-SMR Design: Safety Analyses and Fuel Optimization Activities at ENEA - Massimiliano Polidori, *ENEA*
- Q&A

10.30 Poster Session - Coffee Break

11.00 Italy and Advanced Nuclear Technologies: Insights and Recommendations from the PNNS Working Group on Nuclear Fission - Gianluca Benamati, *ENEA*

11.30 Round Table: Severe Accident Analysis for Advanced Reactors

Chair: Fulvio Mascari

12.30 Group photo and Lunch

14.00 Innovative Design and Modelling of Nuclear Systems

Chair: Patrizio Console Camprini

- The IAEA Coordinated Research Project on NACIE-UP facility: outcome of ENEA activities - Roberto Da Vià, *ENEA*
- From Needs to Development, Validation and Application (Needs): The Virtuous Cycle for LFR Core Design - Giacomo Grasso, *ENEA*
- Enabling advanced thermal-hydraulics knowledge: the NETT1 Laboratory - Francesco Lodi, *ENEA*
- Enhancing LFR Analysis Accuracy: Refining Nuclear Data by Differential and Integral Measurements - Donato Castelluccio, *ENEA*
- Q&A

15.30 Poster Session - Coffee Break

16.00 Advanced Technologies for Future Nuclear Applications

Chair: Barbara Ferrucci

- MCNP simulation of the Intra-Operative Radiation Therapy (IORT) treatment of solid cancers with fast neutrons and comparison with the dosimetry parameters of standard IORT techniques adopting X-rays and electrons - Massimo Sarotto, *ENEA*
- The SELENE project: the Italian contribution to a lunar base - Roberto Pergreffi, *ENEA*
- Design methods for Beam Intercepting Devices for Particle Accelerators - Luca Tricarico, *University of Bologna*
- Improving Initialization of ASTEC's Thermal-Hydraulic Solver with Machine Learning-Based Methods for Enhanced Convergence in Severe Accident Simulations - Marcello Savini, *University of Bologna*
- Q&A

WEDNESDAY, JUNE 18, 2025 | DAY 2

08.30 Registration

09.00 Data management, Nuclear Anthologies and CONNECTNM project - Emanuele Ghedini, *University of Bologna*

09.30 Experimental Campaigns and Facility Updates
Chair: Carlo Carelli

- Flow Induced Vibration (FIV) experiment in the HELENA facility - Ivan Di Piazza, *ENEA*
- Lead corrosion performance of Al and Cr based pack cementation coatings on 316Ti without pre-oxidation treatment - Chantal Vannini, *NEWCLEO*
- NACIE-LHT revamping and experimental test - Pietro Cioli Puviani, *NEWCLEO*
- Measurement of 63,65Cu neutron capture cross sections at the n_TOF facility - Nicholas Pieretti, *University of Bologna*
- Q&A

10.45 Poster Session - Coffee Break

11.15 Round Table: Experimental data for innovative nuclear reactors
Chair: Marco Utili

12.15 Conclusion and Final remarks
Mariano Tarantino – *Head of ENEA NUC-ENER Division*
Matteo Gherardi - *University of Bologna*

12.30 End of Workshop