

SCOPE OF THE SCHOOL

The main target of the summer school is to disseminate the knowledge consolidated and gained along the R2CA project to Masters and PhD students, young researchers and engineers involved in nuclear energy and reactor safety analyses. Along the school the main safety aspects related to DBA and DEC-A of LOCA and SGTR accidents will be discussed focusing the attention on the phenomenology, experimental knowledge available and current numerical modeling. Main advancements within the R2CA project will serve as a background to show the current state of art and the new ideas. The school will target both fundamental knowledge, current nuclear safety best practices and innovation. In addition, a panel of topics of interest for the future of nuclear safety research will also be presented.

REGISTRATION

In-person by April 30th 2023



Free



**ENEA Bologna, Via Martiri di
Monte Sole, 4, 40129 Bologna BO
(TO BE CONFIRMED)**

R2CA TARGET

R2CA project is devoted to the increase of Nuclear Power Plants safety level by providing more realistic evaluations of the radiological consequences of accidents in the Design Basis and Design Extension Condition domains (DBA and DEC-A) and optimizing their managements. It focused on Loss-of-Coolant (LOCA) and Steam Generator Tube Rupture (SGTR) transients. Main expected results are improved calculation methodologies as well as innovative measures or tools for an early diagnosis and better management of accidents.



<https://r2ca-h2020.eu/>

COURSE COORDINATOR

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R2CA

Short Course

**DBA and DEC-A for
Light Water Reactors**

**BOLOGNA, ITALY
JULY 4-6, 2023**



**Jointly Organized by
ENEA and IRSN**

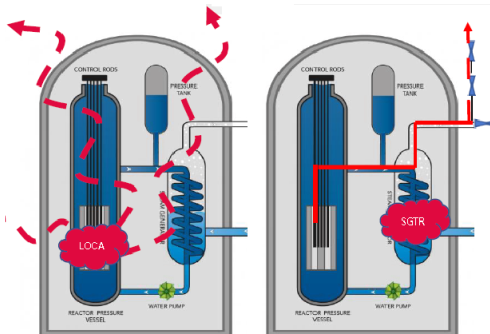
ENEA IRSN



This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement n° 847656

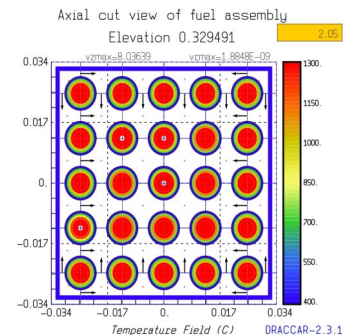
Day 1: July 4

- 09:00-09:10 **Welcome & introduction**
- 09:10-09:30 **Classification of accidents**
SAPIENZA
- 09:30-09:50 **Good practices for analyzing DEC-A**
TRACTEBEL
- 09:50-10:10 **R2CA project overview**
IRSN
- Session 1 Fundamentals**
- 10:10-10:40 **LOCA accidents**
ENEA
- 10:40-11:00 *Break*
- 11:00-11:30 **SGTR accidents**
BELV
- 11:30-12:00 **Safety systems & accident mitigations**
BOKU
- 12:00-12:30 *Reserve for discussion*
- 12:30-14:00 *Lunch*
- Session 2 Simulation tools**
- 14:00-14:30 **Integral simulation tools**
IRSN
- 14:30-15:00 **Fuel behaviour tools**
JRC
- 15:00-15:30 **FP behaviour/release tools**
POLIMI
- 15:30-16:00 *Reserve for discussion*
- 16:00-16:15 *Break*
- 16:15-17:15 **CASE STUDIES**
JRC, POLIMI



Day 2: July 5

- Session 3 R2CA main advancements**
- 09:00-09:20 **R2CA main outcomes**
IRSN
- 09:20-09:50 **Database on dedicated experiments**
EK
- 09:50-10:20 **Accident Management procedures**
BOKU
- 10:20-10:50 **Accident diagnosis/prognosis by means of IA**
NINE
- 10:50-11:10 *Break*
- 11:10-11:40 **Core modelling approaches for failed fuel assessment**
IRSN
- 11:40-12:10 **Clad behaviour modelling advancements**
IRSN
- 12:10-12:30 *Reserve for discussion*
- 12:30-14:00 *Lunch*
- 14:00-14:30 **Fuel behaviour modelling advancements**
JRC
- 14:30-15:00 **Accident Tolerant materials**
EDF
- 15:00-15:30 **FP transport/behaviour in RCS**
UJV
- 15:30-16:00 *Reserve for discussion*
- 16:00-16:15 *Break*
- 16:15-17:15 **CASE STUDIES**
BOKU



Day 3: July 6

- Session 4 Interactions with projects**
- 09:30-09:50 **Probabilistic safety evaluation of radiological releases: CONFIDENCE**
IRSN
- 09:50-10:10 **High fidelity Safety analysis methodologies for SMRs : McSAFER**
KIT
- 10:10-10:30 **Uncertainty sources analyses & qualification in severe accidents : MUSA**
CIEMAT
- 10:30-10:45 *Break*
- Session 5 Overview of perspectives**
- 10:45-11:00 **Passive mitigation strategies in SMRs : SASPAM-SA**
ENEA
- 11:00-11:15 **High performance computing thermomechanical tool for eATF developments : OperaHPC**
CEA
- 11:15-11:30 **Accelerated Program for Implementation of secure VVER fuel Supply**
JRC
- 11:30-12:00 *Reserve for discussion*
- 12:00-12:15 **STUDENT QUIZ**
- 12:15-14:00 *Lunch*



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