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COVER NOTE

Subject:	ENEN - The European Nuclear Education Network - Education and Training Opportunities in Nuclear: Powerpoint presentation (Research(atomique questions) WP meeting 19.05.2022)

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The European Nuclear Education Network – Education and Training Opportunities in Nuclear

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Executive Director

International non-profit association

The European Nuclear Education Network, ENEN, is an **international non-profit association** established under the Belgian law*.

It was **originally established** as a non-profit association under the French Law, based in CEA-Saclay, France, in **2003**.

ENEN implemented an **international legal cross-border** restructuring, transferring its activities to Belgium, in **2018**, .

ENEN has currently **two offices**; one situated in Brussels and the second office hosted by the Joint Research Centre of the European Commission in Belgium.

*Public registration: https://kbopub.economie.fgov.be/kbopub/zoeknummerform.html?lang=en&nummer=0687994274&actionLu=Zoek

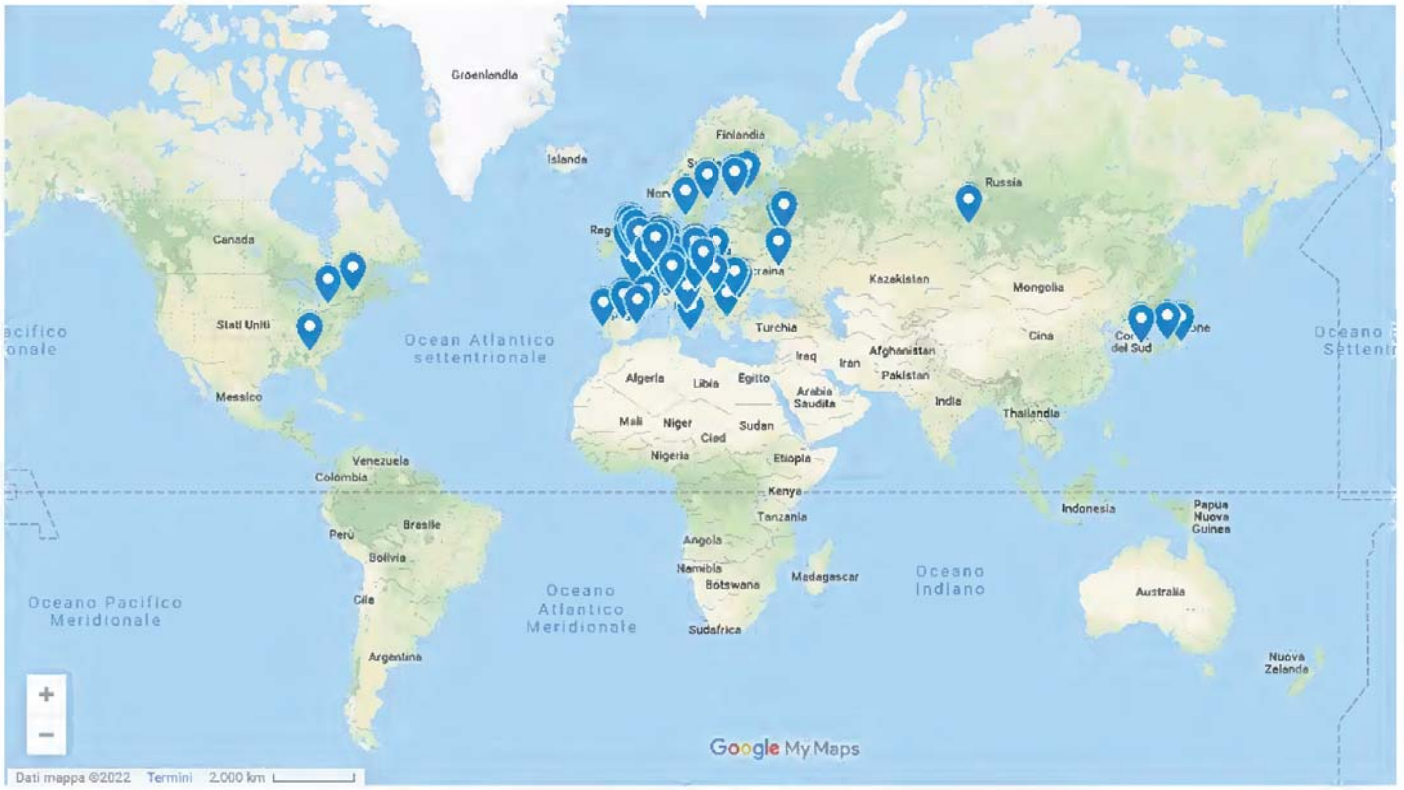
Where we are:
2 new offices in Belgium

✓Brussels, Belgium

✓Geel, Belgium

ENEN Members in 2022

87 (-4) Members from 27 Countries:



2022 figures

Today, ENEN has 87 (-4) **Members and Partners** from 25 countries:

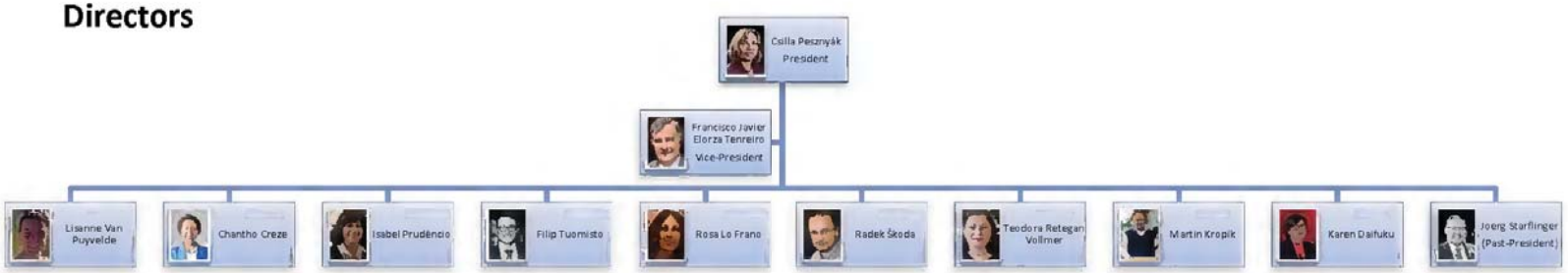
- Universities, Research Centers, Companies, TSOs, International Institutions;
- 18 EU Member States (ENEN Members – European Nuclear Education Network);
- 12 international institutions (MoU).

Partnership with International institutions and sister organizations

- European Nuclear Society
- University Network of Excellence in Nuclear Engineering
- World Federation of Science Journalists
- FORATOM
- Fusenet
- NUGENIA – SNETP
- International Institute for Nuclear Energy
- European Safeguards Research & Development Association
- International Atomic Energy Agency/collaboration framework with worldwide sister organizations
- Nuclear Energy Agency of the Organisation for Economic Cooperation and Developmen
- World Nuclear University
- Nuclear Engineering Department Heads Organization - US

ENEN Coordination in 2022

Board of Directors



Management

OBJECTIVES

The main objective is the **sustainability** and further **development** of expertise in the nuclear fields by higher Education & Training:

- Promote and further develop the **collaboration** in nuclear education and training of students, researchers and professionals
- Ensure the **quality** of nuclear education and training
- Increase the **attractiveness** for engagement in the nuclear fields for students, researchers and professionals
- Promote **life-long learning** and career development at post-graduate or equivalent level

Why we need nuclear Education and Training?

ENEN's answer to support creation and maintaining of competences in order to ensure the best qualified workforce to:

- Set the best safety standards;
- Have highly professional nuclear inspectors nuclear regulators;
- Manage nuclear engineering, chemistry, radiation protection, waste management, geological disposal, decommissioning;
- Develop nuclear Medicine (isotopes use in cancer treatments) and other non-power applications (cf. space, agriculture)

ENEN Role

Activities executed by ENEN

- Organization of Education and Training activities for:
  - Academia - all related topics
  - Non power applications
  - Industry
  - Regulatory
  - etc.
- Coordination of EU-projects, financed by EU
- Dissemination and Communication activities
- **Support for mobility of students**

The R&D is carried out by ENEN members.

Special connection with EHRO-N

European Human Resources Observatory for the Nuclear Sector (EHRO-N) managed by JRC

ENEN is member of the Advisory Board of EHRO-N and, in the same time, is developing on continuous basis joint actions dedicated to the HR (in terms of assessment of quantitative and qualitative needs) both at market but also at policy level.

ENEN activities during pandemic

Strictly ENEN

- Communication and Dissemination activities for our members, partners and other E&T institutions
- Participation in webinars as speakers or as co-organizers: IAEA networks, NKM and TWG of NKM, OECD-NEA on Global forum and NEST; SNETP; FORATOM ETWG; AFCONE, I2EN, Nuclear 2021, ESARDA, INPRO, MEDIRAD.
- Organized activity: Nuclear Energy Management School together with IAEA.

Traditional Activities: PhD Event & Prize

- **ENEN PhD Event & Prize 2021**
  Sept 2021 (Bled, Slovenia @NENE Conference)<-in presence!

Laureates:

- **Carolina INTROINI,**
- **Daria KOLIESNIKOVA,**
- **Luiz PEREIRA.**

ENEN PhD Event & Prize 2022
FISA&EURADWASTE 2022
->in presence! (27 apps)
->14 accepted for the final presentation

Traditional Activities: EMSNE

European Master of Science in Nuclear Engineering Certification

It is a **Certificate** delivered by the European Nuclear Education Network Association, with the endorsement of all its members, in order to certify the highest quality standards of Nuclear Engineering Education and the European dimension pursued achieved by the EMSNE laureate.

Running E&T opportunities

Attract, Retain and Develop New Nuclear Talents Beyond Academic Curricula

- https://plus.enen.eu/
- October 2017 – September 2021
- 1,000,000€ in Grants for students, researchers and trainees (600 mobilities provided)
- To set European ETKM strategy
- 22 partners from 10 countries

This project has received funding from the Euratom research and training programme H2020 under grant agreement No 755556

Accelerator and Research reactor Infrastructures for Education and Learning

This project allows the most modern and state-of-the-art European neutron beam facilities based on accelerators and research reactors to reunite and tackle the challenge of obtaining precise nuclear data.

The goal is to foster the seamless transfer of knowledge to the younger generation, including in countries with less advanced nuclear programs.
The target is to provide researchers with 3000 beam hours for their experimental work in 23 different accelerators or reactor-based neutron facilities.
Mobility support is provided.

This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 847594

European Leadership for Safety Education

To develop a certified university diploma in the field of safety leadership based on up-to-date scientific knowledge and best practices;

To experiment the training curriculum of this diploma with a group of young professionals from INSC and European countries .

Project provides support for INSC mobilities.

To establish the basis for a sustainable development of leadership for safety education:

- by making leadership for safety education available to students through a network of "implementing European Universities", as a component of a Master's degree;
- by designing a **free** MOOC for a worldwide reach;
- by creating an international and multidisciplinary network of academics and experts in the domain of leadership for safety. The first step towards the creation of this network involved the organization of an international workshop.

The ELSE project is funded by the European Union

Safeguards Training and Education

Objective:

Strengthen the capabilities of the beneficiary Nuclear Regulation Authorities and their support organizations) in charge of **safeguards**. Training and education for the staff or potential future staff of these organizations involved in conducting inspections, facilitates fulfilling the countries' **international safeguards** obligations.

Development and implementation of a

- condensed 1-week course (to be held multiple times during project implementation);
- two-week course (to be held multiple times during project implementation);
- one Year Master Program that is to be officially recognized and accredited;

Facilitating the exchange of experience through cooperation between EU and partner countries' nuclear safeguards organizations.

Project provides support for INSC mobilities.

The SaTE project is funded by the European Union

TOURR | nuclear research reactors

Toward Optimised Use of Research Reactors

TOURR project's primary objective is to develop a strategy for RR in Europe and prepare the ground for its implementation.
The project has 9 partners from 7 countries.

This strategic goal can be divided into specific objectives:

(1) Assessment of the current status of European RR fleet, including plans for upgrade;
(2) Evaluation of urgent EU needs;
(3) Developing tools for optimal use of RR fleet,
(4) Rising awareness among decision makers on the (future) role of RRs.

The ambition of TOURR project is to **secure access and availability of RRs** as a vital part of the European Research Area and to support **stable supply of medical radioisotopes**.

This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 945269.

Augmented cooperation in education and training in nuclear and radiochemistry

The project primarily addresses the need for radiochemistry expertise and the loss of the young generation's interest for nuclear knowledge.

It is focusing on secondary / high school students and teachers and involving them by the "Learn through Play" concept.
This will be achieved by bringing **advanced educational techniques** such as:

- state-of the art 3D virtual reality NRC laboratory,
- Massive Open Online Courses,
- RoboLab distance operated robotic experiments,
- Interactive Screen Experiments,

All the new and existing tools wrapped-up around the A-CINCH HUB – a user-friendly and easy-to-navigate single point of access.
There is a 50.000 EUR fund available for mobility of students.

This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 945301.

Joint European Canadian Chinese development of Small Modular Reactor Technology

The ECC-SMART is oriented towards assessing the feasibility and identification of safety features of an intrinsically and passively safe small modular reactor cooled by supercritical water (SCW-SMR), considering specific knowledge gaps related to the future licensing process and implementation of this technology.

20 Partners, from 3 continents.

The main objectives of the project are to define the design requirements for the future SCW-SMR technology, to develop the pre-licensing study and guidelines for the demonstration of the safety in the further development stages of the SCW-SMR concept including the methodologies and tools to be used and to identify the key obstacles for the future SMR licensing and propose strategy for this process.

A mobility fund is available for interested audience.

This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 945234.

GRADUATE EDUCATION ALLIANCE FOR TEACHING THE PHYSICS AND SAFETY OF NUCLEAR REACTORS

A consortium made of 10 Partners from 8 countries.

The GRE@T-PIONEeR project aims at developing a specialized education in reactor physics and nuclear reactor safety for PhD and Post-Doc students, for nuclear engineers, and taken as advanced courses for MSc students.

The education will encompass both **theory and hands-on training exercises**, the latter heavily relying on the use of research/training reactors and of computer-based modelling environments.

The covered topics will allow the students to fully comprehend all the methods and corresponding approximations used for modelling the behavior of nuclear reactor cores, from the generation of nuclear cross-sections to the response of a reactor during a transient.

This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 890675.

New EURATOM projects - 2022

Acronym		NRT
ENEN2plus	Building European Nuclear Competence through continuous Advanced and Structured Education and Training Actions	13
FREDMANS	Fuel recycle and experimentally demonstrated manufacturing of advanced nuclear solutions for safety	2
Go Viking	Gathering expertise on vibration impakt in nuclear power generation	1
Tandem	Small modular reactor for a european safe and decarbonized energy mix	2
OFFERR	OFFERR – eurOpean platForm For accEssing nucleaR R&D facilities	12
SECURE	STRENGTHENING THE EUROPEAN CHAIN OF SUPPLY FOR NEXT GENERATION MEDICAL RADIONUCLIDE	10

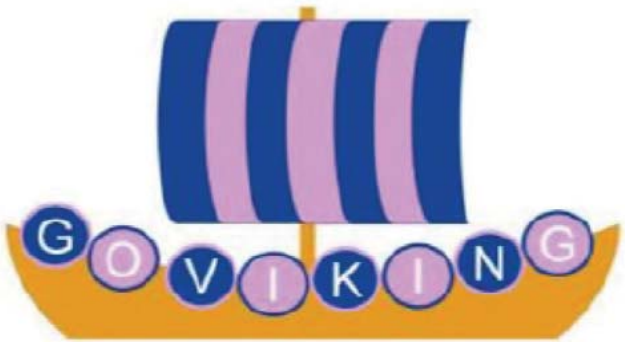
ENEN2plus

- 53 Partners from 3 continents
- Based on the former ENENplus
- Targeting to strengthen the nuclear education at a whole
- Mobility, education and training fund of 2.5 Mil EUR
- Knowledge hub to be developed
- Developed VET programs

FREDMANS

- 17 Partners from 11 countries
- Research and Innovation
- Fuel recycle and experimentally demonstrated manufacturing of advanced nuclear solutions for safety
- FREDMANS aims to increase safety and efficiency in both nuclear power production as well as the recycling of spent fuel.
- Mobility fund available

Go Viking



- Research and Innovation
- 18 Partners from 9 countries
- The GO-VIKING project aims at improving the current state-of-the-art of fluid induced vibrations knowledge and analysis concerning the following global targets: improve overall NPP safety, enhance plant reliability in long-term operation and power uprate programs, reduce staff exposure, design components that are less susceptible to FIV, and increase the regulatory acceptance.
- The GO-VIKING consortium gathers expertise from research, industry and technical safety organisations

Tandem

- Research and Innovation
- 17 Partners from 8 countries
- **Assessment** of the safety compliance of Small Modular Reactors in the Member States that opt for such energy mix
- Foster enabling environment for development of hybrid energy systems based on SMRs and AMRs

SECURE

- Research and Innovation
- 17 Partners from 10 countries
- The SECURE project aims to make a major contribution to the sustainability of medical isotope production and its safe application in Europe;
- To remove critical barriers along the production of its selected alpha and beta emitting isotopes that restrict a sustainable production;
- Develop a framework of guidance and recommendations that enables exploring the full clinical potential of alpha and beta particle therapy and its safe application

OFFERR

- 15 Partners from 10 Countries
- Access to research infrastructures for scientists;
- Support for research activities
- Design of research programs
- Mobility scheme in conjunction with ENENplusplus

Thank you for Your attention

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19 May 2022