European Nuclear Education Network

Pedro Diéguez Porras
Secretary General
European Nuclear Education Network

European Nuclear Young Generation Forum 2015

Paris, France - June 26th, 2015
The European Nuclear Education Network, “ENEN”, was created as a French association in 2003.

The main objective is the preservation and further development of expertise in the nuclear fields by higher Education and Training

- Promote and further develop the collaboration
- Ensure the quality of nuclear education and training
- Increase the attractiveness of the nuclear fields
- Promote life-long learning and career development
The following European institutions are members of ENEN with voting rights at the General Assembly:

<table>
<thead>
<tr>
<th>No.</th>
<th>Institution</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Atomirnstitut der Oesterreichischen Universitaeten</td>
<td>ATI</td>
<td>Vienna</td>
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<td>2</td>
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<td>SCK</td>
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<td>CEA/INSTN Centre d'Etudes de Saclay</td>
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<td>Saclay</td>
<td>France</td>
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<td>16</td>
<td>Centre National de la Recherche Scientifique</td>
<td>CNRS</td>
<td>Paris</td>
<td>France</td>
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<td>Institut Regional Universitaire Polytechnique</td>
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<td>20</td>
<td>Institut Superieur des Techniques de la Performance</td>
<td>ISTP</td>
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<td>Nancy</td>
<td>France</td>
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<td>22</td>
<td>Institute of Nuclear Fuel Cycle, RWT Aachen University</td>
<td>INBK</td>
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<td>Technische Universitaet Muenchen</td>
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<td>26</td>
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<td>J. W. Goethe Universitaet</td>
<td>IAPFU</td>
<td>Frankfurt</td>
<td>Germany</td>
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### ENEN Members in March 2015

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<td>29</td>
<td>Budapest University of Technology and Economics</td>
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<td>Bucharest</td>
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<td>University of Manchester</td>
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<td>53</td>
<td>University of Hertfordshire</td>
<td>Hatfield</td>
<td>United Kingdom</td>
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</table>
ENEN Members in March 2015

The following institutions from outside Europe are considered ENEN Member, without voting rights at the General Assembly, by concluding a Memorandum of Understanding:

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<td>61</td>
<td>V. N. Karazin Kharkiv National University</td>
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<td>University Network of Excellence in Nuclear Engineering</td>
<td>Canada</td>
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<td>65</td>
<td>Joint Research Centre of the European Commission</td>
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</tr>
<tr>
<td>66</td>
<td>World Nuclear University</td>
<td>United Kingdom</td>
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Acknowledgement by the European Union Council  
(1-2 December 2008)

“The Council hopes that, with the help of the EU, ENEN and its members will continue to develop the coordination of nuclear education and training in Europe.

The Council welcomes the existence within the European Union of coordinated teaching and training leading to qualifications in the nuclear field, provided notably by the ENEN”.
“ENEN defended the support to the Education and Training in the nuclear field as a necessary contribution to assure the Nuclear Safety throughout Europe and beyond, together with the promotion of a healthy Nuclear Safety Culture”.

“The NUSHARE Project, as a service to the European citizens, aims at enhancing and better spreading of nuclear safety culture principles, in line with the emphasis on this aspect in the proposed amendments to the new Nuclear Safety Directive”.
1. ENEN’ ACTIONS
EMSNE Certification

Signature of Practical Arrangements with IAEA

PhD Event & Prize

Competitive and friendly presentation of research in Nuclear fields.
12 Finalists, of which 3 winners

This year will be held in ICAPP’2015
Master level : European MSc in Nuclear Engineering

- Established under the European Commission since 2005
- Quality and international mobility at international level
- Common reference curricula and mutual recognition among ENEN members
- Promotes and facilitates mobility of students and teachers

Certifications

European Master of Science in Nuclear Engineering (EMSNE)
European Nuclear Education Network
September 2014 – Present
Master level: European MSc in Nuclear Engineering

Requirements
- At least 5 years university education (3+2, 4+1, or 5).
- At least 60 ECTS must be “purely nuclear”
- 20 ECTS must be obtained from a “foreign” institution, member of the ENEN Association
- Master thesis

List of topics:
- Reactor engineering
- Reactor physics
- Nuclear thermal hydraulics
- Safety and reliability of nuclear facilities
- Reactor engineering materials
- Radiology and radiation protection
- Nuclear fuel cycle and applied radiochemistry
EMSNE 2013 ceremony held during the 58th IAEA General Conference in Vienna, Austria, on 25 September 2014.
European Master in Innovation in Nuclear Energy (EMINE)

- In the frame work of the European Institute of Technology –KIC InnoEnergy.
- **Duration**: 120 ECTS, two years.
- **Language**: English
- **Mobility track**:
  - First year: at UPC (Barcelona, Spain) or KTH (Stockholm, Sweden)
  - Second year: at Grenoble INP (Grenoble, France) or Paris (France)
European Master in Innovation in Nuclear Energy (EMINE)

30 Scholarships / year

• For European students:
  + 750 Euro/month, during 2 years= 18,000 euros
  + Tuition fees: 8,000 euros for the two years
  = Total: 26,000 euros

• For Non European students:
  + 750 Euro/month, during 2 years= 18,000 euros
  + Tuition fees: 16,000 euros for the two years
  + Travel expenses: up to 1000 euros
  = Total: 35,000 euros
European Master in Innovation in Nuclear Energy (EMINE)

- **Academic partners**: Grenoble INP, UPC-Barcelona-Tech, Paristech, KTH, CEA
- **Industrial partners**: EDF, ENDESA, AREVA, Vattenfall
- Students from: France, Spain, Sweden, USA, India, Lebanon, Argentina, Belgium, China, Egypt, Ghana, Indonesia, Italy, Mauritius, Ethiopia, Bangladesh, Montenegro, Norway, Germany, Poland, Turkey, Vietnam.

PhD level: Annual ENEN PhD Event & Prize

- One-day event during an international conference
- 3 ENEN Prizes of 1.000€
- 12 PhD students:
  - 2nd at International Youth Nuclear Congress (IYNC) in Interlaken, Switzerland, 2008
  - 3rd at International Youth Conference on Energetics 2009 in Budapest, Hungary, 2009
  - 4th PhD event, ENC 2010, Barcelona June 2nd, 2010
  - 5th PhD event, ICAPP 2011, Nice May 4th, 2011
  - 6th PhD event, Inter. Conf. Nuclear Energy for New Europe in Ljubljana, 2012
  - 7th PhD event, Int. Conf. on Emerging Nuclear Energy Syst. (ICENES), in Madrid, 2013.
  - 9th ENEN PhD Event & Prize took place in the framework of the International Congress on Advances in Nuclear Power Plants, ICAPP2015, in Nice, France, 5-6 May 2015
Signature of Practical Arrangements with IAEA

2009

2013

- “Promoting nuclear knowledge management, human resources development and capacity building in Europe through regional networking
- Sharing information and material in Europe between the IAEA and ENEN for the benefit of students and professionals
- Exploring opportunities to participate jointly in activities such as meetings, symposia, workshops
- Exploring opportunities for developing and sharing joint publications and material including e-learning contents”
- Other …
Signature of Cooperation Agreement with other IAEA’s regional networks
AFRA-NEST, ANENT and LANENT

in September 2013
By attending to ENEN meetings you can…

- Meet professors and key experts from around Europe in nuclear engineering
- Share and learn from Nuclear education material
- Influence and shape the future competences in the Nuclear industry
- Learn of opportunities in E&T in Europe
- Publicize your activities at an international level
- Participate in international exchanges
- Start or join new educational & research projects
2. PROJECTS
OBJECTIVE: to develop and implement Education, Training and Information programmes strengthening competences required for achieving excellence in NUCLEAR SAFETY CULTURE.

From January 2013 to December 2016, a 4-years action!
EUROPEAN NUCLEAR EDUCATION NETWORK

Single Beneficiary of NUSHARE

Target Group 1
Policy decision makers & opinion leaders

Target Group 2
Nuclear Regulatory Authorities & TSOs

Target Group 3
Electric utilities, suppliers, & providers of Nuclear services
• Development of concepts and basic programmes
• **NUSHARE Catalogue** (NSC training courses - live document)
  It includes **45 offers** for E.T.I. schemes offered by **20 providers**
• **Stakeholders’ Meeting** (Brussels, March 13-14, 2014)

• **Implementation of Information & Training actions 2015-2016**
Principles for a Strong Nuclear Safety Culture (INPO):

1. Everyone is personally responsible for nuclear safety.
2. Leaders demonstrate commitment to safety.
3. Trust permeates the organization.
4. Decision-making reflects safety first.
5. Nuclear technology is recognized as special and unique.
6. A questioning attitude is cultivated.
7. Organizational learning is embraced.
8. Nuclear safety undergoes constant examination.
FP7 European Fission Training Schemes

**FP7 European Fission Training Schemes**

**PETRUS II and III** – Organization of the PETRUS PhD conference on underground storage with all the experts in the field. Free registration.

**Petrus PhD Conference 2015**

*Programme for Education, Training and Research on Underground Storage*

**Date:** 22nd June at 2.00 pm – 26th June at 12.00 am, 2015  
**Location:** Université de Lorraine - Mines Nancy - France  
**Topic:** Radioactive waste management and disposal
FP7 European Fission Training Schemes


Possibility of benefiting from different kind of grants for students in the project:

• Research internships:
  8000€ per student => a total of 64 000,00 €

• Attending a conference:
  Average 2000€ per student => a total of 29 000,00 €

• Attendance to course/workshop:
  Average of 1500€ per student => a total of 19 000,00 €
Other Projects Involving ENEN

• **Coordination of ENEN III** - Training schemes for Generation III and IV engineers. (2009 – 2013) – Use of ECVET system
• **ENETRAP II** - European Network on E&T in Radiological Protection: addressing mainly the nuclear safety authorities (2009 - 2012)
• **FP7 CORONA** Establishment of Regional Center of Competence for VVER Technology and Nuclear Applications (2011 – 2014)
• **FP7 CINCH-II** - Cooperation in education and training In Nuclear Chemistry: focus on the European master's degree in nuclear and radiochemistry (2013 – 2016)
• **FP7 EUTEMPE-RX** - EUropean Training and Education for Medical Physics Experts in Radiology: (2013 – 2016)
• **FP7 GENTLE** - Graduate and Executive Nuclear Training and Lifelong Education (2013 – 2017)
Cooperation beyond EU (FP7)

Coordination of ENEN-RU II - Cooperation with Russia in Nuclear Education, Training and Knowledge Management: focus on the mobility of teachers and students (November 2010 – October 2012)

Coordination of ECNET - Cooperation with China in Nuclear Education, Training and Knowledge Management: focus on the mobility of teachers and students (November 2010 – October 2012)

Bilateral Cooperation between Industrialised Countries

Coordination of EUJEP-2 Project (Japan) - Foster, organize and implement exchanges of European and Japanese Master level students with mutual recognition of credits (October 2014 – October 2017)
Bilateral cooperation-EUJEP-2 (Japan)

Objective: Foster, organize and implement exchanges of European and Japanese Master level students with mutual recognition of credits.

36 months from October 2014 to September 2017

Mobility opportunities:

- EU: 20 students for a total of 100 months
  Grant: 1500€ (trip) + 5000€ for a 5 months stay
  8 faculty staff for a total of 16 weeks

- Japan: 20 students for a total of 100 months
  18 faculty staff for a total of 36 weeks
Bilateral cooperation ENEN-RU II (Russian Fed.)

"Strengthening of Cooperation and Exchange for Nuclear Education and Training between the European Union and the Russian Federation"

36 months from July 2014 to July 2017

Coordinators: ENEN and ROSATOM

Work Packages:
- **WP1**: Nuclear competence building by E&T
- **WP2**: ENEN-RU E&T Forum
- **WP3**: Strengthening participation in Nuclear Education
- **WP4**: Strengthening participation in Nuclear Training
- **WP5**: E&T facilities, laboratories and equipments
- **WP6**: Project management and Knowledge dissemination
Bilateral cooperation ENEN-RU II Project

PARTNERS ON THE EUROPEAN SIDE:
- European Commission
- European Nuclear Education Network Association (ENEN)
  - Belgian Nuclear Research Centre (SCK-CEN), Belgium
  - Ceske Vysoke Uceni Techniske V Praze (CTU), Czech Republic
  - Centrum Vyzkumu Rez S.R.O (CV REZ), Czech Republic
  - Universität Stuttgart (IKE), Germany
  - Technische Universitaet Muenchen (TUM), Germany
  - Consorzio Interuniv; Nazionale per la Ricerca Tecnologica Nucleare (CIRTEN), Italy
  - University Politehnica Bucharest (UPB), Romania
  - Slovenska Techniska Univerzita v Bratislave (STUB), Slovakia
  - University of Manchester (UM), United Kingdom

  All ENEN Members will have an opportunity to contribute under the ENEN umbrella

PARTNERS ON THE RUSSIAN SIDE:
- State Atomic Energy Corporation “Rosatom”
- Consortium of ROSATOM Core Universities:
  - National Research Nuclear University “MEPhI” (NRNU MEPhI)
  - Obninsk INPE NRNU MEPhI
  - Rosatom Central Institute for Continuing Education and Training (ROSATOM-CICE&T)
ANNETTE
Advanced Networking for Nuclear Education and Training
and Transfer of Expertise

Proposed logo:
General Characteristics

The *ANNETTE* Proposal has been submitted to the Euratom call under **NFRP-10** within September 17\textsuperscript{th}, 2014.

It required an effort spent during last spring (for the first ideas) and last summer.

The proposal is worth an EC request of **2.5 MEuros**, with a total cost of about **3.2 MEuros**.

An effort was made in order to involve the large number of **27 participants**, also owing to the focus on coordination of the first work package.
Master and Summer School for CPD

Production of teaching material

ECVET application in industry

Initiatives for NSC enhancement

Contacts with Platforms, etc.

FuseNet asked to join to coordinate «nuclearization»
Thank you for your attention!

European Nuclear Education Network Association
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