Systematic approach to the development of human resources for nuclear power

Ludwik Dobrzyński
National Centre for Nuclear Research (NCBJ)
A.Soltana 7, 05-400 Otwock, Poland

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IAEA recent conference on Human Resources for Nuclear Power


The contest

• The by-product of the conference: an International Student Competition to foster the younger generation’s interest in nuclear science and technology

• Students (aged 14-18 and currently enrolled in secondary schools) are invited to promote discussion and raise awareness on the current or future impacts and applications of nuclear science and technology in our lives
N-HRD in Japan

- Nuclear Human Resource Development Center (NuHRDeC) established in 1958
- NuHRDeC's program consists of
  - education and training for national nuclear engineers,
  - cooperation with universities and
  - international training and cooperation
- The main feature of NuHRDeC's training programs is that the curricula places emphasis on the laboratory exercise with well-equipped training facilities and expertise of lecturers mostly from JAEA
Skill Training Center and Hands-On Experiencing General Training Facility on Daiini Site

Skill Training Center
- Mechanical equipment
- Electrical and instrumentation equipment
- Radiation control, environmental chemistry, fuel technical equipment
- Training scene

General Training Facility
- Hazard Simulation Training Facility
- Past Troubles and Lessons-Learned Exhibitions

From presentation by Yasuyuki Otsuka, N-HRD Japan-Polish Meeting, Warsaw, November 2018
MARIA: the only research reactor in Poland
Education inside MARIA reactor’s hall
More on NPP: big mock-up of WWER-440
Introduction to HTR and its applications
LABORATORY of Atomic and Nuclear Physics

Over 30 hands-on experiments
Exhibition on Nuclear Waste
Simple detectors
An Outline of Nucleonics
PWN, Warsaw, 2017
Science Picnic
under the tent in National Stadium in Warsaw, 2015
Educational posters

Energia i jej przemiany

1. Od energii pierwotnej do użytnej
2. Od paliwa kopalnego do tradycyjnej żarówki
3. Zużycie energii pierwotnej na świecie
4. Zużycie paliw kopalnych na świecie
5. Wytwarzanie energii elektrycznej na świecie
6. Energia i paliwa potrzebne do jej uzyskania
Simple thoughts on early conditions to create many good and well motivated students

• Education is a long and continuous process
• The knowledge is absorbed in the best way by young people
• The interests in special subjects are developed mainly when children are about 12-14 years old. And this is good time to make them interested in nuclear matters
• To do that we need well educated and dedicated teachers, who would keep good contacts with nuclear institutes, that should also be presented to their students
N-HRD in NCBJ

• NCBJ is R&D institution with an important expertise in various fields of nuclear science
• Being mainly research institute and owner of the research reactor, NCBJ can think about offering intensive help to schools of various levels, from secondary schools (incl. teachers) and universities
• Thus NCBJ developed a system of courses (with hands-on experiments) on the
  – sources, properties and usage of ionizing radiation,
  – radiation protection,
  – for accelerators and nuclear reactors’ operators
Promotion of N-HRD in Poland by NCBJ

- Activity of the Education and Training Division is widely known in Poland. It is visited by even 8,000 visitors a year. The didactic broshures and recently published monograph „An Outline of Nucleonics” promotes the awareness of nuclear science and technology
- The academic lectures on nuclear power, and nuclear matters are available from our web-page
- International School on Nuclear Power, organized annualy since 2009, gathers about 200 students every year
- PhD Studium (graduate studies) on modern Nuclear Power was put into operation this year
- There is an activity going on on preparation to construction of the High Temperature Reactor at NCBJ
Social education

• Our speakers propagate information about nuclear power in many places all over Poland, also work occasionally as advisers to parliamentary commission and ministers.

• Popularization of nuclear matters (public education) helps in creating balanced approach to nuclear power and to counteract radiophobia.
Students’ contest „The Paths of Physics”

- Organized since 2005
- The topics selected by students are freely chosen by them
- Almost no works from nuclear physics – the topic almost nonexisting in schools curricula of recent years
- New curricula should change this situation
Cloud chamber made by the student
1st Prize in 2018
We are still developing means of our communication

Thanks for your attention