



**European Nuclear Society**  
e-news Issue 22 November 2008

## Feeling the financial crunch?

Unless you have spent the last few weeks and months orbiting Mars, you can't have failed to notice that the world seems to be gripped by a state of total panic. The global financial crisis, the looming threat of a major economic recession and increasing pessimism about the future continue to dominate the front pages of the press and most TV and radio news reports. With the value of certain companies and banks being dramatically slashed in a matter of hours and savers showing signs of justifiable neurosis, politicians have been forced to take decisive action to bail out beleaguered financial institutions, guarantee the safety of people's life savings and restore some semblance of stability and confidence. Traditional economic wisdom has been severely called into question, as has the long term viability of various economic models. Booksellers across Europe have announced a sudden surge in the sales of the Karl Marx classic *Das Kapital*, as advocates of Marxist economic theory see a chance to grab the spotlight and smugly say "I told you so."

Well, whatever your take on the current situation and on the causes and possible solutions may be, one thing cannot be denied - that we are experiencing something that is uniquely global in scale and impact. It is a time for cool heads, nerves of steel and carefully calculated strategies for riding out the current storm. The best prepared will, as usual, be the best placed to benefit when the turn-around occurs.

Several friends and family members have asked me how the nuclear industry has reacted to the spectre of economic recession, rising unemployment and declining investor confidence. Of course, it is a perfectly legitimate and relevant question. No sector of the economy, company or individual consumer can remain totally immune to the credit crunch. If they say otherwise they are badly informed, worryingly naïve or simply being economical with the truth.

The current nuclear revival is in full flow. Nuclear energy's growing security of supply and climate change credentials and its recently-acquired political muscle have led to a fundamental change in policy in some countries and to a gradual but significant increase in public acceptance of nuclear. At a time when things are going well and the future looks rosy it is all the more relevant and necessary to consider whether the current financial crisis will threaten the nuclear resurgence. It's logical to think that investors might get cold feet and decide not to put their hard-earned cash into a nuclear tomorrow – or at least keep things on hold until the financial climate improves. It would be a bitter irony if, at a time when our industry is experiencing such an upsurge, that external circumstances were to rain on our parade. The question is – and I have to admit that I haven't done a very good job good in answering those questions so far – is whether such an assumption is accurate or not. That's one for the experts to answer.

Keen to shed some light on this question, *ENS NEWS* sought out the views of experts from both the industry and the financial community – those who are in the front line

of the nuclear resurgence and those who can bring sanity and clarity to the chaos. Since the UK recently nailed its nuclear new-build colours to the mast, I thought that the British case might be the most interesting one to study closely.

I contacted the Nuclear Industry Association (NIA) in the UK to get a reaction from a utility perspective and then got in touch with Deloitte for an expert assessment from a financial community perspective.

Here is what they had to say.

First up, Keith Parker, Chief Executive of the NIA:

*Nuclear power stations are by nature very long-term projects. They take 10 years to plan and construct and will then have an operational life in the region of 60 years. Though the current economic climate is challenging, investors understand that these short-term difficulties can be overcome – and that a nuclear power station will remain a strong investment opportunity going forward.*

*A key factor in the recent economic turmoil has been the unreliability of fossil fuel prices. Different economic conditions can best be guarded against by a diversity of interests; this way we can see utilities increasingly aiming to diversify their generation portfolio – with many hoping to develop a mix that includes fossil fuel fired generation, renewables and nuclear.*

Alastair Srimgeour, a Partner at Deloitte in the UK, and his colleague Kevin Magner, a Project Finance Director, combined to give the following considered view from a financial expert's perspective:

*Although the impact of the credit crunch is being widely felt, nuclear new build is one area where the impacts are likely to be limited for a number of reasons:*

*Firstly, the timescale for nuclear new build projects runs well into the future and only planning and preliminary works are in prospect in the near future. This is helpful because it currently looks as though it may be into 2009 before the bank debt market reaches a stable condition less reliant on daily central bank support for funding of many bank loan books.*

*Secondly, it is likely that nuclear new build in the UK will be driven primarily by large utilities such as EDF, Centrica, E.ON and RWE. These large corporates are in as good a position as most banks to raise funds and better placed than many of the weaker banks. They have the option of accessing the bond market directly to obtain finance rather than borrowing from banks. They have large customer bases, a mix of power station types and do not have the large property exposures and toxic securities found in many banks.*

*The UK nuclear new build programme may well be affected by higher debt costs for any particular level of credit rating, as debt markets adapt to the new perceptions of risk and its pricing following the events of September-October 2008 and the authorities' responses. However, this is more likely to be an incremental effect than a dramatic one for UK nuclear new build.*

*In general, other factors such as Government and regulatory policies for the nuclear power industry, public acceptance of the low carbon case for nuclear and the prices of gas and coal as competing fuels are likely to be more significant factors for UK nuclear new build than the credit crunch.*

Of course, the situation can differ from country to country and you may disagree with their theses, but their views are pertinent. So, judge for yourselves whether what they say is relevant to your situation. I would welcome your views on the subject and be delighted to share them with readers in the next edition of **ENS NEWS**.

**ENS NEWS N° 22** kicks off in traditional fashion with its *Word from the President* piece. On this occasion David Bonser focuses readers' attention on the issue of opportunity and responsibility, so often the two sides of the same coin. His thoughts on the subject are outlined in a keynote speech that he gave at the 2008 International Youth Nuclear Congress, in Interlaken, Switzerland.

The connection between the nuclear industry and today's financial situation is then put firmly in the analytical spotlight by Andrew Teller in his usual thought-provoking report.

The ENS Events section provides detailed analysis and appreciation of two of the Society's most important and stalwart international conferences – PIME 2009 and RRFM.

Next up, in the Member Societies and Corporate Members section are a number of reports from Belgium, Slovakia, Serbia, Lithuania, the Netherlands and Russia that reflect the broad geographical spread of ESN's membership. Among the subjects and events discussed are an international conference on secure energy supplies in Slovakia, a report on a new NPP construction project in Lithuania, an important milestone reached in the history of nuclear-generated electricity in the Netherlands and training and education opportunities offered by our Belgian colleagues from SCK-CEN.

The Young Generation Network section of ENS NEWS N° 22 provides two personal appreciations of recent events –the European Nuclear Young Generation Forum, that took place recently in Cordoba, Spain, and the successful return of TopSafe, which drew many ENS members and other delegates to Dubrovnik, Croatia.

It has been a busy period on the EU institutions front and the eponymous section of this quarter's publication is news about two major events organised by FORATOM in October to highlight the priorities and implementation of EU nuclear energy policy: a *Seminar on Public Opinion* and a seminar entitled *Paving the Way to Europe's Low-Carbon Energy Future*. Both events attracted a series of top-level speakers, senior EC officials (including none other than EC President José Manuel Barroso), MEPs, industry representatives, the media and various stakeholders involved in the process and progress of EU nuclear energy policy. The issue of increasing public acceptance of nuclear energy among the EU's citizens and that of promoting the crucial aims of Europe's future low-carbon energy status are of fundamental importance to all sections of the nuclear community.

The ENS World News section features an article on nanofibers as their potential as a means of storing radioactive waste and a couple of news stories from *NucNet*.

Finally, **ENS NEWS** gives advanced information on PIME 2009 and RRFM 2009.

Enjoy ENS NEWS N° 22!



Mark O'Donovan  
Editor-in-Chief, ENS NEWS

<http://www.euronuclear.org/e-news/e-news-22/presidents-contribution.htm>

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## Word from the President



### Opportunity and responsibility – a double-edged sword

Back in September I was fortunate and privileged to have had the chance to address a large number of young nuclear professionals at the International Youth Nuclear Congress (IYNC 2008), in Interlaken, Switzerland. The focus of my talk was the challenges that face talented and visionary young nuclear professionals today and how the resurgent nuclear sector has presented them with a golden opportunity to harness that talent and turn that vision into reality. The main message, which I would like to share with you, concerns the inseparable twin concepts of opportunity and responsibility.

But first allow me to briefly focus on my audience at the IYNC – today's young nuclear professionals. Their future, and that of those who will follow them, is a subject close to my heart. One of my roles in the UK, for example, is to Chair the National Skills Academy for Nuclear. *ENS NEWS* has often reported on the crucial subject of recruiting and retaining the talented and ambitious nuclear professionals of today and tomorrow. IYNC 2008 gave me a platform to express my views.

The young nuclear professionals that attended the Congress, and many thousands of their colleagues around the world, represent the future of the nuclear industry. Aided and abetted by experienced old-timers like many of us, they will set the tone and agenda. Without a constant regeneration of the nuclear talent pool the continued expansion of the nuclear sector and the consolidation of the current global revival will be put in jeopardy. We are all keen to ensure that future generations of nuclear professionals are given the best possible chance to express themselves; to translate their talent and ambition into a fulfilling career; to propel the nuclear industry towards a new era of prosperity and achievement. What most people want from their job is an opportunity to show what they can do and make a genuine and meaningful contribution. That opportunity is staring us in the face today.

Ah yes, there's that word *opportunity* again. A quick trip to the Oxford English Dictionary reveals, significantly, that the word *opportunity* has two meanings: 1) a *career opening* and 2) a *favourable time or set of circumstances for doing something*. Recognising and seizing a career opening is one thing, but it strikes me that failing to make the most of a favourable set of circumstances and failing to translate opportunity into achievement is quite a different proposition; one that has a powerful resonance today.



(Left to right) Kneeling: Sebastian Klengel, Edouard Hourcade; First row: Miguel Sanchez Lopez, Igor Vuković, Susanna Dölen Wegrell, Sini Gahmberg, Gerardo Del Caz Estesio, Ondra Zlámal, Tommi Henttonen, Thomas Bischel; Second row: Andrei Goicea, Ekaterina Ryabikovskaya, Miguel Milan, Wim Uyttenhove, Paul Wouters

And so, back to my main message: opportunity is a double-edged sword. It has an alter ego – called *responsibility*. The nuclear sector is currently experiencing a global revival. It is driving the political debate rather than being relegated to its periphery. More and more countries, motivated by a new spirit of pragmatism fuelled by security of supply and climate change imperatives, are expanding their nuclear operations. Others are revisiting the nuclear option or pursuing it for the first time. Public perception of nuclear energy is evolving favourably and for the first time in a generation young people can see a career in the nuclear sector as a credible, challenging and well paid option. The nuclear revival has, therefore, given us all a tremendous opportunity. Those favourable conditions that the OED refers to are in place. But it has also brought responsibility into sharper focus. The message is clear - we all have a responsibility to make the most of the current nuclear revival; to make our voice heard at a time when people are more prepared to listen than ever before; to promote the excellence of nuclear science and technology with all our wit and energy; to show the wider public that solutions for the safe and efficient long-term storage of radioactive waste are a reality; to persuade young people to join our industry at this most crucial of times. It's a matter of seizing the moment. Simply having that opportunity is no guarantee of success, though. Remember, there is no opportunity without responsibility. In our case, for example, the responsibility to have safety in the forefront of everything we do; to be open, transparent and accountable for our actions; to be committed to our professionalism as scientists and engineers; to play our full part in society. Every generation is judged on results. No-one wants to be remembered for wasting a golden opportunity. The onus to succeed is great. There might not be another such opportunity for a long time.

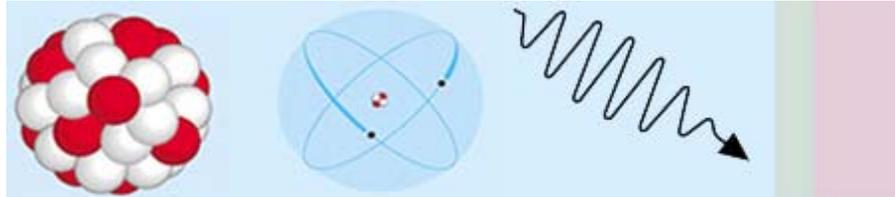
What is absolutely crucial now, therefore, is that we learn from the lessons of the past and build strong and lasting networks – like the Young Generation Network – and strengthen international co-operation at all levels. And we all must do everything in our power to keep that nuclear talent pool well-stocked up. I don't have to convince you of that. I know that many of you are doing precisely this every day. If we – the young and the not so young - can square the opportunity and responsibility equation successfully then we will establish a blueprint for future generations to follow. Failure is not an option. But I am confident that with the enthusiasm and dynamism of youth at the forefront, supported by the experience of the not so young, we will succeed.

David Bonser

<http://www.euronuclear.org/e-news/e-news-22/listening.htm>

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## Two or three things the nuclear industry could have taught Wall Street



by **Andrew Teller**

Like anybody not familiar with financial matters, I have been surprised by the turmoil affecting the world's stock exchanges and the banking system. This disaster, triggered by the failure of the sub-prime scheme, could still entail a global collapse of the economy. Being more familiar with nuclear matters, I have been struck by the parallels that can be drawn between the current financial troubles and a nuclear accident. Apart from the obvious fact that both can be extremely costly, both owe their potential impact to a chain reaction: the bankruptcies propagate in a way that is reminiscent of the fission of nuclei under the impact of neutrons. In addition, in both cases it can be said that a nuclear accident/bankruptcy anywhere is a nuclear accident/bankruptcy everywhere. Drawing similarities goes only so far, but there is one point that, in my view, really deserves to be made. ***Most of the present economic woes could have been avoided if the fancy financial instruments that triggered them had been designed in accordance with safety principles in force in the nuclear industry.*** The safety principles I have in mind are the following:

- Make sure there is an independent body to supervise innovation: the banking sector is highly regulated in most of its areas of activity. However, when it comes to innovation, the banking sector has always been one step ahead of the regulators. It is as though it was given a free rein to implement new responses to stimulate growth. This is nonsense. Vested interests can seriously harm decision making and the system offered enormous rewards to the daring. The nuclear industry on the other hand is supervised by national safety authorities. Their brief is to make sure that designers and operators will comply with the safety rules in force not only in their routine activities but also regarding any innovation they intend to implement. Changes must be submitted to their approval and they examine any proposal with a questioning mind. Their goal is not to redesign the new systems submitted, but to make sure that the designer are complying with the rules.
- Design new instruments so that they can withstand accidents: this is the most fundamental principle of nuclear engineering. What determines the features of a nuclear reactor is its need to be able to withstand the consequences of a series of postulated, credible accidents. The sub-prime system was bound to work well as long the price of houses was increasing and the interest rates remained low. It did not require a leap of the imagination to consider the possibility of the prices

of houses going down and that of the interest rates going up. It appears that the simple exercise of figuring out what would happen in such case was not attempted. This was presumably because the designers of the sub-prime systems would not have liked the conclusions they would have been obliged to draw from it

- Implement traceability: let us take the example of nuclear fuel. All the materials contributing to the fabrication of fuel assemblies must be in perfect condition to avoid failures, i.e. radioactivity releases. When a given component in a given fuel assembly fails, it is extremely useful to be able to trace all the other fuel assemblies containing components coming from the same ingot or machined on the same machine tool for further inspection or, should the need arise, repair or recall. Traceability is also a common feature of car manufacturing for the same obvious safety reasons. It appears again that there is no hope of being able to trace how the sub-prime debt is poisoning the whole financial system.

Perhaps the most important lesson to be drawn from the past events is that world finance has become a highly complex system that must be managed according to principles apportioned to the risks incurred in case of malfunction. Nuclear power generation has been recognised right from the beginning a complex system governed by rules aiming to limit the consequences of possible malfunctions. Perhaps could the world of finance benefit from the expertise accumulated by the nuclear industry over the last fifty years.

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<http://www.euronuclear.org/e-news/e-news-22/pime2009.htm>

ENS EVENTS  
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## Pime 2009

**15 -18 February 2009, Edinburgh, United Kingdom**

PIME, the conference on **P**ublic **I**nformation **M**aterials **E**xchange, is the annual focal point for professional nuclear communicators all around the world. It is the only conference of its kind designed especially for communicators in the nuclear industry and research communities – a unique international meeting that has grown in value and stature year-on-year.

The PIME programme revolves around a series of plenary sessions and interactive workshops. In 2009 key topics on the PIME debating table will, among other things, include public acceptance, communications on nuclear waste and transport as well as crisis communications.

PIME is simply a 'must' for all nuclear public information specialists wishing to enhance and share their know-how and explore possible new strategies.

## MARK YOUR DIARY – Join us in Edinburgh from 15 – 18 February 2009

For further information about PIME 2009 please contact

### Pime 2009 Conference Secretariat

[www.pime2009.org](http://www.pime2009.org)

[pime2009@euronuclear.org](mailto:pime2009@euronuclear.org)

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<http://www.euronuclear.org/e-news/e-news-22/rrfm2009.htm>

ENS EVENTS  
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## RRFM 2009 - Call for Papers



The 13th annual topical meeting on **Research Reactor Fuel Management (RRFM)** will take place in Vienna ( Austria ) from 22. – 25. March 2009.

The RRFM 2009 Programme Committee and the European Nuclear Society (ENS) are NOW calling for presentations.

### Call for Papers

Oral papers and poster presentations are invited on

- **All key areas of the nuclear fuel cycle of Research Reactors** - *Fissile material supply. Fresh fuel and targets: Origin and status, qualification, fabrication. Technical aspects of fuel in-core management and safety. Fresh and spent fuel transportation. Fuel and reactor licensing. Spent fuel storage, corrosion and degradation. Fuel back-end management. Innovative methods in research reactor analysis.*

**NEW** –in 2009 the scope of the programme will be extended to the following subjects:

- **Utilization of Research Reactors** – *Preparation and implementation of strategic and business plans, deployment of additional research reactor applications and marketing of research reactor services. Utilization experience and good practices, especially from well utilized research reactors. Stories of success in improving research reactor sustainability. Utilization of research reactors for research, development, education, training and industrial applications. Articulation and operation of research reactors networks, coalitions and centres of excellence. Experiences of successful application of strategic planning in the transition from full government support to total or partial facility self-sustainability and self-*

*reliance.*

- **Research Reactor Support for Innovative Nuclear Power Reactors and Fuel Cycles** – *Research reactor utilization in support of international initiatives on innovative nuclear power reactors and fuel cycles, including inter alia the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), Generation IV International Forum (GIF), the US DOE Advanced Fuel Cycle Initiative and the US Global Nuclear Energy Partnership (GNEP). Examples of advanced research carried out in research reactors in support of these multilateral undertakings. Identification of research reactor capabilities needed by the international initiatives on innovative nuclear power reactors and fuel cycles. Identification of challenges, constraints and capability gaps potentially limiting research reactor's ability to provide necessary support.*
- **New Research Reactor Projects** – *National and regional plans for new research reactors. Lessons learned from building and operating new research reactors. Role of research reactors in developing nuclear competence to implement nuclear power programmes in a medium to long term perspective. Research reactor capacity needed to meet the future demand for radioisotopes for medicine and industry. Development of national and regional infrastructure necessary to implement new research reactor projects, including inter alia organization and management, uses and applications, funding and financing, stakeholder involvement, legislative framework, regulatory framework, nuclear safety, environmental protection, security and physical protection, safeguards and human resources.*
- **Research Reactor Operation and Maintenance**– *Plant material condition control, managing issues at either end of the facility 'bathtub curve' (commissioning, early operation and end of life/ageing related issues), maintenance assessments and risk informed maintenance programmes, management systems, configuration management, procedure utilisation, communications and work control, design review and control, human resource development and training programmes, regulatory interface, public relations, management improvement programmes and performance monitoring.*

Mark your diaries and be a part of it! Send your abstracts to  
[rrfm2009@euronuclear.org](mailto:rrfm2009@euronuclear.org) before **15 November 2008**.  
[www.rrfm2009.org](http://www.rrfm2009.org)

<http://www.euronuclear.org/e-news/e-news-22/nuc-forum.htm>

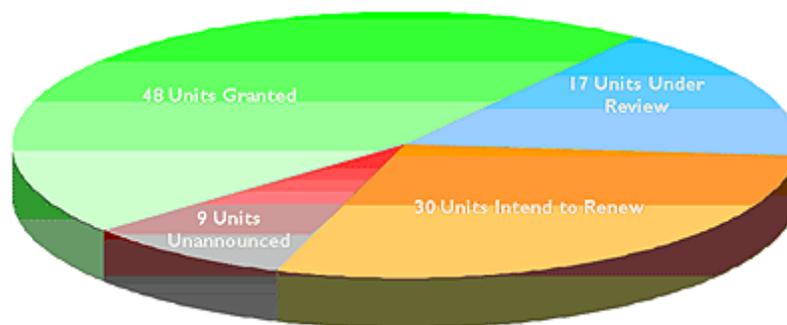
MEMBER SOCIETIES



## Belgian Nuclear Forum takes decision makers and press to the US to study lifetime extension of nuclear power plants

As part of its mission to inform the public and decision makers on the peaceful applications of nuclear energy, the Belgian Nuclear Forum has been organizing yearly study trips for national press and politicians for 20 years.

For 2008, the lifetime extension of nuclear power plants was chosen as the central theme of the trip. For several reasons, the United States offered the ideal 'frame of reference' to explore the subject: by the end of August 2008, of the 104 American reactors, 48 had obtained a licence renewal and the files of 17 others were being studied. The procedure should be launched for 30 other reactors by 2013.



Furthermore, 5 out of the 7 Belgian pressurized water reactors are of American (Westinghouse) design, while the 2 other (Framatome) reactors were built under Westinghouse license. Also, the US nuclear regulation served as model for Belgian regulation and was transposed into Belgian law.



So, on 7 September 2008, a delegation of 7 Belgian MPs, 1 representative of the Flanders Chamber of Commerce & Industry and 4 journalists, accompanied by representatives of the Forum's member organisations, left for the US. First stop, Pittsburgh, home base of Westinghouse Electric Company, to learn about the opportunities and challenges that lifetime extension creates for the reactor manufacturer. How it specifically challenges plant operators was discussed afterwards at the Beaver Valley Plant, near Pittsburgh (the reference plant for 3 Belgian nuclear units), where the delegation was also given a guided tour.

The next stop was Washington D.C. There the group met with the United States Nuclear Regulatory Commission (NRC), mainly to learn about the licence renewal process. In the US, the initial criteria for the issue of a 40-year licence were not linked to technical or safety issues at all. American legislation had set this limit for essentially economic and anti-trust reasons. An operating license is only extended at the request of the commercial operator, who assesses voluntarily whether it is economically justified to continue operation. To help it do this, it can use the NRC analysis grid and can, therefore, include the required investment due to its extended calculations. The procedure consists of two main components: a study of safety problems and a study of environmental problems.

For the delegation, it became clear after the meetings with the nuclear operators and NRC that both parties are satisfied with the procedures followed in the United States for the extension of operating licenses. Normalisation has allowed relatively short procedural time-frames. As the NRC has continually improved the procedure over ten years, it is obvious that the American experience and the high degree of standardisation of the procedure could be exploited beneficially elsewhere in the world.

The meeting with NRC was followed by a very relevant evening lecture hosted by AREVA NP Inc., which gave an insight into US energy market functioning, and how it impacts nuclear energy and creates opportunities for reactor manufacturers such as AREVA.

The trip concluded with a visit to the Nuclear Energy Institute. As the policy organization for the entire US nuclear technologies industry, the Institute not only gave a concluding overview on the issue of license renewal, but also addressed subjects such as public opinion and public policy. This allowed discussion on crucial issues such as used fuel management and waste, which were clearly major concerns for the delegation.



Judging by the commitment of the delegation members and the trip's resultant spin-offs, it is clear that the Belgian Nuclear Forum can offer decision-makers, the press and the industry a unique framework for exchanging views and revising its opinions. The Forum hopes that the conclusions of this trip will give a more solid basis to the public debate on the nuclear phase-out in Belgium.

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<http://www.euronuclear.org/e-news/e-news-22/secure-energy-supply-08.htm>

MEMBER SOCIETIES

## News from Slovakia: International conference - Secure Energy Supply 2008

The Slovak Nuclear Society, together with the Slovak Nuclear Forum, recently organised its fifth regional conference, SES2008, devoted to the hot topic of A Secure Energy Supply. The conference, entitled *It's time for a Strategic Decision on Slovakia's Energy Future - Lets think about it*, took place in the Slovak capital, Bratislava, from October 1 to 3 2008, under the auspices of the Slovak Prime Minister, Robert Fico. More than 100 experts and key players in the energy market, including 14 representatives from abroad, participated.



*Fig. SES 2008-1: Participants of SES 2008*

In preparing the conference programme, Slovak Nuclear Society we sought to put together a balanced mix of presentations from Slovakia and other countries. We addressed the most important Slovak institutions that are active in energy market, as well as representatives from neighboring countries and important nuclear suppliers. Our goal was to emphasise dialogue, since good and open communications and a mutual willingness to listen and understand each other are urgently needed in Slovakia.

The discussions were aimed at two very important strategic documents:

- The Slovak Republic's energy security strategy
- A strategy for the back end of nuclear electricity production



*Fig. SES 2008-2: From the left: Vladimír Slugen - SNUS President, Paolo Ruzzini - CEO of Slovenske elektrarne - Enel, Ivan Gasparovic - President of Slovak Republic, Tibor Mikus - President of Slovak Nuclear Forum*

Both these strategies will define the conditions and legislative framework governing the development of Slovakia's nuclear power sector.

A new nuclear unit in Slovakia was the main idea that resonated during the conference and the problems associated with the construction of a new unit were discussed.



*Fig. SES 2008-3: From the left: Vladimir Slugen - SNUS President, Paolo Ruzzini - CEO of utility Slovenske elektrarne - Enel, Ivan Gasparovic - President of Slovak Republic, Tibor Mikus - President of Slovak Nuclear Forum, Milan Blaha - co-author of the book "Mochovce Nuclear Power Plant – How it was unfolding".*

Undoubtedly, a new unit is needed in Slovakia. Several speakers underlined that if Slovakia is to seriously consider a new nuclear unit, it will first be necessary to:

- Establish conditions that encourage a stable entrepreneurial environment for potential investors and suppliers, so that they are clear, among other things, about the economic return of their investments
- Consider technical solutions that would result in effective back-up power supply for Slovak electric grid, as the new unit would probably have a higher capacity than 1000 MW
- Establish a quality and functioning legislative environment for all sections of Slovak energy industry
- Analyse systemic solutions for conserving nuclear knowledge and putting it into practice in such a way as nuclear energy can be seen to be attractive for young graduates from secondary schools and universities



*Fig. SES 2008-4: From the left: Vladimir Slugen - SNUS President, Paolo Ruzzini - CEO of utility Slovenske elektrarne - Enel, Ivan Gasparovic - President of Slovak Republic, Tibor Mikus - President of Slovak Nuclear Forum, Milan Blaha - co-author of the book "Mochovce Nuclear Power Plant – How it was unfolding".*

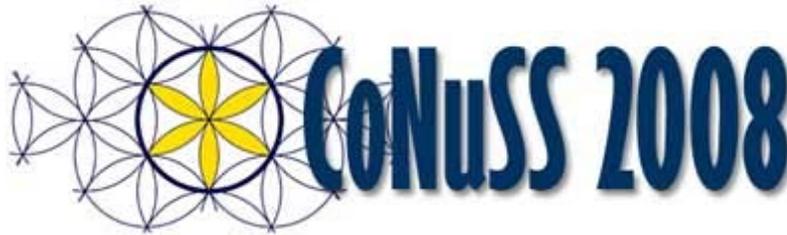
During the conference the President of the Slovak Republic, Ivan Gasparovic, presented a new book written by Milan Blaha and Tibor Bucha called *The Mochovce Nuclear Power Plant – How it is unfolding*.

For more information on the conference, contact the Slovak Nuclear Society.

Prof. Vladimir Slugen, PhD.  
SNUS President and chairman of SES2008 Programme Committee

<http://www.euronuclear.org/e-news/e-news-22/conuss-2008.htm>

MEMBER SOCIETIES



## SIXTH INTERNATIONAL CONFERENCE OF NUCLEAR SOCIETY OF SERBIA

The Sixth International Conference of the Nuclear Society of Serbia, CoNuSS-2008, organised by the Vinca Institute of Nuclear Sciences and the Nuclear Society of Serbia (NSS), was held in Belgrade from September 22 to 25, 2008. The CoNuSS-2008 conference sessions took place in the conference centre of the Serbian Chamber of Commerce and were supported by the Ministry of Science and Technological Development of the Republic of Serbia, the International Atomic Energy Agency (IAEA), the Serbian Chamber of Commerce and several other organisations and companies.



CoNuSS-2008 upheld the tradition of international conferences organised by our nuclear society, helping to stimulate further the exchange of information and ideas among the experts and scientists from South Eastern Europe and other countries. The conference covered the following topics: research reactors, accelerators, nuclear power plants, nuclear methods in science and technology, radiation protection, nuclear and radiation medicine, radioactive waste, environmental protection and education.

This year's conference featured 75 papers by 160 authors from 24 countries (42 papers from foreign authors), thus following on from the success of the previous conferences organized by the Society. The participants came from Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Italy, Japan, Lybia, Montenegro, Netherlands, Pakistan, Romania, the Russian Federation, Slovenia, Switzerland, Ukraine, United Kingdom, USA, Uzbekistan and Serbia.

The conference programme centred around a series of sessions that included presentations given by recognized experts in the field. A number of papers were also

presented during the conference poster sessions. The final versions of all papers, comments, and conclusions will be published in the Proceedings of CoNuSS 2008, which were later prepared and mailed to participants. The *Book of Abstracts* was prepared and distributed during registration. Some selected papers were published in the *Nuclear Technology & Radiation Protection Journal*.

During the Conference the following three round table discussions were organized on the following themes:

- Technical, administrative, and regulatory issues related to spent nuclear fuel
- Experiences with the preparation and implementation of the decommissioning of nuclear facilities
- Material and waste management in spent nuclear fuel and decommissioning related activities,

The annual meeting of the NSS Management Board also took place to coincide with the conference.



Following the decision of the CoNuSS-2008 Award Committee the prize for the best conference paper was awarded to Nikolay Sobolevskiy (Russian Federation).

The conference was organised by the Organising Committee (Dragoljub Antic was the Organising Committee Chairman), in cooperation with the Conference and International Program Committee Chairman and NSS President, Milan Pešić; Jovan Nedeljkovic, General manager of the Vinca Institute of Nuclear Sciences; Vladan Ljubenov, the Conference Executive Assistant, Milijana Steljic (who put together the conference documents prepared the web site and provided updates); Mirjana Borota, Conference Technical Secretary and several employees of the Vinca Institute of Nuclear Sciences.

Dragoljub Antic  
CoNuSS-2008 Organising Committee Chairman

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[http://www.euronuclear.org/e-news/e-news-22/Visaginas\\_NPP.htm](http://www.euronuclear.org/e-news/e-news-22/Visaginas_NPP.htm)

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## New Visaginas Nuclear Power Plant Project in Lithuania moves forward

Visagino Atominė Elektrinė (VAE) is a subsidiary of the national electricity company LEO LT, AB. It was established on 28 August 2008. The new company has been carrying out preparatory work for the new Visaginas NPP construction project. This includes an Environmental Impact Assessment (EIA), a technology acknowledgment and assessment report, a transportation study, an assessment of construction sites, etc. This work is important for the timely implementation of the procurement tender process and for ensuring that the most advanced reactor technology available is chosen. More information about the new Visaginas NPP construction project is available at: [www.vae.lt/](http://www.vae.lt/).

Before the Visaginas NPP Project Company was established, preparatory work had been carried out, since the end of 2006, by Lietuvos Energija AB's, Nuclear Energy Department.

„At the moment one of our priorities is building a team of highly qualified specialists. We recruit employees not only from Lithuania, but internationally as well,“ – said Mr. Marius Grinevičius, Visagino Atominė Elektrinė's General Director, who has been working on the new NPP project in Lithuania almost for two years. According to him, the VAE team working on the project will have risen to around 50-60 professionals by March 2009.

The new Visaginas NPP will be built near to the Ignalina NPP, on Lake Druksiai, in the Visaginas Municipality of North Eastern Lithuania.



Figure 1. Location of the New Visaginas NPP.

In spring 2007, an Environmental Impact Assessment (EIA) procedure was started for the construction of the New Visaginas NPP that will be located next to the present

Ignalina NPP. The EIA Programme was developed on 26 July 2007 after thorough coordination with municipal, national and international bodies. It was approved on 15 November 2007 by the Ministry of Environment of the Republic of Lithuania.

The EIA Report assessed the potential effects on the environment of the construction and operation of a nuclear power plant with a capacity of up to 3,400 MW – it looked at the possible impact on residents, the socio-economic environment, water systems, air quality, fauna and flora, protected zones, cultural heritage, etc. It also assessed alternatives to the project: two possible construction sites at the Ignalina NPP were looked at; various technological alternatives such as boiled water, pressurized water, pressurized heavy water and alternative cooling methods were assessed. The environmental impact of the „zero alternative“ – not building a nuclear power plant at all – was also assessed.

Photomontages of the various proposed alternatives for the new Visaginas NPP project were prepared for the EIA Report (see below).



*Figure 2. Photomontage of Visaginas NPP alternatives.*

An Environmental Impact Assessment (EIA) report that was more than a half of year in the making provided an answer to a crucial question: it concluded that a new Visaginas NPP in Lithuania is both feasible and acceptable from an environmental point of view. The EIA Report was conducted by a consortium made up of the Finnish company Poyry Energy Oy and the Lithuanian Energy Institute.

A final decision on the acceptance of a new Visaginas NPP project will be taken by the Ministry of Environment of the Republic of Lithuania during the first quarter of 2009, after the EIA report has been submitted for consideration to the public, both in Lithuania and abroad.

According to Mr. Marius Grinevičius, a significant stage in the preparatory work of the Visaginas NPP project has been completed and things as they stand are ready to proceed.

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[http://www.euronuclear.org/e-news/e-news-22/borssele .htm](http://www.euronuclear.org/e-news/e-news-22/borssele.htm)

MEMBER SOCIETIES

## Thirty-five years of operation at Borssele NPP

To mark the occasion of the thirty-fifth anniversary of nuclear operation at Borssele, our friends in the Netherlands produced a commemorative fact sheet and questions and answers document...and here they are. If you want to get a copy of the fact sheet contact details are provided at the end of the Q and A sheet

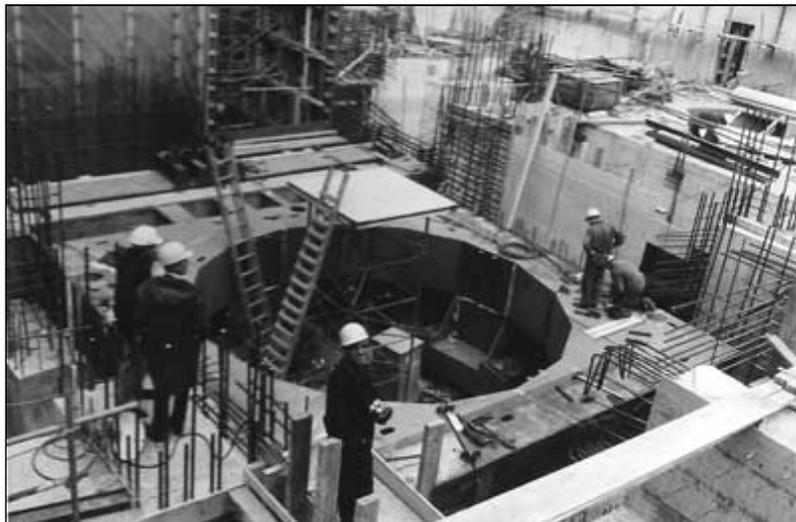
*Thirty-five years of operation for the Borssele reactor*

*Thirty-five years of high-profile energy*

*Thirty-five years of people serving people*

### 1969

The Provincial Zeeland Power Company (PZEM) orders a reactor. The construction contract is awarded to Siemens/KWU.



### 25 October 1973

Siemens/ KWU hands over the reactor to PZEM, following successful trials. The majority of the electricity is supplied directly to large industrial customers. The government issues a permanent operating licence.

### 1979-1984

Partly as a result of a controversial breakdown at the American reactor at Harrisburg, in March 1979, the safety facilities are upgraded (including the construction of a reserve cooling water system).

### 26 April 1986

The accident at the Chernobyl reactor in the Soviet Union causes great uproar. There is a moratorium on the construction of new reactors.



### **1987**

The Borssele reactor becomes part of the Electricity Producers Co-operative (SEP) in Arnhem. The use of the Borssele reactor is included in the Electricity Plan. Supply is no longer provided directly to large industrial customers.

### **1990**

Ownership of the reactor transfers to a public limited company, EPZ, (Southern Netherlands Electricity Production Company). EPZ carries out a study into how the existing Borssele reactor is to be upgraded to incorporate the latest technology in order to ensure long-term production. SEP finances the upgrade project.

### **May 1993**

The Minister for Economic Affairs notifies the Lower Chamber of Parliament that the planned upgrade of the reactor will be reviewed in an extensive licensing procedure. This will delay the start of the works by three years. On 21 June, SEP announces that, due to this delay, the costs can not be written down within the planned period of the Electricity Plan (1995-2004).

### **11 July 1994**

The Minister for Economic Affairs approves SEP's Electricity Plan, which states that, in any event, the reactor shall remain in operation for three years after the plan period (up to 2007) in order to be able to cover the upgrade investment.

### **August – November 1994**

A licence is granted for the upgrade project, known as 'Modifications.'

During the parliamentary debate about SEP's approved E-plan there are discussions about the extension of the Borssele reactor's operating lifetime from 2004 to 2007. After an initial split vote, a motion by the Green Party (Groen Links) to reject this extension was accepted by 76-73 votes.

### **16 December 1994**

The Minister for Economic Affairs announces that, in order to give meaning to Parliament's decision he would withhold his approval for that part of the E-plan that stated that the reactor would remain in operation until 2007.

### **1997**

The 'Modifications' project (at a cost of 450 million Guilders) is completed successfully. There is a great deal of international interest for this innovative project, which becomes a model for similar projects in Sweden and Japan.

### **December 1997**

The Minister for Economic Affairs decides to include a closure date of 31 December 2003 in the operating licence. Various stakeholders appeal against this decision.

**1 July 1999**

With the introduction of the Electricity Act '98 the parliamentary responsibility for the E-plans is abolished.

**February 2000**

The Council of State declares that the decision in December 1998 that operating term should be restricted to 31 December 2003 was taken unlawfully. The operating term is once again confirmed as permanent.

**May 2000**

In response to the judgement by the Council of State the government argues that, on the basis of agreements from 1994, EPZ is obliged to close the reactor in 2003. EPZ denies that there are any agreements that oblige the company to close the reactor.

**December 2000**

The Minister for Economic Affairs has EPZ is summonsed before the Civil Court in Den Bosch and is ordered to enforce the alleged agreements.

**1 January 2001**

As a consequence of the E-Act '98 the Cooperation Agreement (SEP) is terminated. The electricity production market for large consumers is now liberalised.

**21 September 2002**

The court in Den Bosch declares the government unable to prove in any way that a binding agreement was entered into to close the reactor. EPZ has the full right to continue to operate the reactor after 2003.

**May – June 2003**

In the coalition agreement of the Balkenende-1 Cabinet no end date was given. For the Balkenende-2 Cabinet it was stated that the reactor would have to close by 2013 at the latest.

Secretary of State Van Geel (VROM – Ministry for House, Regional Development and the Environment) announces that he would draw up a “Plan of Approach” in order to implement the closure of Borssele in 2013.

**2005**

In the spring of 2005 the Cabinet commissions a study into the consequences of closing the reactor in 2013 or keeping it open for longer. From the point of view of safety considerations there are no insurmountable objections for keeping the ‘Borssele’ reactor open for longer.

In exchange for keeping the reactor open for longer, Essent and Delta, the shareholders of EPZ, will invest an additional 250 million euro in sustainable energy. The government will also invest 250 million €. If there had been a forced closure of the reactor 2013 this money would have been necessary to pay compensation.

Between 2006 and 2012 the money will be spread, almost evenly, between energy saving, CO<sub>2</sub> storage and renewable energy sources.

The agreements are laid down in a Draft Covenant that also states that the reactor must continue to be one of the top 25 safest reactors in the West.

**16 June 2006**

The Borssele Covenant is signed in Goes.

This allows the Borssele reactor to continue to operate until 2034 under specific conditions. This Covenant brings to a close a long political debate about the continued existence of the reactor.

CDA Secretary of State Van Geel (VROM) and the Directors of Essent, DELTA and EPZ sign the Covenant: combined with investments in sustainable sources the reactor will remain open until 2034. The government thus gives a clear and positive signal about the future of the reactor.

With this Covenant EPZ starts a new chapter in its operating history and can once again focus entirely on its core activities: the production of safe, affordable and CO<sub>2</sub>-free electricity.

### **19 October 2006**

Major overhaul of the Borssele reactor takes place. Safety of the reactor increases to an even higher level through modifications that arise from what is known as the “ten-year evaluation” process, which EPZ concluded in 2004.

The Nuclear Energy Act licence requires EPZ to appraise the safety status of the reactor every ten years taking into account the latest technology and (future) legislation. The modifications implemented offer protection against rare accidents. Examples of these modifications are the installation of extra sensors to detect gas clouds originating from shipping accidents on the Scheldt, improved protection against extreme high or low tides and even better fire fighting facilities to combat kerosene fires in the event of aviation accidents.

With these measures in place the Borssele reactor more than meets all points of the current stringent (inter)national statutory obligations and directives relating to nuclear safety and radiation protection.

The temporary shutdown also allows the high and low pressure turbines in the conventional part of the power station to be modernised. The upgraded turbines mean that approximately 35 Megawatts of additional power can be generated and EPZ can supply around 80,000 homes with CO<sub>2</sub>-free power.

## **Thirty-five years**

*Safe and clean until 2034*

*Thirty-five years of “pure” power*



The ‘Borssele’ reactor first produced electricity in 1973. It was not long before ‘nuclear energy’ became a topical talking point. Supporters and opponents started debating this issue – a debate that continues today and will almost certainly continue in the future.

**Do we think that’s a bad thing?**

EPZ’s answer is “no“. Challenges have to be met. Debate about the place of technology in society is a good thing, provided that it is conducted fairly and openly. It is only through debate that we can discover the real problems and solutions that are acceptable.

That debate is continuing with renewed interest. We are facing new challenges, such as climate change and the emergence of new economies. Existing challenges have become topical once again, e.g. dependency upon energy suppliers who are far away but powerful and a shortage of energy. That is why a new approach to and perspective on nuclear energy have arisen.

**Although we operate the only reactor in our country, our role in the debate is small. The debate is often *about us*.**

**Do we think that’s a bad thing?**

We understand that we are a main topic of debate. After all, it is society that decides how it wishes to satisfy its energy needs. All the same, we do contribute to the debate. We achieve this by striving to maintain our reactor as one of the safest in the world and through our initiatives aimed at promoting a better, more efficient and more sustainable use of nuclear energy. We use recycled nuclear fuels and we strive to increase energy efficiency by producing less waste.



### And what about the future?

In accordance with the terms of the Covenant signed with the government, ‘Borssele-1’ will continue to produce electricity until 2034. We shall invest amply to ensure the safe and clean production of electricity from the current reactor. And when the time is right and the people are ready we would like to be involved in the construction and operation of ‘Borssele-2’ on a site reserved next to ‘Borssele-1’.

### EPZ PURE POWER

EPZ

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Vacancies: [www.werkenbijepz.nl](http://www.werkenbijepz.nl)

**35 years Borssele reactor**

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[http://www.euronuclear.org/e-news/e-news-22/leningrad-npp .htm](http://www.euronuclear.org/e-news/e-news-22/leningrad-npp.htm)

MEMBER SOCIETIES

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## Leningrad NPP: International Motor Rally 2008 is over

### Information Department of Leningrad NPP/Press Service of Energoatom Concern, OJSC

From 4 – 23 October, Energoatom Concern OJSC, jointly with Fortum (Finland) and other foreign partners, organised a seminar entitled *Nuclear Power Engineering – New generation*. The “seminar” was held in the form of an international motor rally of nuclear power plants. The rally set off from Leningrad Nuclear Power Plant (Sosnovy Bor, Leningrad Region).



The organisers of the project were the Public Council of Rosatom State Nuclear Energy Corporation, Atomprof (St.Petersburg); the Moscow Center of the World Association of Nuclear Operators; the Administration of Sosnovy Bor and the Association of PR Specialists of St.Petersburg and the Leningrad Region.

The organiser of the rally was Atomturservice agency of the “Energy” Club of Employees of Leningrad Nuclear Power Plant.

The tour covered nuclear power plants in Russia (Leningrad), Finland (Loviisa and Olkiluoto), Sweden (Ringhals), Germany (Grohnde and Isar), the Czech Republic (Temelin), Hungary (Paks) and Lithuania (Ignalina), the Central Office of IAEA in Austria, STUK, Fortum, TVO (Teollisuuden Voima Oy) and Vattenfall. The crews comprised representatives of Bilibino, Kalinin and Leningrad NPPs, the Central Office of Energoatom Concern, power companies of Finland, the Association of PR Specialists of St.Petersburg and the Leningrad Region, the Press Center of the Administration of Sosnovy Bor and the “Energy” Club of Employees of Leningrad NPP.

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<http://www.euronuclear.org/e-news/e-news-22/SCK-CEN .htm>

MEMBER SOCIETIES

## **Transfer of knowledge: Education and training possibilities at the Belgian nuclear research centre (SCK•CEN).**

### **Introduction**

The Belgian Nuclear Research Centre SCK•CEN was created in 1952 in order to give the Belgian academic and industrial world access to the worldwide development of nuclear energy. It is a Foundation of Public Utility, with a legal status under private law, under the aegis of the Belgian Federal Minister in charge of energy. Since 1991,

its statutory mission gives priority to research on issues of societal concern such as the safety of nuclear installations, radiation protection, the safe treatment and disposal of radioactive waste, the fight against uncontrolled proliferation of fissile materials and the combat against terrorism. The Centre also develops, gathers and disseminates the necessary knowledge through education and communications, and provides all services asked for in the nuclear domain (by the medical sector, the nuclear industry and the government). Today, about 600 employees promote the peaceful industrial and medical applications of nuclear energy and are responsible for a turn-over of about €80 M.

SCK•CEN is also an important partner for education and training (E&T) projects in Belgium (for the nuclear, the medical and the non-nuclear sector), as well as at an international level. The Centre's know-how and infrastructure are put at people's disposal for such E&T opportunities.

## **Education and training activities**

Thanks to its considerable experience in the field of peaceful applications of nuclear science and technology, SCK•CEN has a reputation as an outstanding centre of research, training and education. Its activities focus on the following areas:

- Guidance for young researchers in the preparation of their theses
- Co-ordination and organisation of training and education programmes
- Policy support with regard to applied education and training on a national and international level
- Research on transdisciplinary aspects of education and training

### **Guidance for young researchers in the preparation of their thesis**

SCK•CEN offers students the possibility to carry out their research at its laboratories.

On a regular basis, final-year Bachelor or Master students visit SCK•CEN and are with their dissertation work helped by our researchers.

In a conscious attempt to increase its pool of highly specialised young researchers and to consolidate its co-operation with the universities, SCK•CEN embarked in 1992 on a bold programme to hire about 10 PhD or post-doctoral researchers every year. These early-stage researchers are recruited in the research domains that reflect the priority programmes and R&D topics covered by our institute.

### **Coordination and organisation of training and education programmes**

Our courses are directed to the nuclear industry, the medical and the non-nuclear industry, national and international policy organisations, the academic world and the general public. E&T programmes are also organised in co-operation with universities, technical universities, nuclear power plants and public and private health services. In addition, SCK•CEN is involved in international research networks and training programmes, i.e. of the European Commission and the IAEA.

SCK•CEN provides courses on a wide range of nuclear topics. The following paragraphs highlight the principal areas of training provided.

## Master of Nuclear Engineering (BNEN)

In collaboration with major Belgian universities SCK•CEN organises a one-year Masters programme (60 ECTS) on nuclear engineering. The objective of this Masters is to offer current and future professionals and researchers a solid background in the different disciplines of nuclear engineering. The programme is taught in English. Its high modularity allows for optimal time management for teachers and students, it facilitates individual participation in selected courses e.g. advanced courses in the context of continuous professional development and it also facilitates foreign students participation in blocs of courses.

## Nuclear engineering (reactor physics and reactor operation training, nuclear materials issues)

To guarantee the safe operation of present and future nuclear reactors the initial and continuous training of reactor operators has proven to be indispensable. In most countries, such training also results from the direct request from the safety authorities to assure the high level of competence of the staff in nuclear reactors. SCK•CEN organises such courses for, amongst others, reactor operators of the BR2-reactor at the SCK•CEN site, for the reactor operators and operation team heads of the PWR's situated at the DOEL-site (Belgium), and recently also for the new recruits of GDF Suez in Belgium. The main topics covered are nuclear reactor statics and kinetics, thermohydraulics and nuclear materials issues. In addition to the theoretical courses, practical sessions on the BR1 research reactor are also organised. Training courses on reactor operation are also organised as a service for nuclear engineering students at various Belgian and foreign universities and technical universities.



*Fig 1. Training of reactor pilots at SCK•CEN*

## Radiation protection

SCK•CEN's IRP (international school for Radiological Protection) co-ordinates and organises courses that cover all aspects of radiation protection. The series "background and basic knowledge" consists of seven modules (nuclear physics, interaction of radiation with matter, radiation and dose measurements, biological effects, gamma spectrometry, legislation and ALARA and safety culture) and provides the theoretical and practical knowledge required for implementing radiation protection aspects in an industrial, medical or research environment - both in daily practice and in long-term management. A course programme can be extended with

one or more modules from the "nuclear and radiological expertise" series (covering topics such as: radon and natural occurring radioactivity, nuclear transport, on-site accident management, organization of emergency planning, radiochemistry, ethical aspects of the radiological risk, ...), depending on the specific working environment of the students. On-site practical training exercises are organised and visits to different SCK•CEN installations and laboratories can be included. More information can be found on [www.sckcen.be/isrp](http://www.sckcen.be/isrp).

### **VISIPLAN 3D ALARA planning tool**

The application of ALARA and the dose assessment for work in complex environments is a complicated task. Dose values are influenced by the geometry of the installation, source distribution, shielding configuration and work organization. VISIPLAN 3D ALARA planning tool is a PC-based programme developed for the ALARA analyst or the person responsible for the assessment of the dose uptake of the employees. It allows to assess the radiation doses in a 3D environment and to compare different work scenarios. Typically, a three day course explains the VISIPLAN features.

### **Nuclear emergency management**

Off-site nuclear emergency management concepts were reviewed in-depth after the Chernobyl accident. SCK•CEN transmits its know-how in this field through a one-week European training course on "Preparedness and response for nuclear or radiological emergencies". The course aims to give a comprehensive overview of off-site nuclear emergency management, its principles and their application to those involved in emergency planning and response, e.g. health physicists, technical and radiological advisors, civil and environmental protection officers. It covers the following major topics: principles of intervention, radiological evaluations, decision-aiding techniques and the decision-making process leading to optimised management options. The European and international dimensions of the subject are analysed (e.g. EC legislation, ECURIE and EURDEP). Other topics such as health effects, economic consequences and psycho/social aspects are also included.



*Fig 2. Nuclear emergency management course*

### **Decommissioning of nuclear installations**

With the decommissioning of the BR3 reactor, a European pilot project, SCK•CEN successfully developed best practices for the optimisation of dismantling, decontamination and decommissioning techniques and processes (including the restoration of nuclear sites to so-called 'green fields'). Experience offered in this field also includes the realistic assessment of costs, and the development of techniques for the minimisation of secondary waste and minimisation of radiation doses for personnel. The course on dismantling and decommissioning is primarily intended for dismantling project managers, safety engineers, health physicists and

decontamination and dismantling operators. The course is also of interest to governmental and regulatory bodies dealing with decommissioning.

## **Radioactive waste disposal**

Customised training courses are offered in the field of long-term radioactive waste management. The courses focus on final disposal as the preferred option to long-term radioactive waste management. Waste disposal requires selection and thorough characterisation of a site, characterisation of waste packages and demonstration of long-term safety by means of performance and safety assessment. Courses are generally organised in three areas that are very closely linked, i.e.:

- Characterisation of radioactive waste packages in relation to their disposal
- Site selection and site characterisation
- Integrated safety assessment modelling

Training courses typically last for one to two weeks and generally include hands-on computer sessions, technical workshops or field visits. The courses are directed to individuals having a controlling or supervising role within radioactive waste agencies or nuclear regulatory bodies, or for technical experts who carry out the characterisation of an existing or new site, characterise waste packages, or perform post-close assessments.

## **Approach**

Except for the Masters in Nuclear Engineering, all course programmes are tailored to meet the needs of the students and are available to fit within a larger modular programme.

The courses can be taught at the premises of the customer or at SCK•CEN's Conference Centre, which offer fully-equipped lecture rooms. The Conference Centre is located next to the Technical Centre of SCK•CEN, allowing easy access for the practical training sessions. Several laboratories and installations are available and open to national and foreign students.



*Fig 3. SCK•CEN's Conference Centre*

The team of lecturers includes engineers, physicists, technicians, biologists, occupational physicians and social scientists who all contribute particular insight, experience and ideas from their specific backgrounds to the course programmes. As SCK•CEN staff members they have a solid knowledge and experience in their field, and can thus directly transfer their theoretical knowledge and practical experience to students.

### **Research on trans-disciplinary aspects of education and training**

Understanding the benefits and risks of radioactivity requires technical knowledge and training, as well as a contextual insight and a sense for the social and philosophical aspects of any situation. In co-ordination with the academic sector, the research of SCK•CEN's International School for Radiological Protection (ISRP) concentrates on how to integrate this trans-disciplinary approach in education and training programmes for as well professionals as students and pupils.

Pupils have a wide attention span and are eager to learn. In our complex society, they should be able to develop an open and critical mind in order to gain more insight into and confidence with regards to multi-faceted issues such as the risks and benefits of radioactivity and nuclear technology, and their possible applications in the medical and energy sector. In this sense, ISRP interacts with teachers of high schools in order to discuss how the standard education programme can integrate a pluralistic approach to complex technical issues such as the applications of radioactivity. The aim is to identify gaps in the existing curriculum and to find out how to establish links between specific courses and how to organise 'cross-over' sessions in practice.

With regards to the general public, ISRP works with Belgian industry's visitor centres and with the regional and Belgian state-sponsored communication activities on physics and nuclear science. In co-operation with SCK•CEN-PISA (the programme of Integration of Social Aspects into Nuclear Research), ISRP has build up experience with the theory and practice of participation and involvement in technology assessment. On various occasions, the two groups organised round tables, workshops and focus groups with schools and local communities, and this on topics such as medical applications of radioactivity, (nuclear) energy policy and radioactive waste management.

### **Policy support with regard to applied education and training on a national and international level**

The implementation of a coherent approach to education and training becomes crucial in a world of dynamic markets and increasing worker mobility. Through networking and participation in international programmes, SCK•CEN wants to contribute to the better harmonisation of education, training and skills recognition on both a national and international level.

Covering electricity production, medicine and several activities within the non-nuclear sector, the spectrum of applications of ionising radiation is very wide. Although working with a variety of responsibilities and specific professional aims, practitioners have a threefold common need:

- Basic education and training providing the required level of understanding of artificial and natural radiation
- A standard for the recognition of skills and experience
- An opportunity to fine-tune and test acquired knowledge on a regular basis

From an executive perspective, education and training are undoubtedly the two basic pillars of any policy regarding safety in the workplace. The radiological protection rationale that serves as the basis for this policy is the same all over the world, going beyond cultural differences and disciplinary applications. In this sense, we can see clearly how the implementation of a coherent approach to education and training in radiological protection is crucial in today's world of dynamic markets and increasing workers' mobility.

Through networking and participation in international programmes, SCK•CEN aims to contribute to the better harmonisation of training practice and skills recognition on a national and international level. Specific issues of interest to SCK•CEN in general - and the ISRP in particular - are standard requirements for course programmes and educational materials, the development of trans-disciplinary training programmes, e-learning and distance learning, the link between radiation safety and conventional safety, the organisation of experience feedback, the international exchange of knowledge and experience and the sharing of lecturers, training facilities and educational materials. These are the topics covered in European networks such as EUTERP (European Training and Education in radiation Protection Platform) and ENETRAP (European network for Education and Training in Radiation protection), in which SCK•CEN plays a prominent role.

Also on the academic level, SCK•CEN plays an active role in networks such as the ENEN (European Nuclear Education Network), dealing with the preservation and the further development of expertise in the nuclear fields through higher education, through the co-operation between universities, research organisations, regulatory bodies, the industry and any other organisations involved in the application of nuclear science. While ENEN primarily focuses on nuclear engineering, other European networks also focus on education programmes in other domains, such as radiobiology, radioecology or emergency planning. These networks can count on a contribution from SCK•CEN's experts.

## **Contact**

More information on the education and training activities of SCK•CEN can be found at: [www.sckcen.be](http://www.sckcen.be). Alternatively, you can contact Dr. Michèle Coeck, Education and Training Coordinator, Boeretang 200, BE-2400 Mol, Belgium, tel. + 32 14 33 21 80, [mcoeck@sckcen.be](mailto:mcoeck@sckcen.be).

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<http://www.euronuclear.org/e-news/e-news-22/enygf09.htm>

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## THE EUROPEAN NUCLEAR YOUNG GENERATION FORUM 2009 - ENYGF09



The Young Generation is the future of the nuclear industry, driving companies to continuously improve and develop new techniques, projects, ways of communicating, etc.

The European Nuclear Young Generation Forum (**enygf09**) will take place in Córdoba, in the South of Spain, from 19th to 23rd May 2009. This Forum will gather together young nuclear science and technology specialists from all over Europe. The aims of the Forum are:



- To promote science, engineering and communications in the field of the peaceful uses of nuclear technology
- To promote knowledge exchange between the older and younger generations
- To promote training and encourage new leaders to emerge,
- To attract young people to the nuclear field and encourage them to pursue a career in it
- To create a platform for career development and networking among young professionals

The Forum will seek to expand and strengthen the Young Generation's networking with other professionals and offer an opportunity to meet renowned nuclear experts and polic-makers in the EU.

Additionally, it will organise discussions on relevant current issues related to nuclear new-build in Europe (e.g. new projects and designs), focus on technical aspects relating to safety and waste management, and social aspects such as communications, transparency and social acceptance and analyse the issue of human resources.



During the Forum, a very interesting technical visit will take participants to the recently extended Spanish Low and Intermediate Level Waste Disposal Facility, at El Cabril. Since 1992, Spain has disposed of low-level radioactive wastes in concrete-lined structures close to the surface. El Cabril is a unique disposal facility located close to Cordoba.

The Forum will take place in Cordoba, one of the most beautiful cities in Spain, a UNESCO world heritage and the gastronomical capital of Andalusia. Truly a treasure that astonishes every visitor, Cordoba was once the largest and, probably, the most beautiful city in the world.

Furthermore, at the end of May the city celebrates its greatest festival: *La Feria*. It features carnival games and rides, fireworks, music and dancing in the streets - and excellent food.

Finally, after the Forum, a unique cultural visit is offered to participants: a trip to The Alhambra, a pearl set in emeralds, one of the most beautiful places on earth, close to the city of Granada.



The enygf09 committee would like to give everybody the opportunity to attend the Forum and to offer companies a chance to be promote their activities to the young professionals. That's why if you believe in the future of the nuclear industry and the potential of the next generation you might like to become a sponsor. Please contact [enygf09@gmail.com](mailto:enygf09@gmail.com)

Córdoba  
enygf09

Please visit [www.enygf09.org](http://www.enygf09.org) and take a look at a video announcement of the Forum.

Jose Luis Pérez  
Enygf09 General Chair  
Spanish Nuclear Young Generation Network General Chair

<http://www.euronuclear.org/e-news/e-news-22/ygn-topsafe08.htm>

MEMBER SOCIETIES

**TOPSAFE**

Dubrovnik, Croatia, 30.9. - 3.10.2008



## The Return of TopSafe

In the wake of the nuclear renaissance there has been increasing public interest in nuclear safety and increased activity in this field within the nuclear science community. The timing was, therefore, perfect when ENS recently organised the first TopSafe conference dedicated to the safety of nuclear installations for 10 years.



TopSafe 2008 was hosted by the Croatian Nuclear Society (HND) and held in the beautiful coastal resort of Dubrovnik, Croatia, from September 30 - October 3. Around 130 participants from 28 countries took part, representing the different sectors of the nuclear society - industry, regulatory bodies, International organisations, universities and research institutes.

The conference organisers and the programme committee should be congratulated for a very well planned and executed event. The social schedule included a Welcome Reception, coffee breaks on the terrace with an unforgettably beautiful view over the Adriatic Sea, lunch buffets in the hotel restaurant and a conference gala dinner with accompanying song and dance at the Town Café, in the harbour of the charming old town of Dubrovnik.

Almost 100 technical papers were presented during three intensive days. The presentations and posters were divided into the eight categories: *Safety Assessment and Analysis, Licensing and Harmonization, Operational Safety, Fuel Cycle Safety, Design and Safety Issues, Safety of Forthcoming Reactors, Safety of Future Reactor Designs and Research Reactors*. The poster session was innovatively introduced by a poster session panel, commenting all posters and providing a good overview of the projects. This also provided a good starting point for further discussions with the various authors.



In addition, seven invited lecturers presented their views on current topics of fundamental interest to delegates. A brief summary of the conference, including some general observations, is given below. Full proceedings are available at the TopSafe 2008 web site. Also ENS' newly inaugurated scientific advisory body, the High Scientific Council, have announced that they will publish a position paper on the conference.

In the sessions on Safety Assessment and Analysis the presentations emphasised the prevailing trend towards more advanced simulation tools, such as 3D coupled core-plant codes and CFD applications, which help provide the best possible estimations. In support of the introduction of the so-called "Best Estimate Plus Uncertainty (BEPU)" methods, a few papers also dealt with ways of handling and determining "uncertainties." One example of this was presented by NEA. It is the LWR Uncertainty Analysis of Modelling (UAM) Benchmark, the objective of which is to determine the uncertainties and their propagation in all steps of a LWR coupled neutronics-thermal hydraulics calculation – an ambitious and long-term goal.



Another area of safety assessment where huge research efforts are being made is that of severe accidents. Most notable in this respect is the international collaboration planned under the aegis of SARNET-2, the second phase of the Severe Accident Research Network, which is dedicated to resolving issues related to the consequences of core meltdown for the enhancement of safety at existing and future nuclear power plants.

Finally, a particularly interesting and important comment was made during the closing panel session, namely that the industry is not making full use of the progress accomplished by research in modelling and experiments due to unsatisfactory interconnections between the industry and research sectors.

Another area where major international initiatives are underway is that of the harmonisation of nuclear safety standards and regulations, which was well covered at the conference.

Such harmonisation is generally recognised as being a prerequisite for allowing the

standardisation of future reactor designs necessary to help maintain the nuclear renaissance.

The IAEA presented their plans for new or updated safety standards governing generic NPP designs and new security standards. At the same time, regulatory bodies in the EU countries are working together within WENRA (the Western Europe Nuclear Regulators Association) to benchmark their requirements and reach a level where no substantial differences in regulatory requirements and their implementation remain between countries. As a counterpart to WENRA, and to support this objective, the European nuclear power utilities have formed ENISS (the European Nuclear Installations Safety Standards initiative), which was also presented at the conference.

For the regulation of new reactor designs, NEA have started a Multinational Design Evaluation Programme (MDEP) to increase co-operation between regulators in different countries in this field. Requirements have also been outlined in the European Utility Requirement document (EUR). So, there are a lot of parallel activities keeping track of all that's new in the field of regulatory affairs. In addition to harmonisation and new reactor designs, another key topic for regulators today is how to approach the increasing use of BEPU methods in license applications. This subject too was discussed during the conference.

Some controversy occurred during the discussions on operational safety, more specifically with regards to operational experience feedback. As the EC-JRC (European Commission's Joint Research Center) presented its "Clearinghouse Project" for supporting regulators in the assessment of operational events, it was strongly questioned by representatives from the regulatory bodies why WANO's event reporting system could not be taken advantage of and why this data base was kept confidential. From a WANO utilities' perspective it was argued that this would threaten the transparency and alertness, and be counter-productive for safety if the event reports were released to the public. It was further argued that public event reporting needs to provide appropriate event analysis that enhances a good understanding of what has gone wrong and of what needs to be done. This is not always the case when events are initially reported to WANO.



While operating experience feedback was discussed in some detail, safety culture was identified as an issue that received insufficient attention at the conference. In this area a lot of interest was given to Electrabel's presentation on its innovative training programme and facility for improving safety culture for nuclear power plant personnel - an initiative that has already been adopted by a number of utilities in Europe.

Only a few presentations focused fuel cycle safety, which might seem like a bit of an

imbalance in the conference programme considering the high level, of interest that this aspect of nuclear safety generates in the public. However, there was, for example, an interesting contribution from AREVA on their development in the field of criticality safety analysis and also a short paper submitted by AREVA's on its risk analyses for optimising transport security.

Among the design and safety Issues that were discussed at the conference, the use of probabilistic safety assessment during the design phase of new reactors, such as the Finnish EPR OL-3, deserves special mention as it represents the state-of-the-art in evolutionary reactor designs. Issues that were not so well covered during the conference were those related to material safety and ageing, which can be expected to be a growing problem for the ageing reactor fleet. This problem area has drawn a lot of attention in Japan after a number of serious events linked to material degradation have occurred recently and a lot of research activities are on-going there. Another interesting but more specific type of design issue featured at the conference was the safety improvement plan conceived for the completion and start-up of the Slovakian Mochovce Units 3 and 4, which was presented by the plant's new owners, ENEL.



The future reactors that were presented at the conference included AREVA's EPR (PWR) and SWR1000 (BWR), Westinghouse's AP1000 (PWR) and AECL's ACR-1000 (CANDU). Considering the considerable similarities between Westinghouse's and AREVA's generation III PWR's, it is interesting to see how different their generation III+ PWR concepts are.

The EPR is an evolutionary design relatively similar to that in existing plants, but with an improved defence-in-depth system against accidents occurring and for the mitigation of the consequences of severe accidents. The development of the AP1000, on the other hand, has been directed by EPRI's Utility Requirement Document (URD), emphasising simplification of design and passive safety systems. Just looking at the significant reduction of building volumes and components with the AP1000, one could guess that the capital cost would be considerably lower than that of the EPR. However, this may, on the other hand, well be counterbalanced by the considerably higher electricity output of the EPR – 1600 MWe as compared to 1100 MWe for the AP1000. While AREVA was first out with the start of construction of the two EPR's in Olkiluoto and Flamanville and preparations for new-builds in China well underway, Westinghouse now seem to be gaining ground with the start of the construction of the first of four AP1000 ordered from China at the beginning of 2009. Several additional orders have also been placed in the US. So, it's looking to be a close race between these two fundamentally different alternatives – and, not to forget, a long list of other challenging new designs.

I was not able to attend the sessions on research reactors and safety of future reactor designs much and cannot, therefore, do them justice in this report. Concerning

research reactors it was, however, evident that considerable work is being done to resolve safety issues that may persist at individual reactors and to make more detailed safety assessments. For example, efforts have been made, on the initiative of IAEA, to improve reliability input to the probabilistic safety assessment of research reactors. As far as future reactor designs of generation IV reactors are concerned, it was noted that a higher commitment from industry is required for the development, financing and research of these reactors. However, government support is also a key component. The country that seems to have advanced the most here is Japan, where both industry and government seem committed to have fast breeder reactors commercialised by 2050 that will account for the majority of nuclear generated electricity production in 2100.

As it was pointed out in the closing panel discussion, the TMI and Chernobyl incidents made us learn the lesson that we in the nuclear community are “all in the same boat”. The only way to ensure that there is the necessary level of nuclear safety at all plants is to encourage widespread co-operation and co-ordination between companies and institutions worldwide. TopSafe could serve an important purpose in facilitating and promoting such interaction. But for TopSafe to fully accomplish this, and to fulfil its ambition of covering all aspects of nuclear safety, the conference would have to expand to attract more participants representing all of the European nuclear society, as well as a critical mass of experts from the relevant competence bodies.

This year, other nuclear installations than power plants were not well represented. So were the utilities, as is often the case at this type of conference. Some criticisms from the research community were also noted regarding their representation at the conference. Nevertheless, the conference was a success and most participants seemed to agree with the call for increasing in the frequency of this event.

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<http://www.euronuclear.org/e-news/e-news-22/foratom.htm>

EUROPEAN INSTITUTIONS

## **FORATOM co-organisers top-level seminar on Europe's low-carbon energy future**

On 8 October, over 150 people attended a day-long seminar in Brussels devoted to the hot topic of Europe's low-carbon energy policy. The seminar, entitled *Paving the Way to Europe's Low-Carbon Energy Future*, was jointly organised by FORATOM, EURELECTRIC and BUSINESSEUROPE and chaired by Thomas Barth, a Member of the Board at E.ON Bayern and of the Co-ordinating Committee of EURELECTRIC.



Participants at the seminar included senior EC officials, representatives of the European nuclear industry, heads of other industries (wind energy and automotive) and a range of stakeholders actively involved in mapping out Europe's future low-carbon energy policy.

Among the highlights of the seminar were a keynote speech from President of the EC, José-Manuel Barroso and closing remarks from the Vice President of the European Parliament, Alejo Vidal-Quadras. The core message of President Barroso's address was that the EU must significantly increase its low-carbon energy production - including nuclear, renewables and clean coal - if it is to meet its climate change and energy goals and help transform Europe into a low-carbon economy.

The seminar programme revolved around 3 panel discussions: *The Future Role of Low-Carbon Technologies in Europe; Policy Options Driving Europe's Competitiveness and Assessing Policy Options to Combat Climate Change.*



Among the guest speakers were Christian Kjaer, CEO of the European Wind Energy Association (EWEA); Philippe Rosier, chairman of the Energy Working Group of BUSINESSEUROPE; Paul Greening, Director of Emissions and Fuels at the European Automobile Manufacturers' Association (ACEA); Alain Perroy, Director General of the European Chemical Industry Council (CEFIC) and MEPs Gunnar Hökmark (EPP-ED, Sweden) and Reino Paasilinna (PSE, Finland).

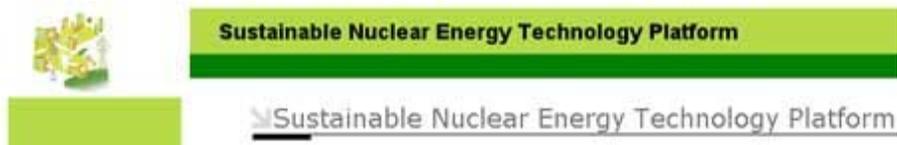


For full details of the conference, visit FORATOM's website at: [www.foratom.org](http://www.foratom.org).

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<http://www.euronuclear.org/e-news/e-news-22/sne-tp.htm>

EUROPEAN INSTITUTIONS



## SNE-TP

The first General Assembly of the Sustainable Nuclear Energy Technology Platform will take place in Brussels on the 26th November. During this General Assembly, the Strategic Research Agenda of the platform will be presented as well as the Deployment Strategy. An update on the status of the SET Plan and the preparation of a European Industrial Initiative for sustainable fission will also be presented. Finally, a round table on funding for nuclear fission R&D will be organised. Details and registration can be found on the SNE-TP website, [www.snetp.eu](http://www.snetp.eu).

The first Newsletter can also be downloaded from the website.

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<http://www.euronuclear.org/e-news/e-news-22/nanofibre.htm>

ENS WORLD NEWS

## Nanofibres that filter and store radioactive waste

A team of researchers at Australia's Queensland University of Technology (QUT) claim to have created ceramic nanofibres that could be used to filter and store radioactive ions from waste water.

The team, led by Zhu Huai Yong from the School of Physical and Chemical Sciences, has discovered how to create nanofibres that are millionths of a millimetre in size. The ceramic nanofibres are produced from titanium dioxide, which is mixed with caustic soda and heated in a laboratory oven. The researchers claim they could permanently lock away radioactive ions by displacing the existing sodium ions in the fibre.



Zhu Huai Yong (Image: QUT)

Zhu said, "We have created ceramic nanofibres which attract and trap radioactive cations [positively charged ions], possibly for ever." He added, "Ceramic is more chemically stable than metal and can last much longer, and therefore can be a better material for storage. It's also much cheaper to make than steel."

"The nanofibres, which are about several to 40 micrometres in length, look like white powder to the human eye," said Zhu. "The fibres are in very thin layers, less than one nanometre in width, and the radioactive ions are attracted into the space between the layers," he added. "Once the ceramic material absorbs a certain amount, the layers collapse to lock the radioactive ions inside."

Zhu said that the nanofibres could be used for the treatment of radioactive water resulting from uranium mining, the production of nuclear fuel or from reactor cooling water.

"Natural inorganic cation exchange materials, such as clays and zeolites, have been extensively studied and used in the removal of radioactive ions from water via ion exchange and are subsequently disposed of in a safe way," Zhu explained in an interview with *Nanowerk*. "However, synthetic inorganic cation exchange materials - such as synthetic micas, g-zirconium phosphate, niobate molecular sieves, and titanate - have been found to be far superior to natural materials in terms of selectivity for the removal of radioactive cations from water. Radioactive cations are preferentially

exchanged with sodium ions or protons in the synthetic material. More importantly, a structural collapse of the exchange materials occurs after the ion exchange proceeds to a certain extent, thereby forming a stable solid with the radioactive cations being permanently trapped inside. Hence, the immobilized radioactive cations can be disposed safely."

Zhu noted, "Generally, ion exchange materials exhibiting a layered structure are less stable than those with 3D crystal structures and the collapse of the layers can take place under moderate conditions. Then again, it has also been found that nanoparticles of inorganic solids readily react with other species or are quickly converted to other crystal phases under moderate conditions, and thus are substantially less stable than the corresponding bulk material."

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<http://www.euronuclear.org/e-news/e-news-22/nucnet-news.htm>

ENS WORLD NEWS



## NUCNET NEWS

THE WORLD'S NUCLEAR NEWS AGENCY

04.11.2008

No. 87 / News

### Work Resumes On Completion of Slovakia's Mochovce-3 and -4

**4 Nov (NucNet):** Work on the completion of units 3 and 4 of the Mochovce nuclear power plant in western Slovakia resumed yesterday.

Slovak prime minister Robert Fico attended a ceremony to mark the start of completion of the two Soviet-type VVER-440 pressurised water reactors.

The Slovak Nuclear Society said utility Slovenske Elektrarne will invest about 1.8 billion euro (2.3 billion US dollars) in the completion of the units.

The new units are intended to compensate for the loss of electricity production resulting from the closure of two units at the Bohunice nuclear power plant (also known as Bohunice V1). Unit 1 at Bohunice was shut down permanently in 2007 in line with commitments made by Slovakia when it joined the EU in May 2004. Unit 2 is scheduled for closure next month.

Construction of Mochovce-3 and -4 began in 1987, but was halted five years later. Technology at the units was 30 percent complete and civil structures were 70 percent

complete.

According to the Slovak Nuclear Society, Slovenske Elektrarne is trying to keep to the planned deadline for completion of Mochovce-3 in 2012 and Bohunice-4 in 2013. All construction permits needed for the resumption of work have been granted.

Enel of Italy, the majority owner of Slovenske Elektrarne, also plans to uprate Mochovce's two existing operational units.

Enel chief executive officer Fluvio Conti today reiterated Enel's intention to push for another new reactor unit at Bohunice.

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**31.10.2008**

**No. 42 / World Nuclear Review**

## **Japan Aims For 67% Nuclear Share By 2100**

**31 Oct (NucNet):** The share of nuclear in electricity generation in Japan by 2100 is expected to be 67 percent and come from both fission and fusion reactor units. In a supply-and-demand study called '2100 Nuclear Vision: Proposal Toward a Low-Carbon Society', the Japan Atomic Energy Agency (JAEA) says the aim by 2100 is to reduce CO2 emissions by about 90 percent from current levels.

The study includes four major proposals:

- The use of renewable energy and nuclear energy must be increased.
- Nuclear energy will be used for power generation and also as a heat source in the production of hydrogen.
- Final energy consumption should be reduced to about 60 percent of current levels by 2100. The approximate component shares of each type of energy will be 60 percent for electricity – an increase of 25 percent from today's level – 30 percent for fossil fuels (now 75 percent) and 10 percent for hydrogen.
- The approximate component shares for each type of primary energy will be 60 percent for nuclear (now 10 percent), 30 percent for fossil fuels (now 85 percent) and 10 percent for renewable energies (now 5 percent).

The JAEA said the total amount of generated electricity in 2100 is expected to reach around 1,700 billion kilowatt-hours, with nuclear accounting for about 67 percent, of which 18 percent will come from light water reactors (LWRs), 35 percent from fast breeder reactors (FBRs), and 14 percent from fusion reactors.

Installed capacity is expected to be about 370,000 megawatts (MW), with nuclear making up about 40 percent, of which 10 percent will come from LWRs, 21 percent from FBRs, and 9 percent from fusion reactors.

By 2100, 120 high-temperature gas-cooled reactors will be in use in the production of hydrogen, with a thermal capacity of 72,000 MW.

Today, Japan has 55 reactor units in commercial operation and two, Tomari-3 and Shimani-3, listed by the International Atomic Energy Agency as under construction.

All seven units at the Kashiwazaki Kariwa nuclear power plant remain offline following a strong earthquake in July 2007. The nuclear share in electricity generation was about 28 percent in 2007.

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**21.10.2008**

**No. 81 / News**

## **IAEA Chief Renews Call For Global Energy Body**

**21 Oct (NucNet):** The proposed creation of an “all-embracing international energy organisation” has been raised during a meeting of finance ministers of the group of Commonwealth countries by the head of the International Atomic Energy Agency (IAEA).

IAEA director-general Mohamed ElBaradei reiterated a call he made earlier this year for a new global energy body in an article for a publication made available during the ministers’ annual meeting held in St Lucia from 6 to 8 October 2008\*.

“A number of institutions focus on energy, but none with a mandate that is global and comprehensive and that encompasses all energy forms,” Mr ElBaradei said.

“A global energy organisation would complement, not replace, existing bodies. It would bring an essential intergovernmental perspective to bear on issues which cannot be left to market forces alone, such as the development of new energy technology, the role of nuclear power and renewables, and innovative solutions for reducing pollution and greenhouse gas emissions,” he added.

Such an institution could also provide “authoritative comparative assessments at global, regional and national levels” such as on the long-term impacts of nuclear waste.

Mr ElBaradei said: “Efforts in the 1970s to establish a global energy organisation were unsuccessful. The world has changed dramatically since then and the need for joint action to develop long-term solutions to the current energy crisis is now undeniable.

“It is difficult to see how this can be done without an expert multinational body, underpinned perhaps by a global energy convention, with the authority to develop policies and practices to benefit rich and poor countries alike, equitably and fairly. We need to act before crisis turns into catastrophe.”

During their three-day meeting, Commonwealth finance ministers discussed the impact of food and fuel prices on their respective countries and, in a statement issued at the end of their meeting, said they noted the need to support the agricultural sector to increase food production and to explore new sources of energy supply.

\* The Commonwealth is an association of 53 independent states whose head is Britain’s Queen Elizabeth. Mr ElBaradei’s article – ‘Addressing the global energy crisis’ – appears in the ‘Commonwealth Finance Ministers Reference Report 2008’. The full report can be purchased from the Commonwealth ([publications.thecommonwealth.org](http://publications.thecommonwealth.org)). Mr ElBaradei’s article is available on the IAEA’s web site ([www.iaea.org](http://www.iaea.org)).

<http://www.euronuclear.org/e-news/e-news-22/Member-Societies.htm>

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### Member Societies

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