European Nuclear Society
e-news Issue 15 January 2007

ENS NEWS, N° 15:

While some of us were still struggling to recover from the New Year festivities and get back into the swing of things, 2007 hit the ground running and firing on all cylinders. By early January, several significant political developments regarding EU energy policy had already taken place and energy discussions dominated the corridors of power in Brussels. This explains why **ENS NEWS N°15** has a distinctly EU flavour to it.

On 10 January, under the glare of the media spotlight, EU President José Manuel Barroso - flanked by EU Energy Commissioner, Andris Piebalgs, and EU Environment Commissioner, Stavros Dimas - presented the EC's eagerly-anticipated Communication on the future of EU energy policy. The report, entitled An Energy Policy for Europe, is a broad-ranging strategic review of the Community's energy policy. It gives explicit recognition – for the first time in an official EC policy document – to the important role that nuclear energy should play in helping the EU meet its security of supply, climate change and competitiveness challenges.

FORATOM gave a prompt response to the "energy package," which **ENS NEWS** readers can see, together with the official EC press release and other FORATOM information on the home page of the FORATOM web site: www.foratom.org. To summarise, FORATOM welcomed its recognition of the role and importance of nuclear energy in forging an effective long-term EU energy strategy and noted with satisfaction the Communication's reference to nuclear as "one of the largest sources of CO_2-free energy." However, FORATOM was disappointed that the EC did not take into account its own research data and emphasise that the share of nuclear energy and renewables in Europe's primary energy supply could double to about 40% by 2050.

Of special interest to the scientific and nuclear community are the references that ***An Energy Policy for Europe*** makes to new technologies and increased research spending over the next 7 years.

Before the ink was dry on the EU's reworked "energy package" had the EC released the results of a Eurobarometer Survey on Energy Technology, which provided some interesting insight into what EU citizens think about energy matters, including nuclear. I'm happy to report that scientists are still seen as the most trustworthy source of information about energy matters. But before we all get too complacent, the results were far from all positive: only 1 in 5 citizens, according to the survey, support the use of nuclear energy and the percentage in favour has decreased from 37% when the Eurobarometer on Radioactive Waste was published in 2005 to only 20% today. Mind you, as a famous politician once said "There are lies, damn lies and statistics." Anyway, you can make up your own mind by analysing the results of the

survey at:
ec.europa.eu/public_opinion/archives/ebs/ebs_262_en.pdf

After the traditional beginning-of-year message from our President, **ENS NEWS N° 15** kicks off with a thought-provoking analysis by Andrew Teller of the unfounded opposition to the **ITER** project expressed by some environmentalists. Next up is some general information about upcoming ENS conferences. As always, more detailed information one each of these flagship conferences, **PIME 2007**, **RRFM/IGORR 2007** and **ENC2007**, is provided in the ENS Events section.

There is a particularly impressive number of articles in the Member Societies and Corporate Members section this time round, with members sending in articles dealing with a range of issues from Sweden to Slovakia and from Lithuania to Russia.

The Young Generation Network (YGN) report focuses on the 10th anniversary of the British Nuclear Society's YGN chapter, which was celebrated at a gala event in Manchester.

As I mentioned earlier, January was a red-letter month for EU energy policy, with the strategic energy review process providing a new "energy package" that includes the aforementioned EC Communication ***An Energy Policy for Europe and Eurobarometer Survey on Energy Technologies***, as well as the PINC (5th Illustrative Programme on Nuclear). These important initiatives are examined in-depth in the European Institutions section.

In the ENS World News section our friends from NucNet also focus on EU news, especially the European Strategic Energy Technology Plan that was announced by the EC as part of the wider strategic energy review. The Plan's measures focus primarily on boosting spending on research into the competitiveness of low-carbon technologies and will form part of an overall energy Action Plan that should to be adopted at the European Council in March 2007.

Your comments and suggestions on any aspect of **ENS NEWS** - style, format or content - would, as always, be most welcome.

In the meantime, have a great 2007 and enjoy your ENS NEWS!

Mark O'Donovan
Editor-in-Chief

http://www.euronuclear.org/e-news/e-news-15/presidents-contribution.htm

ENS NEWS

Word from the President

Contributing, communicating, participating.

Dear ENS NEWS Reader,

First of all I would like to wish you and your family a happy, prosperous and healthy 2007!

But what will the New Year bring? Well, it certainly promises to be a busy one and a watershed year for EU energy policy – something that this edition of ENS NEWS has attempted to reflect. The urgent need to drastically reduce greenhouse gas emissions, geopolitical realities imposed by the planet's finite resources, the just struggle by developing countries to achieve reasonable living standards and the global population explosion all point an inescapable and non-negotiable requirement for sustainable energy sources. And it appears that EU leaders recognise this fact and are committed to meeting these challenges.

The strategic energy review that was recently undertaken by the European Commission shows how a new spirit of pragmatism has given fresh impetus and a sense of urgency to EU energy policy. Let's hope that decision-makers and policy-shapers at all levels can get their act together and translate words into deeds. EU energy policy's reinforced focus on combating climate change, ensuring greater security of energy supply and increasing research spending by 50% over the next 7 years will continue to influence the focus of the nuclear science community's work and, to a large extent, define the environment in which we work. I think it is very important that the nuclear science community makes its voice heard more and engages more actively in the debate that shapes the EU energy policy-making process.

Nuclear energy is certainly not the only sustainable energy source, nor is it the only acceptable one in today's context. The nuclear community is convinced, however, that it is a crucial component of the overall energy mix and an environmentally-friendly and economically viable option for meeting our long term energy needs. To make this a reality will require the appliance of science and the harnessing of the latest scientific and technological advances. But it will also require a considerable communications effort and, above all, the optimal exploitation of nuclear energy in accordance with the highest of safety standards. None of us needs reminding that it only takes one major nuclear-related accident to occur for the future of nuclear energy, and the scientific work that underpins it, to be seriously compromised in large parts of the world, particularly in Europe.

This leads me to another area that we need to concentrate on - communications. We need to increase the visibility and credibility of the work that we do. Common misconceptions and misinformation about nuclear energy need to be dispelled. Part of the problem is that many people remain largely unaware of the broad range of nuclear applications that exist and how they are present in our daily lives. They have little or no idea those applications can improve quality of life and protect the interests of consumers across the world. For example, each year the diagnosis and subsequent treatment of millions of patients depend upon reactor or accelerator-produced radio-nuclides. Thousands of industrial processes use sealed radioactive sources for monitoring, quality assurance etc. Of course, we know that nuclear is about a lot more than just energy – but how many ordinary citizens do?

This situation needs to change. The onus, therefore, is on us to "sell" the success of our science. Mind you, not all nuclear scientists are born communicators. But I believe that we have to play our role in spreading information in a clear, objective and scientific way - and by so doing enhance the knowledge and improve the opinion that people have about all things nuclear.

One of the mainstays of the service that ENS provides is, of course, its conferences. Following on from what I just said about the importance of communications, the ENS conference schedule, appropriately, kicks off from 11-15 February with **PIME 2007** (in Milan). PIME is an established annual conference for communicators in the nuclear research and industry sectors. It is organised with the collaboration of FORATOM, the IAEA and the NEA.

Next up will be **RRFM/IGORR 2007** (in Lyon from 11-15 March). This annual ENS fixture for specialists working in the field of fuel management for research reactors is organised in co-operation with the IAEA.

Finally, **ENC2007** (the European Nuclear Conference) will take place in Brussels from 16 -19 September. ENC2007 is a biannual conference that provides a platform for sharing knowledge and insight into the latest developments in nuclear research. It also seeks to seek synergy between the scientific community, industry and citizens on the key issues of the day. It is organised in collaboration with the British Nuclear Society, the American Nuclear Society and the Vrije Universiteit Brussel.

Make sure you register now for the conference(s) of your choice. And remember, your feedback on the conferences and all other aspects of ENS' work is crucial if we are to improve the service that we provide.

ENS looks forward very much to further developing the way it collaborates with its members in the year to come. I hope that we will satisfy your needs and live up to your expectations by providing you with the information and support you will need to keep abreast of what's going on in the nuclear community and expand your activities.

Let's make the New Year one to remember.

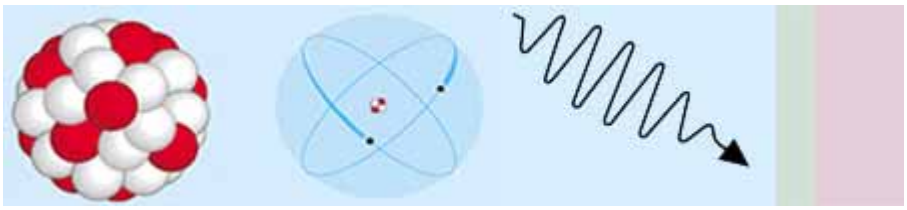
Best regards and enjoy your ***ENS NEWS!***

Frank Deconinck.
President of ENS

http://www.euronuclear.org/e-news/e-news-15/listening.htm

ENS NEWS

The strange controversy surrounding ITER



by Andrew Teller

ITER, the reader will certainly recall, is the next step in the world's endeavour to produce energy by fusing light nuclei together (see ENS NEWS no 4, Spring 2004). After protracted discussions, it was decided last year that the Cadarache site, in the south of France, would house the reactor. Having reached consensus on the siting, the parties got finally round to signing the international ITER Agreement, which took place on 21st November 2006 at the Elysée Palace in Paris. The event triggered a wave of renewed protests from several environmental organisations. Many reasons were invoked to justify such opposition, most of them beside the point or clearly disingenuous. I would like to examine two of them here, because they look reasonable enough to convince the uninformed. First, the undertaking having already suffered countless delays, there would be no reason to believe that it would one day provide a useful answer to the threat of global warming. Second, the amount of money required would deprive the research on Renewable Energy Sources (RES) from much needed resources and therefore hamper their development. The opponents of nuclear energy, be it produced by fission or fusion, often use arguments stemming from genuine concerns. Often also, the way they make their case is flawed and one does not need much background information to poke holes in their reasoning. Let me show here that this is the case indeed for the two abovementioned objections.

Regarding the time needed to achieve self-sustaining fusion, it is very easy indeed to cast doubts on the current estimates. The proponents of fusion have claimed for so long now that success was thirty years down the road, that The Economist felt entitled to comment that fusion experts had discovered a new physical constant. There is however a performance index readily available to assess the likelihood of the claim. This index, used to measure the performance of a fusion plasma, is called "triple product". Any visitor to the web site of the European Fusion Development Agreement (EFDA) will easily find the figure 1 below. It shows the progress of the said triple product. One can see that over the thirty years between 1970 and 2000, the triple product had increased faster than the number of transistors on computer chips (the famous Moore law). To be more specific, the triple product has increased by a factor of 10,000 in the said thirty years and no more than another factor of 6 is needed to achieve the value needed for a power plant. Such figures speak for

themselves. They do not provide any guarantee but in a court, they would provide sufficient new evidence to have the case reopened. Ignoring it, as the opponents do, is a convenient way of maintaining a position based on prejudice, not on facts.

Let us turn now to the purported competition between fusion and RES research & development (R&D). This argument is flawed on three counts at least. First, it assumes that there is only a fixed amount of money around to finance R&D and that what is allocated to one project must necessarily be denied to another. Admittedly, ITER is going to cost 10 billion euro over thirty years. This is quite a lot of money for one single project. But how does it compare with the overall R&D budgets? On a yearly basis, 10 billion euro translate into 335 million. The R&D budgets of the world's most industrialised countries amounted in 2003, according the European Commission's Statistical Office EUROSTAT, to 585 billion euro. This means that the yearly requirements of ITER represent less than 0.06% of the overall yearly R&D expenditures. It is hard to believe that such a tiny fraction could disrupt all other R&D programmes in a noticeable way. In particular, for the R&D on renewables to be affected, it would have to be pushed out of the list of things to do as a very low priority item. But one can rest assured that this is not the case, owing to the popularity enjoyed by these energy sources. Taking this into account, claiming that money given to ITER will be diverted from RES R&D is therefore tantamount to saying that RES R&D has very low priority, which is clearly ludicrous.

Second, the argument is based on the implicit premise that achieving progress in RES is only a question of throwing enough money at the problem. This again is misleading. It is true that R&D can achieve practically anything (not contravening the laws of physics) given sufficient funding. But this is not the problem faced by renewables. Their problem is to become cost-effective and, obviously, spending unlimited amounts of money to make a process cost-effective can only defeat the purpose. There is no guarantee that money can buy more than marginal improvements to the existing processes, leaving them still too costly for comfort. Third, the argument equates ITER's rocket science with the piecemeal engineering applicable to RES. The first type of activity will attract top scientists; the second one is the province of people who are content with more mundane technical work. The two are not interchangeable and the very idea that the world does not need top scientists brings sinister memories to the mind: such view was held in the past only under the worst of political regimes.
As is often the case, the two objections just examined do not resist scrutiny. Despite all the remaining uncertainties, it is worth giving ITER a try. The risk of failure, which cannot be ascertained without the experiment soon to be undertaken, will not affect much other R&D projects. The rewards of success on the other hand are simply too good to be overlooked.

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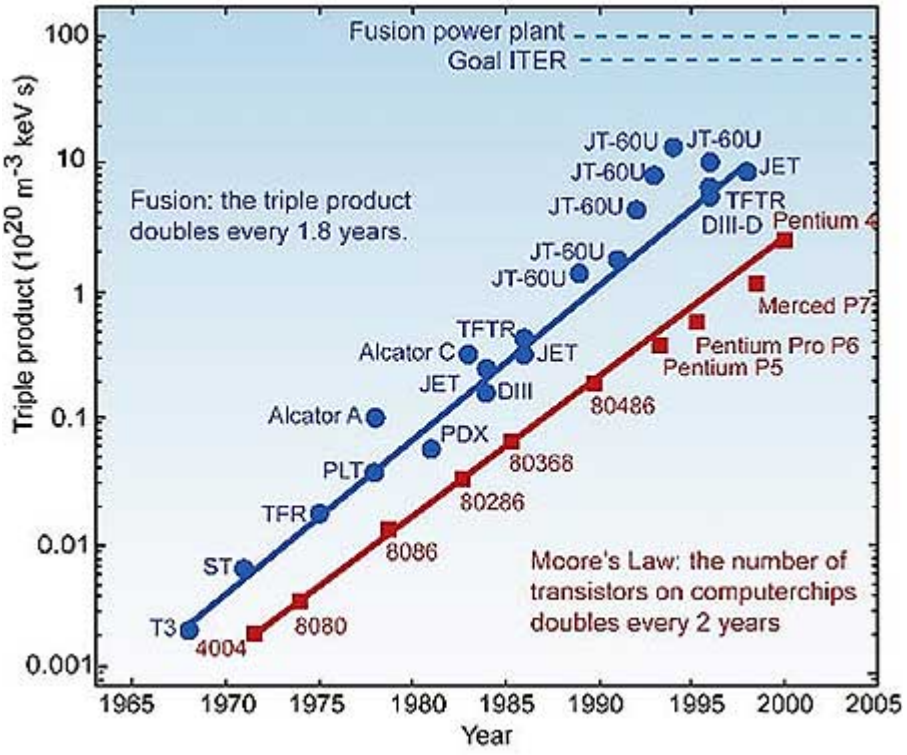

Figure 1:The progress of fusion research through the years, measured by the triple product, which is an indication of the performance of a fusion plasma. Please note the logarithmic scale on the vertical axis. F or comparison, the development of computer chips is indicated. (Courtesy of EFDA)

http://www.euronuclear.org/e-news/e-news-15/time-to-get-moving.htm

ENS NEWS

European Nuclear Society
Largest nuclear society for science and industry

Step up a gear and get into conference mode!

The 2007 ENS conference season is about to get underway, with **PIME 2007** (11-15 February, in Milan) less than a month away and **RRFM** (11-15 March, in Lyon) also just around the corner. What's more, planning for **ENC2007** (16-19 September, in Brussels) is already at an advanced stage and the deadline for submitting abstracts for ENC2007 is fast approaching, so please send in your contributions NOW.

As far as PIME 2007 and RRFM are concerned, there is still time to register your attendance and ensure that you too can play an active role in the debate and analysis of the key issues that are setting today's scientific and political agenda. But don't wait too long – recent ENS conferences sold out!

So, if you want to participate in these international topical meetings and conferences you need to step up a gear and register now!

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http://www.euronuclear.org/e-news/e-news-15/pime2007.htm

ENS EVENTS

Register now for PIME 2007!

PIME 2007 will take place from 11 - 15 February, in Milan. PIME 2007 offers a varied and top-quality programme that covers a range of issues of importance to nuclear communicators. It features a number of international experts and high-level speakers who represent all aspects of nuclear communications. For the first time, in 2007, PIME will include two 'blind workshops' that provide participants with a results-oriented, hands-on approach to creating ready-made communication tools in response to key needs.

Don't miss this key event for all nuclear communicators! Register now!

Go to www.pime2007.org for further information.

There is no registration deadline for registration but we recommend that you reserve early your participation in the Technical Tour and your hotel accommodation.

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http://www.euronuclear.org/e-news/e-news-15/rrfm2007.htm

ENS EVENTS

RRFM IGORR 2007

RRFM 2007 / IGORR: Research into reactor fuel management in the international spotlight!

In 2007, ENS and IGORR (the International Group on Research Reactors) will, for the first time, jointly organise RRFM 2007 / IGORR. This unique conference for specialists involved in all aspects of research into reactor fuel management and technology will take place from 11 – 15 March 2007, in Lyon, France.

A well-established fixture on the nuclear community's international agenda, RRFM (the International Topical Meeting on Research Reactor Fuel Management) has over the years provided a perfect platform for engineers, plant operators and nuclear fuel management experts from around the world to present their latest research data, to exchange experiences and to discuss issues of fundamental concern to researchers and the nuclear industry alike. This year's co-organisation with IGORR will give it added impetus and focus.

The response to RRFM 2007 / IGORR has been so great, as witnessed by the record number of abstracts submitted, that the organisers have decided to **extend the conference over three days!** And what's more, **registration fees** are **lower** than for last year's conferences.

So make sure you register now!

As far as the agenda is concerned, there will be extra sessions both on specific and general issues to meet growing interest in the conference. Key topics like fuel efficiency, enhanced fuel cycle management and improved back-end solutions, will again feature high on the RRFM 2007 / IGORR agenda - as well as new reactor designs and projects for upgrading existing installations.

Another major factor of the RRFM 2007 / IGORR winning formula is the technical

tour programme and this year delegates will not be disappointed! The programme will include visits to the AREVA CERCA workshops in Romans and to the Institut Laue-Langevin (ILL) which operates the most intense neutron source on Earth.

Make sure you make the most of the social programme too, which revolves around the sights, sounds and tastes of the old city of Lyon. RRFM 2007 / IGORR offers food for the body as well as the mind. The perfect combination!

Visit the dedicated web pages of the ENS website, www.rrfm2007.org, for more information on RRFM 2007 / IGORR and book your place now.

See you in Lyon!

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http://www.euronuclear.org/e-news/e-news-15/enc2007.htm

ENS EVENTS

ENC 2007

Mark your diary!

Sharing knowledge and providing insight on the latest developments in nuclear research and its applications – that is the aim of the **European Nuclear Conference (ENC)**.

ENC2007 will take place in **Brussels** from **16 – 20 September 2007**. The conference will have a multidisciplinary approach, looking at nuclear applications in energy production and medical technologies, and giving special attention to how they impact on our society and vice versa.

Call for Papers

Share your knowledge with your colleagues by presenting a paper related to the following subjects:

- The nuclear fuel cycle (including waste, transport, dismantling and transmutation)
- New energy technologies
- Medical applications, and

- Socio-economic, political and ethical considerations, human resources and education and training

In the spirit of the multidisciplinary approach of **ENC 2007**, contributors are encouraged to send in work that appeals to crossover thinking and context exploring.

Please submit your abstract by 31 of January 2007. The Call for Papers and abstract form can be downloaded from www.enc2007.org

Help us spread the news about **ENC 2007** and make sure your colleagues get to know about the event through our website or via this e-mail.

We hope to see you in Brussels for ENC 2007!

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http://www.euronuclear.org/e-news/e-news-15/nnp-lithuania.htm

MEMBER SOCIETIES

Summary of a Feasibility Study into the construction of a new nuclear powerplant in Lithuania

25 October, Vilnius

BACKGROUND

On 26th January 2006, during an energy conference in Vilnius, government officials from three Baltic countries agreed to commission a feasibility study into the construction of a new nuclear power plant in the region. January 2006, during an energy conference in Vilnius, government officials from three Baltic countries agreed to commission a feasibility study for a new nuclear power plant in the region.

On 27th February 2006, the Prime Ministers of Lithuania, Latvia and Estonia issued a communiqué expressing their approval of the construction of a new nuclear plant in the region and inviting national energy companies to invest in the Project.

The Memorandum of Understanding about conducting the feasibility study was signed by the heads of Lietuvos Energija, Latvenergo and Eesti Energia on 8th March 2006.

INTRODUCTION

The Baltic electrical system and – as a result – the economies of the Baltic States are facing a major challenge as they seek to make progress. According to the EU accession arrangements for Lithuania, the nuclear power plant facilities operating today at Ignalina will have to be closed down, causing a major shift in the electricity supply and demand equation - not only in Lithuania but also in the integrated Baltic electricity system, which includes Estonia and Latvia.

It is for this reason that the three governments of Estonia, Latvia and Lithuania have

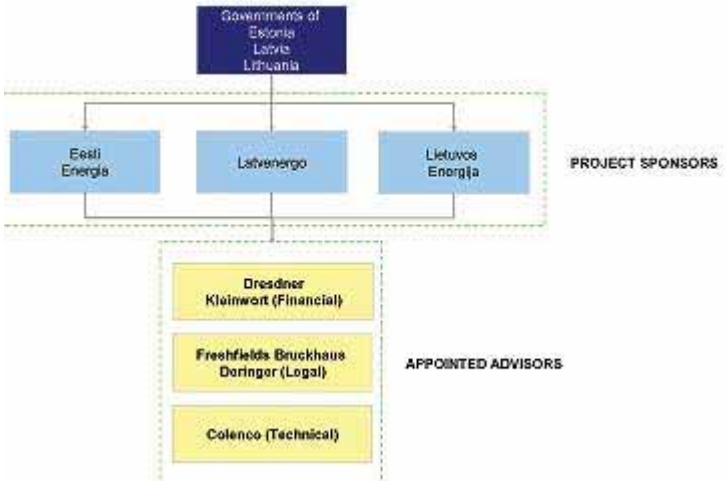
decided to jointly explore possible options for addressing this issue with the utmost urgency. One of the options considered entails building a new nuclear power plant in Lithuania, effectively replacing the existing obsolete Ignalina units with up-to-date and optimally safe nuclear power production technology. In order to assess the feasibility of this particular option the three governments requested their respective state owned utilities - Eesti Energia, Latvenergo and Lietuvos Energija AB (the "Sponsors") to carry out the feasibility study.

The work within the framework of the feasibility study was split among the following four working groups:

- Best Available Technologies Group: for the new nuclear plant, i.e. possible reactor size, and the potential investment and operational costs of the facilities
- The Financing Working Group: responsible for economic and financial appraisal of the Project
- The Legal Working Group: responsible for structuring the project in the light of the applicable legal, contractual, regulatory and EU legislative requirements
- The Transmission Working Group: responsible for investigating the adequacy of the Baltic transmission system for ensuring power flows from the new plant in Ignalina to power systems in all countries involved and estimating the reserve capacity required after construction of the new plant

The Sponsors appointed advisors to assist with the financial, technical and legal analysis of the feasibility of the project (Dresdner Kleinwort, Freshfields and Colenco Power Engineering).

Figure 1. Main parties involved in preparation of the Feasibility Study



GOAL OF THE FEASIBILITY STUDY

Given the task assigned to the Sponsors by the respective governments , the main goal of this feasibility study has been to assess whether it is realistic to envisage that a NPP could be successfully developed in the current and prospective economic, technical, financial and legal environment in the Baltic States and the EU. This analysis was based on information available today on:

- available reactor technologies
- the current market environment for commodities (in particular oil and gas),
- the legal and regulatory framework for nuclear generation in the Baltic region
- the applicable legal framework in Lithuania and the EU
- the technical status of the interconnected Baltic system
- the current and forecast financial status and the financial and market environment

CONCLUSIONS

The main conclusion of the study is that it would be feasible to develop a new nuclear power plant to replace Ignalina.

The key factors supporting this conclusion are as follows:

- There is a clear need to replace the capacity that will be lost when Ignalina is finally closed
- Replacing Ignalina with new nuclear capacity offers a number of important advantages compared with available alternatives. In particular, it will maintain diversity of fuel source and generation mix; it will reinforce security of supply by using fuel that is readily available from a global market and it will assist in meeting Kyoto Protocol emissions targets
- Replacing Ignalina with one of the range of modern nuclear plants that meet current international safety and environmental standards will also deliver substantial public benefits
- The work done also shows that there is good reason to expect that the project could be successfully implemented in practice.
- From a technical standpoint, the study of available reactor technologies shows that there is a satisfactory range of proven reactors that would be suitable for use and that would meet prevailing international safety standards. The assessment reveals that the current Ignalina site is suitable for developing a new reactor(s). The study also shows that the current transmission grid would be able to cope with the new power plant with little and manageable reinforcement and adaptation. It indicates that short-term storage of spent fuel would continue for Ignalina, that long term storage options for existing and future spent fuel are to be developed in the context of EU-led initiatives, and that the new plant's storage costs would be financed on the basis of regular contributions to an independent fund, in line with best European practice.
- From an economic perspective, the study also indicates that nuclear is a more viable choice for new capacity than alternative forms of power generation, based on current fuel prices and projections and on the expected range of reactor prices. Financial analysis and initial consultations with potential lenders also indicate that it would be feasible for the sponsors to provide the

necessary equity and to cover the debt incurred. This will, of course, require that the financing is suitably structured and that appropriate commercial contracts for a project of this kind are put in place to support the financing. It will also require that processes currently under development to ensure that each sponsor is sufficiently capitalised to support its share of the financing are, in due course, implemented. There is good reason to think that these steps are achievable

The analysis undertaken in the context of this study indicates that today the undertaking of the three sponsors to jointly build a new nuclear power plant appears feasible from a technical, electrical system, financial and legal perspective on the basis described above. More specifically, conclusions have been drawn with regards to the following parameters listed:

- The need for additional generating capacity

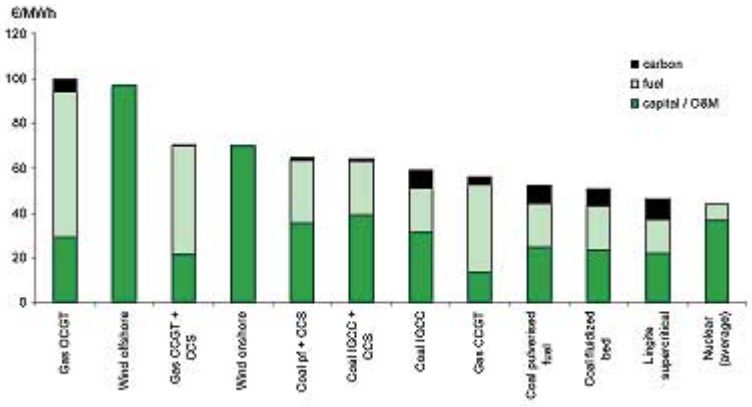
The analysis indicates that given the current and forecast economic development for all three Baltic States a significant supply and demand gap will be apparent. This is exacerbated by the closure of Ignalina. As a result, significant new capacity needs to be built to fill the gap. Nuclear generation capacity is one major source of energy for filling the supply and demand gap that must be considered.

- The likely cost advantage of nuclear reactor over alternative sources of new generation

The analysis indicates a cost advantage for the analysed reactor designs compared to other forms of likely generation capacity upgrades to the Baltic electricity system.

Using different estimates for oil and coal prices, it has been possible to assess indicative ranges for generic new entrant costs. The Project's economic feasibility will thus be based on the assessment of whether the all-inclusive costs for the project, including full financing costs, could be reasonably assumed to be below such new entrant cost levels.

Figure 2. Indicative electricity generation new entry costs for different fuels



Source: Dresdner Kleinwort Equity Research

- Availability of suitable reactor designs

The study entailed an extensive, albeit preliminary, assessment of reactor technologies available today. This exhaustive market survey confirmed that all these reactor types present the highest of safety standards, which exceed safety levels

currently in operation at Ignalina and would be at least as high as those applicable to other European reactors. Furthermore, it appears that there is sufficient variety of suppliers available for such reactors to provide a competitive environment at the procurement stage.

- Security of supply of nuclear fuel

The nuclear fuel market is effectively a global market supplying over 400 nuclear installations, in recent decades, with nuclear fuel in a reliable, efficient and cost-effective manner. It is important to bear in mind that the actual cost of the nuclear fuel represents only a small part of the overall cost base for any nuclear reactor. In addition, sources of uranium are fairly well-distributed geographically, so that no particular region is in a dominant position. Furthermore, relevant international studies indicate that sufficient levels of uranium reserves are available. While a few reactor types have technical specifications which limit the number of suppliers of particular services for fuel delivery, the overall market for such services, however, is diversified to avoid any potential problem with regards to security of supply.

- Site

Using the International Atomic Energy Agency's (IAEA) standards for evaluating the possible site options, it has been concluded that sufficient space at the existing Ignalina site is available to accommodate a new nuclear reactor unit. Drilling and geological research has been carried out which support these conclusions.

- Human Resources

According to the information provided by potential suppliers and the experience of the technical advisor, the average number of staff required to operate a new nuclear plant is between 400 and 500 persons. An assessment of the age and qualification structure of the personnel at the existing nuclear facility in Ignalina indicates that following an education management process, eligible current employees could constitute the majority of the staff at the new plant.

- Decommissioning and spent fuel costs

The envisaged approach for decommissioning and storage costs is - in line with European and national regulations and best practices - to make the project responsible for making regular payments to a separately held fund, which provides for the future costs of decommissioning of the power station and of the long-term storage of spent fuel. The level of contribution would be fixed periodically by an independent authority on an objective basis so as to ensure that the fund is adequate. The project would pass on these costs to its customers under power purchase agreements. Lithuania already has to identify the most appropriate approach for storing its existing spent fuel materials from Ignalina's past operations. Thus, building a replacement nuclear power plant does not present a new challenge, - indeed the additional spent fuel volumes from the project will, in economic terms, probably reduce the unit cost of overall storage through economies of scale; and the establishment of a fund to finance the cost of the project's storage and decommissioning needs will create financial stability that will assist with the development of storage and decommissioning facilities for the site as a whole.

- Transmission system capabilities

Regarding the latest UCTE requirements and the current status of the integrated transmission systems of the Baltic States, the analysis indicates that the current infrastructure and electrical system is capable of accommodating up to 3,000MW of nuclear capacity without major modification. In this context, a detailed analysis has been undertaken of the likely cross-border flows under various scenarios, as well as an analysis of the necessary arrangements with regards to primary, secondary and tertiary reserves to support different configurations of reactor types and unit numbers. All this analysis supports the overall conclusion that the project is technically feasible.

- Likely funding structure

It was concluded that strong level support from the sponsors will be required - either directly and/or indirectly via off-take undertakings - would mean that the sponsors' rating assessments are likely to include a pro rata participation in the project itself, irrespective of the corporate structures employed. Furthermore, it was concluded that a fully integrated financing package is more economic, more flexible and less complex than a project finance approach for integrated construction and operation phases on a non-recourse basis.

The overall investment cost is expected to be indicatively between €2.5 - 4.0 billion, depending on the reactor type chosen and the number of units to be installed, amongst other parameters. In addition, it is assumed that a not insignificant amount of equity from the sponsors would be required.

- Overall likely size of the investment

The study has confirmed that under the envisaged project structure described above, the sponsors could select any of the reactor types available today for the project, i.e. there are no restrictions from a financial, technical, system or legal perspective to any single design. In addition, the analysis indicated that for some of the designs it may well be possible to contemplate constructing two units, which could provide certain additional benefits, such as economies of scale, future procurement benefits, and reserve capacity benefits. These benefits, however, have to be weighed against the ability of the sponsors and ultimately the Baltic market to absorb such quantities of electricity.

- Legal issues

As indicated above, no substantial legal obstacles to the successful implementation of the project have been identified, assuming that appropriate commercial arrangements are successfully negotiated, that the necessary legislative changes are introduced and that the technical environmental and economic requirements for applicable regulatory and other authorisations are met.

Main Parameters

Capacity needed	800-1600 MW
Investments	2.5-4 billion Euros
Overnight capital cost	1300-2000 Eur/kW
Possible project completion	2015

NEXT STEPS

Clearly, this assessment is based on current expectations for likely price evolution for fuel, carbon, reactor and financial markets and for the outcome of various negotiations with third parties and the results of detailed environmental impact assessments, design work and regulatory approval processes. The recommendation is that work should start on implementing the project, subject to regular periodic governmental review to verify that no circumstances have arisen which would adversely affect the feasibility of the project and subject to final approval once full details of the reactor price, financing package, commercial arrangements and other key elements of the project have been negotiated.

Implementing the project is a substantial task requiring many interrelated technical, commercial, financial and legal work streams. It will involve negotiations with a variety of commercial parties and consultations with and approvals from a variety of regulatory authorities at national and EU level. Implementing legislation will be necessary in the host country and appropriate inter-governmental and government support agreements will need to be entered into before financing and other final commitments are made.

A summary of the Report for Feasibility Study of Constructing a New Nuclear Plant in Lithuania will be presented to governments and the parliaments of Lithuania, Latvia, Estonia by November, 2006.

WHY NUCLEAR TECHNOLOGY?

While there are various options for replacing the generation capacity lost through the shut down of Ignalina, it is important to highlight in this context the main reasons why nuclear reactor technology should be considered:

- It allows sponsors to maintain the current mix of fuels used in the Baltic electricity system and thus maintain a diversified generation structure
- It contributes to security of supply as it uses nuclear fuel from a global market without material security of supply concerns
- Given the high construction cost and low operating cost of nuclear operations, significant value would likely be created in the domestic economies as opposed to wealth transfer on an ongoing basis to the fuel supply markets
- It will help meet Kyoto Protocol targets for CO_2 emissions, while at the same time supporting growth of the domestic economies
- Nuclear technology offers a relatively stable and predictable initial cost base
- Potential economies of scale may arise in the establishment of final storage facilities for nuclear fuel from the current Ignalina plant and the proposed replacement
- The combined effect of the current high commodity price environment for oil, gas and coal - coupled with a low interest rate environment - could make the economics particularly attractive

While there are significant political and environmental concerns regarding nuclear generation, it appears that today's technologies are able to provide a safe and sound framework for assessing and mitigating these concerns to a very large extent. The governments and sponsors involved in the project, if it were to go ahead, would clearly need to ensure that concerns on these issues are met through appropriate standards, transparency and public debate. **The environmental and safety standards of the proposed site would, of course, be verified in due course in accordance with applicable Lithuanian licensing procedures.**

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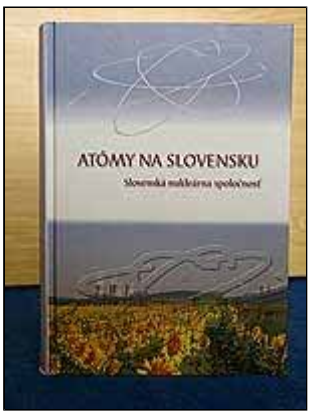
http://www.euronuclear.org/e-news/e-news-15/slovakia.htm

MEMBER SOCIETIES

Publication Atoms in Slovakia



On September 1st, 2006 the Slovak Nuclear Society (SNUS) published the book Atoms in Slovakia (in Slovak Atómy na Slovensku). The aim of the book is to preserve the memory of the period when the creation and development of nuclear physics, technology, nuclear medicine, radioecology and energetics in Slovakia occurred - as witnessed by people who experienced this period. and to adapt it to future generations.

The Editorial board of the SNUS collected the views of 60 contributors and distinguished

Slovakian experts in nuclear science, education and technology. Calling upon a wide spectrum of experts ensured an objective historical description of the period. A huge amount of subjective views on recent decades were collected and supported by a wealth of photographic documentation. This created a synthesised reflection on the history of the „atoms"in Slovakia.

This publication is dedicated to the memory of J. Suchomel, a former SNUS president and tireless promoter of Slovakian nuclear physics, technology and energy research who had taken the initiative to publish the book, but sadly did not live long enough to see it published.

The book is written in Slovakian has and has a format of 24,5x17 cm, 273 pages, 15 tables, and 192 black and white and 119 colour pictures from around the world and from places involved in the compilation of the study and with the study of atomic science in Slovakia.

The main chapters are as follows: Atoms in the world, Atoms in Slovakia, Atoms in the educational system, Atoms in health services (*Radiology, Nuclear medicine, Radiation protection, the Cyclotron centre of the Slovak Republic*), Radioecology, Other applications of irradiation, Nuclear energetics (*Electric energy in the second*

half of the 20th century, NPP Bohunice, NPP Mochovce, the back-end of Nuclear energetics, Big names in Nuclear energetics in Slovakia), Chronology and an Appendix entitled "Slovak companies in nuclear energetics."

The majority of Slovakian experts in the field was educated at the Faculty of Nuclear Physics and Technology in Prague, or at the Moscow Energy Institute. Challenging tasks they were assigned during the building and commissioning of the first Czecho-Slovak Nuclear Power Plant A-1, at Bohunice (heavy water, gas cooled reactor), and the IAEA grants they received for studying at nuclear establishments in Western Europe enabled young talented nuclear specialists to develop expertise, and many of them later achieved international recognition (by, e.g. the IAEA, WANO, etc.). This generation of nuclear experts, who experienced first-hand the turbulent years of the development of nuclear technologies and sciences in the 60s and 70s century, has now reached retirement age and their valuable knowledge and expertise is disappearing with them. We hope that this book *Atoms in Slovakia* will preserve at least some of their know-how for younger readers to put to good use.

Dr. M. T. Morovics, from the Slovak Society for the History of the Science and Technology said: *Atoms in Slovakia* is a historical work that is not written by historians. This has a natural impact on its character and thematic intent and illustrates its pro-and-cons. It records the views many experts on their professional activity developed. They are mainly direct or reported stories involving original members of that pioneering generation who helped to create a strong and broad base for the development of nuclear physics and its technical applications (in education as well as in nuclear energetics, medicine, environmental sciences, etc.

Slovak and Czech readers will maybe recognise themselves in this, or friends from Slovakia, theCzech Republic, or the former Soviet Union. They will find in it plenty of interesting facts about the genesis and evolution of their workstation, and about the story of the study of the atom in Slovakia and across the world. The book has helped keep the rich traditions of Austro-Hungarian and Czech science and technologies alive.

Prof. Vladimir Slugen
President of Slovak Nuclear Society

http://www.euronuclear.org/e-news/e-news-15/forsmark.htm

MEMBER SOCIETIES

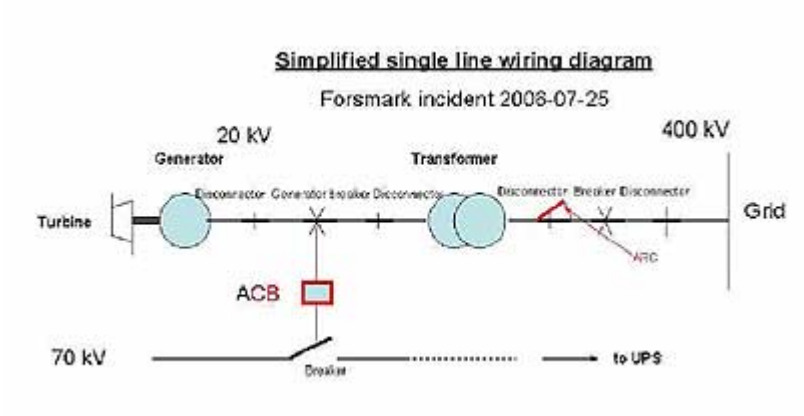
At Forsmark Multiple Safety Layers were Effective in protecting the reactor from the consequences of multiple failures in some electronic circuits.

by Frigyes Reisch, Sweden

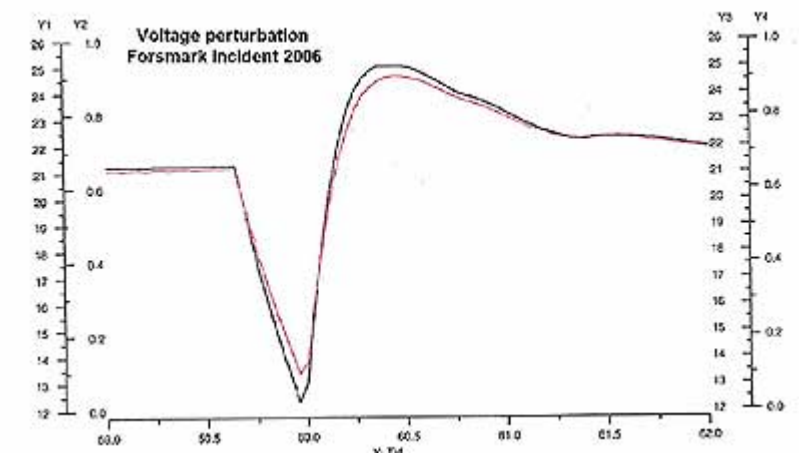
International Electrotechnical Commission (IEC), Lyon 2006 Meeting

"Much ado about nothing" these famous words of Shakespeare fit well the excitement that was generated over some trivial failures that took place at Forsmark. A word from an angry person about the distant possibility of core meltdown got the Swedish and international press - and of course the anti-nukes in a frenzy - , even though nothing dramatic actually happened at the plant.

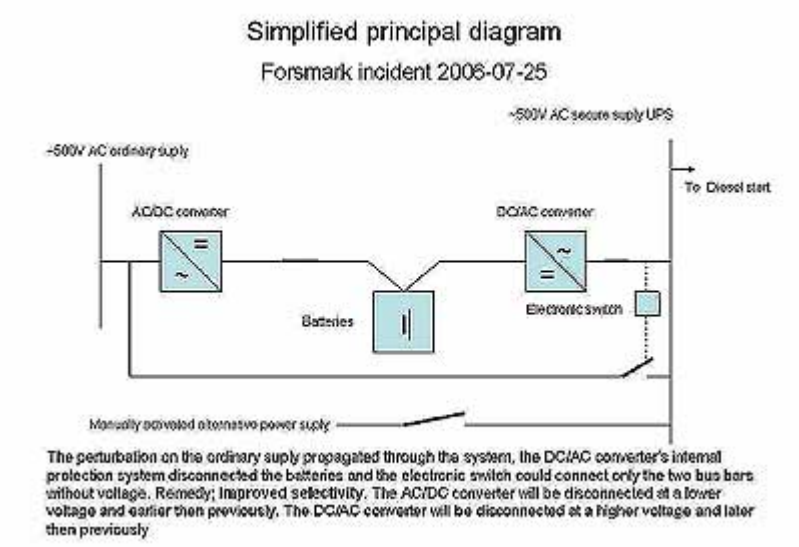
On July 25, in the high voltage (400 kV) switch yard during maintenance work a short circuit between two phases occurred because an energized disconnector was opened and thereby an arc arose (see the Simplified single line wiring diagram). The following transient (see the Voltage perturbation diagram) revealed some inaccurate adjustments in a couple of electrical circuits. The reactor was automatically shut down. That worked correctly.



The "uninterruptible" power supply systems (UPS) are configured with an AC/DC converter that fed the batteries and a DC/AC converter that support the uninterrupted power supply bus bar (see the simplified principal block diagram). The diesel generators' speed controls that are necessary for diesel start are supplied from the UPS fed bus bars. The perturbation on the ordinary power supply penetrated through the system. The internal protection system disconnected the DC/AC converter prior to the AC/DC converter's protection, for two of the four UPS.



The main generator's low frequency protection was installed with erroneous phase order and therefore did not disconnect the 20 kV generator breakers in time. That disconnection would have connected in
an alternative (70 kV) power supply. The alternative power supply, like the diesels were connected in to the system manually some twenty minutes later.



Now all three Forsmark reactors are in operation
The main improvements made are as follows; the battery secured network was made to endure severe disturbances, DC power supply to the diesel generators is assured, faulty indications in the control room at the loss of power supply are corrected, the gas turbines at the plant can be started from the control room.

With hindsight there are a few observations that we can make: the robust rotating DC/AC converters were replaced with new electronic boxes and so were the AC/DC converters, also the low frequency actuation protection of the generator breakers was replaced with new ones. All these new electronic boxes were tested individually, no integrated tests were performed. Previously, tests were required to disconnect the grid and to follow how the on-site power supply fulfilled its function. This insight had been lost in recent years.

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http://www.euronuclear.org/e-news/e-news-15/financing-npp-print.htm

MEMBER SOCIETIES

Pre-conditions for Financing Nuclear power

Contents

1. Introduction & benefits of nuclear
2. Dynamics of financing
3. Key risks
4. Case study: Olkiluoto 3
5. Government measures
6. Conclusion

Download Presentation

http://www.euronuclear.org/e-news/e-news-15/borssele.htm

MEMBER SOCIETIES

OUTPUT AT THE BORSSELE NUCLEAR POWER PLANT BORSSELE (KCB) INCREASED BY 35 MWe

On December 10th 2006 the nuclear power plant Borssele KCB (PWR) of EPZ was connected to the public electricity grid again with 35 MWe net more.

In 2003 EPZ, the owner of the Borssele nuclear power plant decided to carry out a feasibility study for increasing the output of the plant by improving efficiency and not by changing the reactor power.

The study concluded, supported by references, that today's turbine technology (knowledge of materials and 3D-blade design) allows a power increase with attractive ROI time on condition that the main interfaces (turbine table foundation, condensers and main steam feeding) are not changed and that the new process parameters do not effect these interfaces in a negative way.

It has to be noted that the old turbine installation had been in operation since 1973 and was still in good condition.

In 2004, the study was changed into a project which focused on how the power increase must be possible within the given boundaries and has to be done during the already planned refueling outage at the plant at the end of 2006. The outage period had been planned for a longer period than usual due to a lot of planned, partly obligatory inspections.

During spring 2004, EPZ asked the European Commission to publish a general invitation to tender for this project.

In 2002, two extreme short cuts on the public electricity grid lead to a speeding up of the ageing of the winding heads of the generator stator. The decision was made to change the generator stator (rewinding took too much operation time) also during the same outage period, having realised that this activity would have to take place at the same location as the turbine modernization with the same crane, which could have caused logistical problems.

In February 2005, Siemens received the order from EPZ to realize the power upgrade from 450 MWe up to 485 MWe net output and the change of the generator stator during the outage at the end of 2006.

The power upgrade consisted of changing the inner turbine parts (blades, which means new rotors and inner casings) for the HP and 3 LP turbines, to install new water separators and to bring in a new state-of-the-art I&C control/protection and automatic test system.

The upgrade and change of the generator stator had to be done at the plant starting on

October 21st 2006 and had to be ready for commissioning within 36 days.

The new blade design gives a power upgrade at the HP turbine section of 5, 3 MWe and 28 MWe on the 3 LP turbine sections.

The change of the water seperators (separated from pre-heaters but in series) from centrifugal type to collision type (power vanes), which leads to a more effective water separation from the exit steam from the HP turbine brings 1, 7 MWe.

The advantage of bringing in the state-of-the-art I&C is to minimize the necessary hydraulic oil control system (prevention against fire hazard), to solve the foreseen lack of spare parts and the running out of skilled maintenance personnel.

Siemens carried out the project together with the sub-contractors for the water separators (Areva, Balcke Dürr and Exotech) within the contractually agreed deadline of 36 days.

After an extensive commissioning program, already pre-tested on the KCB's full scope simulator (which was adjusted for the new installation), EPZ took over the new turbine installation for testing and normal operation on December 10th 2006 with an extended power output of 35 MWe net.

Machinefloor: inner parts of 3 LP turbines, in crane hook: new waterseparator

http://www.euronuclear.org/e-news/e-news-15/kudankulam.htm

MEMBER SOCIETIES

Radiation monitoring system for Kudankulam NPP: project development and implementation goes ahead

Upon results of the tender, PROM Engineering (Russia) was awarded a contract for the manufacture and supply of an automated radiation monitoring system (ARMS) in the framework of constructing two power units of Kudankulam NPP with WWER-1000 reactors in India.

The Kudankulam NPP ARMS has a number of considerable advantages when compared to the existing systems at Russian nuclear plants today due to the great reliability provided by its system structure, the wide range of objectives that it can achieve, the use of state-of-the-art instrumentation with wide measurement ranges, software usability and equipment serviceability.

About ARMS

ARMS is the major system for control of radiation safety at the NPP. It allows damage to one or other of the protective barriers to be identified at an early stage and prevents the penetration of radionuclides into the environment. Information exchange between the Automatic Process Control System and ARMS enables continuous analysis of the NPP to be carried out and failures with the main process equipment to be predicted.

ARMS combines both continuous and periodical monitoring functions:

- monitoring of the radiation process
- monitoring of the radiation status in a power unit and at the site
- monitoring of gaseous and particle releases into the atmosphere
- monitoring of radionuclide releases into the open aquatic environment
- monitoring of the spread of radioactive contamination
- monitoring of collective and individual radiation doses received by personnel

The ARMS system for use at a nuclear plant is a complex system worked out according to an hierarchical approach. It consists of self-contained subsystems for routine operation and for emergency control. For emergency control the subsystems are made with dual redundancy for measuring channels, communication and power supply lines. It must be able to function for all the types of NPP operation, including design basis and beyond design basis accidents, right up to NPP decommissioning.

Monitoring optimization

Work on monitoring the scope for optimization at the Kudankulam ARMS has gone beyond the period of detailed project development. The optimization of the ARMS project focused on the selection of the most informative parameters for monitoring at the NPP, which is equipped with a WWER-1000 (pressurized water reactor) type reactor. This has lead to the complete reconsideration of the whole project bearing in mind the new capabilities of the latest up-to-date equipment (computer facilities and measurement instrumentation) and the latest normative requirements. Furthermore, the main aims were was to consolidate the maximum possible number of radiation control objectives within a single automated system and to assign main monitoring functions to the measuring of channels in permanent automatic mode.

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http://www.euronuclear.org/e-news/e-news-15/hns.htm

MEMBER SOCIETIES

Elections of the new President and Board Members of the Hungarian Nuclear Society (HNS)

The General Assembly of HNS took place at the Budapest University of Technology and Economic's Institute of Nuclear Techniques on 12 May 2006. On the agenda was the election of new Board members. The new Board became operational as of 1 January, 2007.

The process led to the election the following members:

- (a) President:
  Mr. Tamás Pázmándi (Hungarian Academy of Sciences (KFKI), Atomic Energy Research Institute)

- (b) Secretary General (responsible for running the society) :
  Ms. Judit Silye (Hungarian Atomic Energy Authority)

- (c) Vice Presidents:
  Mr. Csaba Sükösd (Budapest University of Technology and Economics)
  Mr. József Bajsz (Paks Nuclear Power Plant)

Dr. Tamás Pázmándin, the new President of HNS, is 30 years old. He is a scientific researcher and research project leader at the Hungarian Academy of Sciences (KFKI) Atomic Energy Research Institute. He graduated with a PhD from the Budapest University of Technology and Economics and also has a diploma from the Corvinus

University, Budapest.

He has won several prizes and is the author of many publications. His main fields of research are nuclear measurement techniques and health physics.

Between 2001 and 2004, he was President of the Hungarian Young Generation Network (which operates within the framework of the HNS). This was probably the most active and successful period ever for the Hungarian Young Generation Network and during his time there the network won the international PIME Award for Communications Excellence, in 2005, in Paris. Since 2004, Dr. Pazmandin had been the Vice President of HNS.

After Dr. Tamás Pázmándi was elected, he highlighted how HNS will tackle the new challenges that it will face in the future. Furthermore, in the near future Hungary will have to generate new supplies of energy. This explains why the building of new nuclear units is on the agenda. This will provide new opportunities for the Hungarian nuclear industry and also means that HNS will have new challenges to meet. Dr. Pazmandin also emphasized some of the major tasks ahead for the HNS, including: benefiting from further exchange of knowledge and experience with other nuclear societies, the transfer of knowledge between young and more experienced colleagues. And, last but not at least, he pointed out the importance of communicating effectively with stakeholders.

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http://www.euronuclear.org/e-news/e-news-15/ygn-bnes.htm

MEMBER SOCIETIES

YGN BNES 10th Anniversary Event, October 2006, Manchester.

Formed in 1996, the Young Generation Network, YGN, (part of the British Nuclear Energy Society) marked its first successful decade on 27th October 2006 by putting

on a celebratory event held at the Jarvis Piccadilly Hotel, in Manchester.

The event was attended by over 200 members of the BNES and YGN. These were made up in the most part by 'young' nuclear engineers from various professional and academic organisations. The afternoon and evening programme was packed with industry presentations, discussion and entertainment.

The afternoon programme began with a welcome note by Becky Ferris and Dave Clarke, the current and previous chair of the YGN. The first speech was given by John Ritch, Director General of the World Nuclear Association (WNA). John focused his talk on the necessity of nuclear energy in the 21st century. He also talked about the global environment and meeting predicted future energy needs. A key message of his presentation was that nuclear build must be part of the US energy mix. Finally, he talked about the World Nuclear University established to prepare the nuclear profession for a new nuclear century. He considered this event as a convocation of future leaders and encouraged the YGN to make a crucial contribution.

John was followed by Sarah Johnson, Head of Organisational Development at British Energy. Sarah gave a presentation on Britain's present nuclear industry and ongoing developments. She also focused on recruitment trends.

Next there was a panel session which started with Peter Bleasdale, Managing Director of Nexia Solutions. Peter talked about the current state of the decommissioning industry and the setting up of the National Nuclear Laboratory (NNL) at Sellafield, which aims to safeguard the country's nuclear skills and capability. The NNL will be Government Owned Contractor Operated (GOCO) and will focus on:

- Long term research
- Skills development

The setting up of NNL is seen as an important development for the industry's progress.

Peter was followed by Simon Franklin, Director of the Imperial College Research Reactor. Simon gave an interesting presentation on nuclear research and development and the interest shown by overseas students. He focused on the milestones that YGN BNES have achieved in the last 10 years and the kind of activities that YGN has been involved in, e.g. 'Removing The Myth Seminars', arranging annual meeting programmes, nuclear tourism and many more. He also talked about a survey that he carried out on the opportunities developed due to decommissioning, new build and the NDA's role in facilitating career development for young people.

Simon was followed by John Earp, President of BNES. John gave a presentation on the history of YGN, how and why it was formed and also answered the big mystery of the YGN's age limit of 37 years! He talked about the development of the YGN from a decade &go, with only 25 members and growing to more than 400 members today.

After John Earp's presentation, industry speakers joined a panel for an open discussion on the topic of skills, training and the future of the British and worldwide nuclear industry.

The afternoon programme closed with a humorous 'University Challenge' type quiz pitting the wits of the cream of the YGN against the captains of industry from BNES.

The evening programme began with a reception. This was followed by a three course dinner, a fantastic after dinner speech by Major Phil Ashby QGM and entertainment from the Northern Jazz Orchestra.

The event provided a great opportunity for the young engineers and scientists working in the nuclear sector to expand their personal networking, enhance their understanding of the industry, exchange best practices and experience and promote their career development.

My personal view of the event is that it was focused to promote the YGN as they are the future of the industry, but at the same time to transfer the skills and experience from their seniors and captains of industry. The world is changing and we are going through an exciting phase of evolution .Nuclear industry is no longer stagnating but instead is a buoyant industry. We are experiencing a nuclear renaissance.

Rahat Ali Siddiqui
Halcrow Special Structures
BNES YGN

Edited by
Christian Guiotto
Aker Kvaerner YGN Vice Chair 2007

http://www.euronuclear.org/e-news/e-news-15/eurobarometer.htm

EUROPEAN INSTITUTIONS

Eurobarometer Survey on Energy Technologies: a mixed bag of results for the nuclear industry

At the beginning of January, the European Commission published the results of a ***Eurobarometer*** public opinion survey that it carried out last year among EU citizens on the subject of energy technologies. ***ENS NEWS*** has carried out a detailed analysis of the survey results for its readers and outlined (see below) the most salient statistics, including data on EU citizens' general awareness of issues relating to nuclear and other energy sources and their views on research, fusion etc.

The results are a bit like the proverbial curate's egg – good in some parts. And, of course, opinion polling is not a precise science, with statistics always subject to varying interpretations. So, you should draw your own conclusions. However, these extensive EU-wide surveys can reveal useful information about what EU citizens know and feel about key issues of the day.

It is important to bear in mind that the survey was carried out between May and June 2006, just after the Chernobyl accident's 20th anniversary, and negative publicity could have influenced respondents' views. Furthermore, the survey was carried out in the EU-25 and does not include the two new comers, Bulgaria and Romania - two nuclear countries where public opinion is very much in favour of nuclear energy. However one chooses to interpret the results, it cannot be denied that they certainly give food for thought.

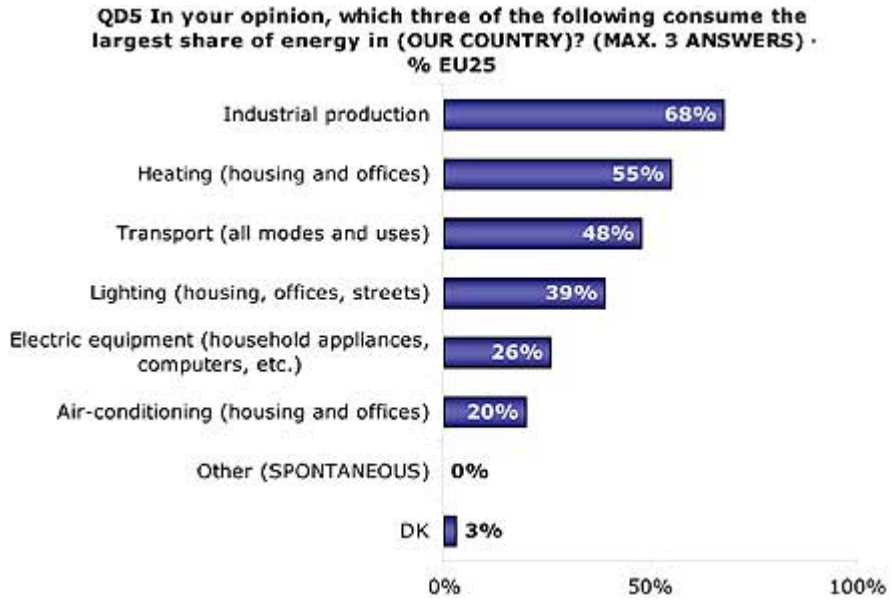
Summary of the main findings:

- **Energy related issues seem to be of secondary importance when compared to wider societal or economic issues.** The *Eurobarometer on Energy Technology* confirms that energy is not a major concern or a top priority for EU citizens. It is a "back of mind issue". When the major social issues of the day are considered as a whole, EU citizens rate energy issues (14%) far below unemployment (64%), crime (36%) and healthcare systems (30%). Clearly, issues that relate more directly to daily life, economic well-being, safety and health (p.9) are seen as priorities by most EU citizens. However, other public opinion surveys on energy issues have tended to show that views can evolve quickly (see *Info Pool/Public Opinions* section of FORATOM's web site: www.foratom.org).

- Only **1 in 5 citizens support the use of nuclear power** (p.33). The percentage of people in favour of nuclear energy (20%) has decreased compared to that registered in the last *Eurobarometer on Radioactive Waste*, which was published in June 2005 (37%). However, only 37% of the interviewees are now clearly against it, which shows a decrease of around 20% (55% in the June 2005 *Eurobarometer*, p.26). Consequently, there is a greater proportion of respondents that are non-committal.

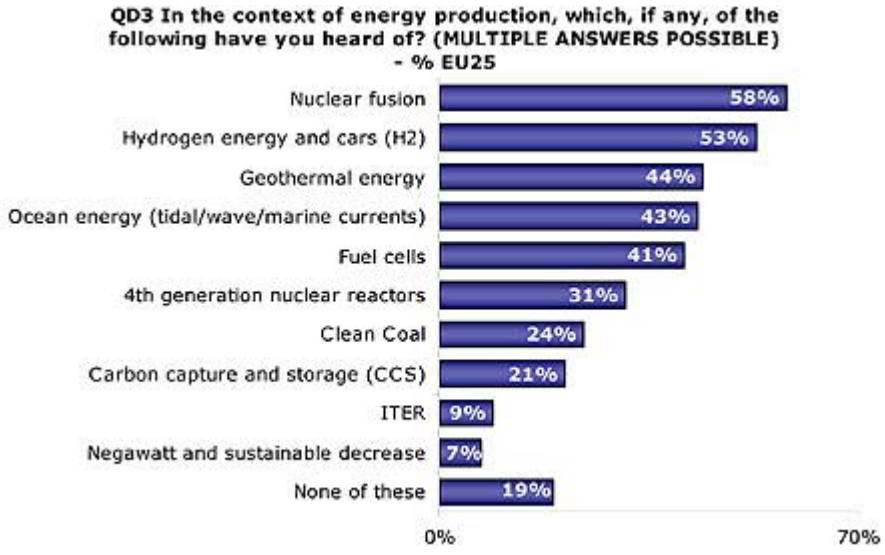
- Looking thirty years ahead, Europeans anticipate a fundamental swing towards the use of renewable energies. The survey reveals that European citizens now rank nuclear energy as likely to be the third "most used" energy source in 30 years time - after solar (49%) and wind (40%). **Nuclear energy is, therefore, expected to be a substantial part of the energy mix in the future** (p.34-38). Four years ago, when the Eurobarometer on Energy was published, only 6% of EU citizens expected nuclear to be part of the energy mix in 20 years (p. 73, Eurobarometer, Energy: Issues, Options and technologies, December 2002).

- **In citizens' minds, energy is most often associated with high prices**. A third (33%) of Europeans spontaneously relate energy issues to prices and 45% consider that their government should make guaranteeing low energy prices a top priority in their energy policy (p.13-15). **A majority of EU citizens also think that their country is significantly dependent upon imported energy.** 61% think that their country is dependent upon energy imports. This degree of dependency falls to 53% when respondents are asked to consider overall EU dependency levels (p.20-21). Of course, these are issues where nuclear power can contribute to finding the solution.

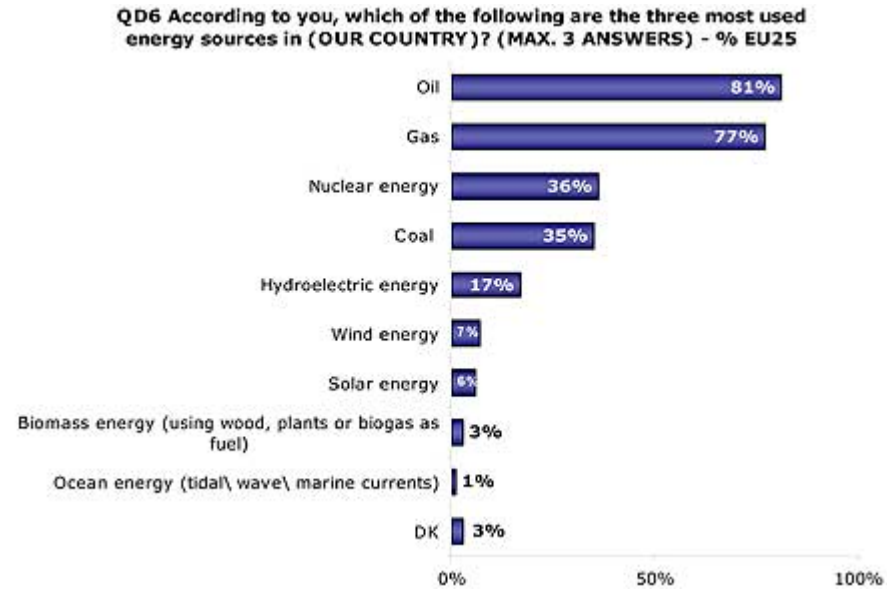


- It is worth noting that **in Sweden 30% of respondents think about nuclear power first where energy issues are concerned.** The current debate about the phasing-out of nuclear power probably explains this trend. In 1980, the government decided to phase-out nuclear power after a referendum, but today nuclear power supplies half of the country's electricity needs and a majority of Swedes are in favour of it. An opinion poll published in June 2006, which was commissioned by the Swedish Nuclear Safety and Training Centre (KSU) and conducted by the polling organisation TEMO, shows that public support for continuing to use nuclear power remains strong at 85%. The phase-out policy is, therefore, not in concert with the views of a majority of Swedes.

- **Over half of EU citizens have heard of nuclear fusion (58%)**. The countries where the share of those knowing about fusion is the largest are: Sweden (99%), The Netherlands (86%), Denmark (72%), Germany (71%), France and Finland (69%) - (p. 12-13)



- **EU citizens are quite well aware of the fact that nuclear power is one of the main energy sources in many European countries.** Nuclear power (36%) ranks third among the most used energy sources, according to those surveyed, after oil (81%) and coal (77%). However, their views are not completely accurate. In countries where nuclear power is the main source of energy, like France and Lithuania, it is still only the third most chosen answer (78% in France and 49% in Lithuania). (p.18-19)



- **Scientists top the credibility league**: a majority of EU citizens consider scientists (71%) and environmental protection organisations (64%) to be the most trustworthy sources of accurate and useful information on energy issues. Energy companies rank fifth in the list (35%) ahead of journalists (31%) and national governments (29%) (p 24).

- **EU citizens attach considerable importance to energy-related research.** 66% consider that it is a high priority and only a small amount of respondents considered research to be unimportant.

Readers can study the survey's findings in more depth at the following web link: ec.europa.eu/public_opinion/archives/ebs/ebs_262_en.pdf

http://www.euronuclear.org/e-news/e-news-15/eu-energy-review.htm

EUROPEAN INSTITUTIONS

EU Energy Initiative Recognises Role of Nuclear Energy in European Energy Future

Wednesday, 10 January 2007

On 10 January 2007, the European Commission (EC) presented an "energy package", which consists of a Communication entitled *An Energy Policy for Europe*, communications and reports on coal, biofuels, nuclear (the so-called PINC); a competition enquiry into electricity and gas markets and a green paper on climate change . It will lead to the adoption of an Action Plan on a common European Energy Policy by the European Council next March. The communication on energy policy and the PINC (Nuclear Illustrative Programme) clearly recognise the key contribution that nuclear energy makes to the achievement of the EU's security of supply, climate change and competitiveness goals. It also highlights how nuclear energy is and will remain a key component of the EU's energy mix.

You can find these documents in the Energy section of the Commission website at: ec.europa.eu/energy/energy_policy/index_en.htm and the EC press releases on the issue at: www.europa.eu/press_room/presspacks/energy/index_en.htm

The EC also published a new Eurobarometer on Energy Technologies. The survey reveals that European citizens now rank nuclear energy as likely to be the third "most used" energy source in 30 years time - after solar and wind.

You can also read the press release on the strategic energy review and the latest FORATOM position papers related to this issue at: (link to press release and to PINC, Green Paper, Climate Change position papers)

The Communication clearly recognises the central role that nuclear energy will play in promoting low-carbon energy and competitiveness. According to the provisional copy of the Communication: "…nuclear energy is one of the largest sources of carbon dioxide (CO_2)free energy in Europe . Nuclear power is less vulnerable to fuel price changes than coal or gas-fired generation, as uranium represents a limited part of the total cost of generating nuclear electricity and is based on sources which are sufficient for many decades and widely distributed around the globe." The Communication also refers to nuclear energy as: "one of the cheapest sources of low carbon energy that is presently produced in the EU and has relatively low costs. The next generation of nuclear reactors should reduce these costs further." On the key subject of climate change and Kyoto commitments, the EC is equally unequivocal: "Reinforcing nuclear power generation could also represent one option for reducing CO_2 emissions and play a major role in addressing global climate change. This could also feature as an important consideration when discussing future emissions trading schemes."

Therefore the PINC encourages member states to make new investments in nuclear

power if they choose this energy option as a way to secure energy supply, competitive energy prices and fight climate change : " A significant number of NPPs are indeed due to close down within the next 20 years. Construction of new plants and/or extension of the current operating lifetimes of existing reactors will be required if the Member States choose to maintain the current share of nuclear power in the overall energy mix." Although it is up to every Member State to choose whether it want to use nuclear energy, individual national decisions "can have an impact on other States in terms of trade flows of electricity, the EU's overall dependence on imported fossil fuels and CO_2 emissions but also on competitiveness and the environment."

As part of the process of developing the Action Plan, continued stakeholder consultation is essential and, with this in mind, Members of the European Parliament and the nuclear industry have suggested to the EC the establishment of a **European Nuclear Forum** along the same lines as the Florence, Madrid and Berlin fora that were established for electricity, gas and oil respectively.

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http://www.euronuclear.org/e-news/e-news-15/nucnet-news.htm

ENS WORLD NEWS

The World's Nuclear News Agency

NUCNET NEWS

THE WORLD'S NUCLEAR NEWS AGENCY

NucNet moves to Belgium… and is reunited with old friends

At the beginning of the New Year important news involving *NucNet* broke. For those of you who are still not aware of it, here is the news bulletin that *NucNet* itself put out to inform its readers.

"The start of 2007 marked a new chapter in the development of NucNet, with its move from Berne in Switzerland to a new home in Brussels.

However, the well-coordinated transfer ensured that operations continued without interruption and allowed NucNet's editorial team to promptly cover a number of developments worldwide, including the safe, controlled shut-down of Taiwan's Maanshan-2 on 26 December 2006 as the result of seismic activity.

As of 1 January 2007, ***NucNet*** is again co-located with **ENS**, which founded NucNet just over 15 years ago. Both organisations worked side-by-side in Berne until ENS

moved to Brussels some years ago.

Towards the end of 2006, ***NucNet's*** governing board approved a proposal for NucNet to be co-located with ENS again at 57 Rue de la Loi, Brussels, the building which is also home to Foratom, the European nuclear industry trade association. NucNet will continue to be operated independently of both organisations.

NucNet's new telephone numbers in Brussels are:
+32 2 505 3055 / 3056.

NucNet's web site and e-mail addresses remain the same:
www.worldnuclear.org
editors@worldnuclear.org / info@worldnuclear.org.

Welcome to Brussels *NucNet*!

Technology Plan for EU to 'maintain lead' in hydrogen and fusion

Spending on energy research should increase by at least 50% over the next seven years, as part of a European Strategic Energy Technology Plan announced by the European Commission (EC).

The proposals, announced on 10 January 2007, say the spending increase is necessary to "accelerate the competitiveness of low carbon technology".

The measures will form part of an action plan expected to be adopted at the European Council (spring council) meeting of EC leaders and EU heads of government in March 2007.

Introducing a competitive, low carbon European energy system can be achieved, according to the EC, by measures such as increasingly adapting transport to using hydrogen fuel cells and second-generation biofuels by 2030.

Also by 2030, the EC wants to boost the amount of electricity and heat produced from low-carbon sources. Completing "the switch" to low carbon in the European energy system for 2050 and beyond could be achieved with an overall energy mix including "large shares for renewables, sustainable coal, sustainable hydrogen and, "for those (EU) member states that want, Generation IV fission power and fusion energy".

"The EU should maintain its technological lead in fourth generation fission nuclear reactors and future fusion technology to boost the competitiveness, safety and security of nuclear electricity, as well as reduce the level of waste," the EC said.

The Strategic Energy Technology Plan formed part of a wider Strategic Energy Review (SER) presented by EC president Jose Manuel Barroso, energy commissioner Andris Piebalgs and environment commissioner Stavros Dimas.

The SER underlined the importance of nuclear power and said decisions on new nuclear plants and lifetime extensions could be needed to reduce dependency on imported electricity.

A “core energy objective” is for the EU to reduce greenhouse gas emissions from energy consumption by 20% by 2020 to “measure progress in re-directing today's energy economy towards one that will fully meet the challenges of sustainability, competitiveness and security of supply”.

On nuclear specifically, the EC said it was for each of the EU’s 27 member states to decide whether or not to rely on nuclear power for the generation of electricity, adding: “With 152 reactors spread over the EU 27, nuclear power contributes 30 percent of Europe’s electricity today – however, if the planned phase-out policy within some EU member states continues, this share will be significantly reduced.

“To meet the expected energy demand and to reduce European dependency on imports, decisions could be made on new investments or on the life extension of some plants.

“Reinforcing nuclear power generation could also represent one option for reducing CO_2 emissions and play a major role in addressing global climate change. Nuclear power is essentially carbon emissions-free and forms part of the (EC’s) carbon reduction scenario including the objective of reducing CO_2 emissions. This could also feature as an important consideration when discussing future emissions trading schemes.”

Commenting on the proposals, ENS secretary-general Santiago San Antonio said: “Nuclear energy has been given the official recognition that it deserves as an unavoidable component of the EU’s present and future energy mix. Among major energy sources, nuclear energy is the key to helping get the EU’s security of supply and climate change objectives back on track.”

Source: NucNet

http://www.euronuclear.org/e-news/e-news-15/Member-Societies.htm

Member Societies

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