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Part 2: Bartnicki J., **Borysiewicz M. J.**, Dziewit Z., **Garanty I., Kozubal A.**, Łabocki L., Markiewicz M., **Potemski S.**, Strużewska J.: *Air quality modeling*

Part 3: **Borysiewicz M. J.**, Borysiewicz M. A., **Garanty I., Kozubal A., Potemski S.**, Rowiński P., Zheleznyak M.: *Pollutant transport in water bodies*

Part 4: **Borysiewicz M. J.**, Borysiewicz M. A., Galkowski A., **Potemski S.:** *Decision support system for emergencies*

Part 5: **Borysiewicz M. J., Garanty I., Golnik N., Kozubal A., Potemski S.:** *Assessment and management of risk*

Part 6: **Borysiewicz M. J., Garanty I., Kacprzyk W., Kozubal A.:** *Approaches to comparative risk assessment of fuel cycles of electricity generation*

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EXPERT REPORTS

Józefowicz K.: as an expert from Laboratory of Radiation Protection Measurements, participated in the work of Normalisation Commission No 246 for Radiological Protection, (Polish Committee for Normalisation). The more important opinions written in 2006 concerned the following documents:

- ISO 8529-1:2001: *Reference neutron radiations – Part 1: Characteristics and methods of production*
- ISO/DIS 12789-2: *Reference neutron radiation – Part 2: Calibration fundamentals*
- ISO 14152:2001: *Neutron radiation protection shielding – Design principles and considerations for the choice of appropriate materials*

Licki J.: Technical Committee No 280 for Air Quality of Polish Committee for Normalization

- ISO 21258: *Stationary source emission – Determination of the mass concentration of dinitrogen monoxide (N₂O) – Reference Method: Non-dispersive infrared method*
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Licki J.: IEA expert mission No C3-SAU-8.010-03-02 to King Abdulaziz, City for Science and Technology, Atomic Energy Research Institute, Radiation Technology Center, Riyadh 11442, Saudi Arabia. Dates of assignment: 27 March - 10 April 2006.

Mission title: Feasibility study for electron beam flue gas treatment plant

Chwaszczewski S.: Perspectives of the nuclear power utilization in Poland. Expert opinion for Chancellery of the President of the Republic of Poland.

PATENT

Licki J. (co- author): *The method of removing volatile, gaseous organic pollutants such as polynuclear aromatic hydrocarbons (PAHs) from industrial exhaust gases.*

- Gold medal during 55th World Exhibition of Innovation, Research and New Technology, Brussels. Eureka 2006, 23-27 November 2006.

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PH.D THESIS

M. Sc. **Elżbieta Borek-Kruszewska**, Ph. D. Thesis: *Experimental investigations and analysis of transition flow boiling in annular parallel*, IEA Świerk, public defense November 11, 2006.

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W. Szteke - chairman

J. Wasiak - secretary

W. Biłous, M. Przyborska, T. Wagner, J. Wojciechowska, B. Zubowski

This was the 13th seminar on the subject that covers broad range of applications in the exploitation of power plants, gas transport pipelines and underground gas storages. The security of gas installations was especially addressed. The technical supervision issues within the scope of Poland accession to the European Union and the compliance of certification management systems in enterprises to the standard PN-EN ISO/IEC 17025:2005 are also discussed. The special session was destined to some aspects of the changes in power industry, in particular the future of nuclear energy in Poland. There were six sessions:

- Diagnostic – requirements and emergency procedure
- Diagnostic investigation in the power industry
- Power industry in Poland
- Problems of operation safety in the gas transportation
- Structural materials
- Operating problems of the gas pipe-lines

All papers were published in Raport IAE-123/A.

The seminar was organised by Material Research Laboratory in IAE.

PROGRAMME

I. Session

1. M. Wojas, M. Walczak: *The qualification requirements for personnel performing the testing for the pressure equipment materials*
2. J. Komorowski, **W. Szteke**, P. Zajączkowski: *Averages in the electro-power stations and its influence on the high-pressure pipelines*
3. **W. Szteke**, **W. Biłous**, **J. Wasiak**, **W. Baran**, **T. Wagner**, **M. Przyborska**, **M. Wieczorkowski**, **A. Wocial**, **P. Zajączkowski**: *The modern diagnostic of the pressure installations using the fracture mechanics coefficient*

II. Session

4. M. Zeman: *Evaluation of the susceptibility to operation cracking of the 13hmf steel after prolonged service*
5. Z. Tucholski, **J. Wasiak**, **W. Biłous**, **E. Hajewska**: *The investigation of the locomotive boiler material*
6. B. Zantowicz: *Sulphur compounds distribution on screen tubes of the low-emission boiler OP 230 furnace*
7. M. Zdankiewicz: *Application of welded tubes in the manufacturing of pressure equipment*

III. Session

8. R. H. Kozłowski, J. Tallat: *A new strategy for restructuring the Polish energy sector*
9. P. Berowski: *Low-power nuclear reactors*
10. S. Krystek, J. Bauriski: *What about the nuclear energy in Poland?*

IV. Session

11. A. Tkacz: *Polish standard of the technical safety of transmission gas pipelines*
12. K. Kuchta: *Safe operation of gas transmission pipelines*
13. **M. Borysiewicz**: *Principles of Security Vulnerability Analysis of stationary industrial installations*

V. Session

14. A. T. Bukat, A. Nobili: *Designing a new materials - some problems and prospectives*
15. J. Brózda: *Austenitic steels of the new generation used for power plant installations with supercritical parameters and their welding*
16. J. Pasternak, S. Fudali: *Application of high nickel alloys in the field of experience within corrosion resistance protection in flue gas desulphurisation plants absorbers*

VI. Session

17. T. Pietrak, Z. Rudzki, W. Surmacz: *The tightness of the globe valves in the exploitations practice of the gas pipe-lines*
18. K. Kalinowski, A. Dąbrowski, D. Sobkiewicz, H. Oracz: *The support instruments in the safety management of gas pipe-lines*
19. S. Skwarczyński, P. Żoła: *The conception of the LPG implementation in Poland*

INTERNATIONAL CONFERENCE NUCLEAR POWER PLANTS for POLAND

Warsaw, 1-2 June 2006 r

ORGANIZERS: Association of Polish Electrical Engineers, Polish Nuclear Society

CO-ORGANIZERS: International Atomic Energy Agency, National Atomic Energy Agency, Polish Power Grid Co., Polish Committee of World Energy council, Polish Chamber of Power Industry and Environment Protection, Economic Society Polish power Station, Committee for Energy Studies-Polish Academy of Sciences, Institute of Power Engineering, Energy Market Agency, **Institute of Atomic Energy**

SCIENTIFIC PROGRAMME COMMITTEE:

Z. Bicki, **S. Chwaszczewski**, Z. Celiński, T. Wójcik, J. Bauriski, H. Bownik-Trymucha, M. Duda, M. Jaczewski, S. Krystek, S. Latek, K. Lipko, J. Marecki, A. Mikulski, J. Soliński, **A. Strupczewski**, R. Trechciński, H. Trojanowska, J. Wańkiewicz, **K. Wieteska**, H. H. Rogner, S. Brozek

TABLE OF CONTENTS:

1. Marecki J., Duda M.: *Why there is a necessity to build nuclear power plants in Poland?*
2. Rogner H. H., Weisser: *Nuclear power: global trend and outlook*
3. Tulonen S.: *The nuclear energy renaissance in Europe*
4. Mampaey L.: *Experience in nuclear power plants operation: WANO's view*
5. Modo S. M., Jankowski W.: *Achievements in safety upgrading of nuclear power plants*
6. Bertel E.: *Competitiveness of nuclear energy- an international viewpoint*
7. Ryhänen V.: *The fifth nuclear power reactor in Finland*
8. Roche B.: *The French nuclear power program: EDF's experience*
9. Voss A.: *A comparative assessment of electricity generation option from an ecological and sustainability viewpoint*
10. Debontride B.: *Design of EPR*
11. Doehnert B.: *Design of the AP1000 power reactor*
12. Maslak C., Carlson A., Segarra J.: *Design of the ESBWR reactor*
13. Antipowe S. I., Rogov M. F., Novak V. P.: *Nuclear power plant with VVER-1500 reactor*
14. Doerffer S., Ivanco M., Alizadeh A., Hopwood J.: *Advanced CANDU technology and ACR-1000*

15. Kaufmann U., Ernst M.: *Siemens – the turbine island for nuclear power plants*
16. Korzecki P., Niewodniczański J.: *Poland: principles for the NPP licensing process and radioactive waste management concepts*
17. Kaniewski J.: *Legal framework for the nuclear power in the European Union*
18. Long R. L.: *Education and training for the NPP Workforce*
19. Latek S.: *The level of support for nuclear energy in Poland*
20. Bucaille A.: *French experience on information and communication with the public on nuclear power*
21. Bisconti A. S., Long R. L.: *Evolution of public opinion on nuclear energy in the United States*
22. Ehdwall H.: *Swedish programs of information on nuclear energy and evolution of the public opinion*

IAE SEMINARS

1. **Czerski P.:** *The XXI century gas cooled reactor systems* April 20, 2006, in Polish.
2. Hertel N. E.: *HEU and research reactors*, May 9, 2006.
3. **Klisińska M.:** *Lead-cooled reactors*, May 18, 2006., in Polish.
4. Szepliński Z.: *Synteza termojądrowa w kieszonkowym generatorze*, June 14, 2006, in Polish.
5. **Łuszcz M.:** *Perspective of high temperature gas cooled reactor application to hydrogen production technology*, June 22, 2006, in Polish.
6. Belgya T.: *The Institute of Isotopes Hungarian Academy of Sciences and Research at the PGAA-NIPS facility in the Budapest Reactor*, October 19, 2006.
7. Molokanov A., Schvidkij S.: *The precision therapy of cancer using 200 MeV proton beam from phasotron; dosimetric characteristics of high energy ions ^{12}C* , November 30, 2006.

DEPARTMENT OF NUCLEAR METHODS IN THE SOLID STATE PHYSICS SEMINARS

1. **Jabłońska A.:** *Structural oscillation in carbon martensite*, January 5, 2006, in Polish.
2. **Czachor A.:** *Neutron scattering length for nuclei – what do we understand?* January 26, 2006, in Polish.
3. **Fijał-Kirejczyk I. M.:** *Influence of multiple ionisation and shell couplings on heavy ions induced L series X-ray emission* March 2, 2006.
4. **Wiśniewski Z.:** *Superionic conductors - research perspectives at IAE and applications*, March 23, 2006, in Polish.
5. **Milczarek J. J.:** *Fractal structure of porous material*, March 30, 2006, in Polish.
6. **Winek T.:** *Safety-enhancing active systems for cars*, May 11, 2006, in Polish.
7. **Stoch P.:** *Crystal structure, hyperfine interaction and electronic structure in $\text{Dy}(\text{Fe}_{1-x}\text{Co}_x)_2$ intermetallics*, May 25, 2006, in Polish.
8. **Pochrybniak C.:** *Silicon photovoltaic cells – idea and practice*, June 8, 2006, in Polish.
9. **Stoch A.:** *Hyperfine interactions, electrical and magnetic properties of $\text{Dy}(\text{Fe-Co-Ni})_2$ intermetallics*, September 28, 2006, in Polish.
10. **Maurin J. K.:** *Roentgen diffraction as a method of proving the drug falsification*, November 9, 2006, in Polish.
11. **Gołąb A.:** *Nuclear research reactor MARIA - state, capabilities and applications*, November 23, 2006, in Polish.
12. **Pytel K.:** *Anomaly in radioactive capture and its relation to a quantum mechanics postulate*, December 7, 2006, in Polish.

LECTURES AND SEMINARS DELIVERED OUT OF THE IAE

1. **Stoch A.:** *Hyperfine interactions, electrical and magnetic properties of Dy(Fe-Co-Ni)₂ intermetallics*, AGH, Krakow, October 30, 2006, in Polish.
2. **Golnik N.:** *Information on Workshop: Innovative Techniques for Hadron Therapy of the NSS/MIC Conf., San Diego, October 2006. Workshop of the National Centre of Hadronotherapy* Institute of Nuclear Physics, Kraków, December 12, 2006, in Polish
3. **Szuta M.:** *Accelerator Driven Reactions*. Summer School of Nuclear Energies "Dunaj 06", Warsaw University of Technology, Polish Nuclear Society, Polish Power Network, May 15, 2006, in Polish.
4. **Szuta M.:** *Production, exploitation and storage of nuclear fuel*. Summer School of Nuclear Energies "Dunaj 06", Warsaw University of Technology, Polish Nuclear Society, Polish Power Network, May 15, 2006, in Polish.
5. **Wojciechowski A.:** *Statistical model of spallation reaction at intermediate energies*. Technical University of Warsaw, October 18, 2006, in Polish
6. **Bielewicz M.:** *Distribution of Neutrons in the U/Pb Assembly Irradiated by Relativistic Protons and Deuteron Beam – Experimental Results*. International Centre of Theoretical Physics, Trieste, Italy, November 22, 2006.
7. **Chwaszczewski S.:** *Nuclear Energy*. Monographic lectures. Warsaw University of Technology – February 22, 2006; March 1, 2006; March 8, 2006; March 15, 2006; March 22, 2006, in Polish.
8. **Strupczewski A.:** *Why nuclear energy renaissance?* Innovation, Technologies, Machines. Science for the Economy. Poznań, June 21, 2006.
9. **Milczarek J. J.:** *Neutron radiography and its applications*. Innovation, Technologies, Machines. Science for the Economy. Poznań, June 21, 2006, in Polish
10. **Milczarek J. J.:** *Neutron radiography at stationary nuclear reactors*. Nuclear Techniques in Borders Surveillance., Sołtan Institute for Nuclear Studies, Wilga, June 20, 2006, in Polish
11. **Borysiewicz M.:** *Technical safety in chemical industry – risk management*. Innovation, Technologies, Machines. Sciences for the Economy, Poznań, June 21, 2006, in Polish.
12. **Słowiński B.:** *General physics. Radiation phenomena in materials. Physics background of nuclear power*. Lectures in Warsaw University of Technology.
13. **Słowiński B.:** *Topical problems of radiation nuclear physics*. Warsaw University of Technology, Warsaw, May 10, 2006.

POLISH AND INTERNATIONAL RESEARCH PROJECT

SPUB-M nr 624/E-80/SPB/DESY/T-11/DWM 134/2004-2006, *Strain Fields and Structural Defects in Components of Modern Semiconductor lasers*, **K. Wieteska**

Grant no 3 T10C 022 29, 2005-2007. *Investigation of defect structure, lattice deformation and polytypic structure in single crystals and implanted layers of silicon carbide*, W. Wierzchowski, Institute of Electronic Materials Technology, in cooperation with **K. Wieteska**

European approach to nuclear and radiological emergency management, EURATOM acronym: EURANOS, Contract: FI6R-CT-2004-508843, 2005-2008, **M. Borysiewicz**

International experiment "Energy plus Transmutation" on research of physical aspects of electronuclear method of energy production and transmutation of radioactive wastes of nuclear energetics in high energy beam of particles from synchrotron or nuclotron accelerator in JINR, Dubna, Prof. A. I. Malachov, Dr M. I. Krivopustov in cooperation with **M. Szuta, E. Strugalska-Gola, S. Kilim, A. Wojciechowski, M. Bielewicz**

Coordinated Research Project on *Analytical and Experimental Benchmark Analyses of Accelerator Driven System (ADS)*. IAEA Research Agreement No: 13396: 2005 - 2010, **M. Szuta, Z. Woźnicki, E. Strugalska-Gola, S. Kilim, A. Wojciechowski, A. Polański**

Corrosion of Research Reactor Aluminium Clad Spent Fuel in Water. International Atomic Energy Agency Coordinated Research Programme. Project 624/E-80/SPB/IAEA/T-08/DWM-8/2004-2006, Chief Scientific Investigator in Poland: **S. Chwaszczewski**

Identification of changes of sulfur isotopic ratio in the transition products of coal combustion process and desulphurization of flue gases. KBN-3T09C-03827, 2004-2006, IICNT, **J. Licki**
supervisor: A. G. Chmielewski

European Approach to Nuclear and Radiological Emergency Management EURANOS, integrated project, 2004 – 2007, **M. Borysiewicz**

Strain Fields and Structural Defects in Components of Modern Semiconductor Lasers – project II-03-022 EC at DESY-HASYLAB, 2004 – 2006, **K. Wieteska**

CONRAD (*COordinated Network for Radiation Dosimetry*), FP6-12684 (2005-2007), Coordinated by Delft University, The Netherlands, Work Package 6 *Complex mixed radiation fields at workplaces*, Contract nr: FP6-12684, 2005-2007, **N. Golnik**

Development of recombination methods for the dosimetry of high-energy radiation fields, with regard to the new international recommendations. 2 P05D 065 30, 10.04.2006 - 09.04.2009, **N. Golnik**

Optimization of the neutron beam spectrum and collimation at the boron neutron capture therapy facility, using numerical modeling of the converter/moderator/filter system and neutron transport in the patient head phantom. PZB/MEiN/01/2006/43, 2007-2009, **N. Golnik**

EUTERP – *European Training and Education in Radiation Protection Platform*, **N. Golnik**

Project N508 048 31/2569: *Neutron transmutation doping of multicrystalline silicon for photovoltaic applications*
J. J. Milczarek

Project 3T08D04630: *Glassy materials for radioactive and toxic waste immobilization*, 2006 – 2009, **P. Stoch**

Project 3T10C 00628: *Rheological properties of the new phase of castor oil and the design of the original rheomete*, 2005 – 2007, R. Siegoczyński, **R. Wiśniewski**, A. Rostocki, **T. Wilczyńska**

Project of collaboration on ion implantation with JINR Dubna, Contract number 07-5-1013-2001-2008, **R. Wiśniewski**

Project: 3T08D 4530 *Structure and properties of diphase conductors of silver*, 2006 – 2007, **Z. Wiśniewski**, **R. Wiśniewski**

Saudi Arabia, King Abdulaziz. City for Science and Technology (KACST), Atomic Energy Research Institute, Riyadh 11442, Saudi Arabia. Project manager: Prof Ahmed Ali Basfar.

Title: *Feasibility Study for Yanbu Demonstration Electron Beam Flue Gas Treatment Plant.*
Supervisor A.G. Chmielewski (IChTJ), **J. Licki**

SPECIAL PROGRAMMES AND RESEARCH DEVICES

The Financial Support for the Hot of the Material Research Laboratory of IAE.

Head of project: **W. Szteke**

Project no: 624/E-80/SPUB/ZR9/071/2006

JOINT SCIENTIFIC AND TECHNOLOGY PROJECTS
SCIENTIFIC AND TECHNOLOGICAL COOPERATION JOINT PROJECTS

RUSSIA

JOINT INSTITUTE OF NUCLEAR RESEARCH, DUBNA
LABORATORY OF NEUTRON PHYSICS

Neutron research of **A. Rajewska**

Investigation of the Sugar Nonionic Gemini Surfactants.

SANS Study of the Nonionic Classic Surfactant $C_{14}E_7$ in D_2O Solutions.

LABORATORY OF HIGH ENERGY

Prof. A. I. Malakhov

Study of Transmutation of Radioactive Waste of Nuclear Energy Arrangements.

Polish side partner: **B. Słowiński**

BAUMAN STATE TECHNICAL UNIVERSITY, MOSCOW

B. E. Vintaikin

Investigation of Atomic and Magnetic Microdynamics, Structural Peculiarities Close to Martensitic Phase

Transitions and Kinetics of the Decompositions Connected to Physics-Mechanical Features of 3d Metal Alloys.

Polish side partners: **K. Mikke, J. Jankowska - Kisielińska, J. J. Milczarek**

ROSTOV STATE UNIVERSITY, ROSTOV-ON-DON

Iterative methods, prof. L. A. Krukier

Polish side partner: **Z. I. Woźnicki**

INSTITUTE OF NUMERICAL METHODS AT RUSSIAN ACADEMY OF SCIENCES, MOSCOW

Reactor Physics Numerical Methods, prof. V. Lebedev, prof. Y. Neczepurenko

Polish side partner: **Z. I. Woźnicki**

CZECH REPUBLIC

NUCLEAR PHYSICS INSTITUTE OF THE ACADEMY OF SCIENCES, PRAHA, Prof. R. Mach

Nuclear Reactions of Intermediate Energy in Extended Heavy Targets

Polish side partner: **B. Słowiński**

EGYPT

NUCLEAR RESEARCH CENTER, CAIRO, Prof. M. N. H. Comsan

Radiation Materials Investigation Using Beams of Heavy Ions, Neutrons and Gamma Rays.

Polish side partner: **B. Słowiński**

SWITZERLAND

CERN EUROPEAN CENTRE FOR NUCLEAR RESEARCH, RADIATION PROTECTION GROUP, CERN (TIS-
-RP), Dr T. Otto

Comparison of Dosimetric Instruments for Determination of $H^(10)$ in High-Energy Mixed Radiation Fields.* Polish

side partners: **N. Golnik, M. Zielczyński**

FRANCE

LABORATOIRE LEON BRILLOUIN,

CEN, Saclay

Inelastic Magnetic Neutron Scattering at the Magnetic Brillouin Zone Boundary in the Mn (20%Fe) Alloy;

Anisotropy of Spin Wave Dispersion in the FCC Mn(37%Fe) Alloy

B. Hennion:

Polish side partners: **K. Mikke, J. Jankowska-Kisielińska**

AUSTRIA

INTERNATIONAL ATOMIC ENERGY AGENCY, J. Misak

Incorporation of Advanced Accident Analyses Methodology into Safety Analysis, Report of NPPs.

Polish side partner: **J. Szczurek**

SLOVAK REPUBLIK

VUJE, Trnava, a.s.

Safety Analysis of VVER-440/213 Reactors with RELAP Code

Polish side partner: **J. Szczurek**

HUNGARY

KFKI ATOMIC ENERGY RESEARCH INSTITUTE

Neutron radiography

Dr Marton Balaskó

Polish side partners: **A. Czachor, J. J. Milczarek**

BULGARIA

INSTITUTE of NUCLEAR RESERCH and NUCLEAR ENERGY, SOFIA

Polish side partner: **L. Dąbrowski**

EDUCATION

IAE provides access to nuclear facilities for educational purposes. In 2006 over 4500 people visited Institute of Atomic Energy in order to obtain information on atomic energy, nuclear techniques and their applications in industry, agriculture, health and environment protection. The visitors represented universities, engineering colleges, secondary schools and various scientific and technical organizations. The main topic of interest was MARIA research reactor and with its installations and facilities. Another point of interest was Material Research Laboratory and its research activity for power industry. Each visit comprised the lecture on the principles of the nuclear reactor operation and the application of the neutron radiation. In total 180 lectures on the nuclear reactor have been delivered for visitors. Similar 90 lectures on the materials testing techniques have been delivered at the Material Research Laboratory of the IAE.

VISITORS to IAE

A. Molokanov, S. Shvidkij, Joint Institute for Nuclear Research, Dubna, Russia

M. Zheleznyak: Institute of Mathematical Machines and System Problems, Ukraine

T. Mikkelsen: Risoe National Laboratory, Denmark

S. Hirschberg: Paul Scherrer Institute, Switzerland

W. Raskob: Forschungszentrum Karlsruhe, Germany

TRAINING OF STUDENTS

The 4 weeks training of university students was performed during summer months. Three students of the Faculty of Physics and two students of Faculty of Chemistry of Warsaw University of Technology were trained in neutron scattering and neutron radiography at the MARIA reactor. Four student of AGH University of Science and Technology, Cracow, obtained the training in Mössbauer effect studies of magnetic alloys.

LONG TERM VISITS OF IAE STAFF MEMBERS TO FOREIGN COUNTRIES

| | | |
|--------------|--|--|
| T. Kochański | Joint Institute for Nuclear Research, Dubna, Russia | Contract: February 1995 – July 2006 |
| A. Rajewska | Joint Institute for Nuclear Research, Dubna, Russia | Contract February 1995 - December 2006 |
| A. Hofman | Joint Institute for Nuclear Research, Dubna, Russia | Contract: July 1995 – December 2006 |
| D. Mączka | Joint Institute for Nuclear Research, Dubna, Russia | Contract: 2006 - 2008 |
| L. Dąbrowski | Institute for Nuclear Research and Nuclear Energy, Sofia, Bulgaria | June 15-July 14. 2006 |
| S. Potemski | Institute of Environment and Sustainability of the Joint Research Centre, Ispra, Italy | February – December 2006 |

PARTICIPATION IN SCIENTIFIC COUNCILS, COMMITTEES AND SCIENTIFIC SOCIETIES

POLISH ACADEMY OF SCIENCES COMMITTEES

Committee of Medical Physics and Radiobiology and X-ray Imaging of Division of the PAS

N. Golnik

Committee on Energy to the Presidium of the PAS

S. Chwaszczewski

INTERNATIONAL ORGANISATIONS, ASSOCIATIONS AND SOCIETIES

International Organization of Medical Physics

N. Golnik

International Radiation Protection Association

N. Golnik, B. Filipiak, K. Józefowicz, M. Zielczyński

World Association of Nuclear Operators, Moscow Centre Governing Board

S. Chwaszczewski (Member)

International Organization for Standardization. Working Group WG-19, WG-21, WG-2

N. Golnik, K. Józefowicz, M. Zielczyński

World Energy Committee: European Regional Study Working Group on The Future of Nuclear in Europe

S. Chwaszczewski (Member)

Polish Nuclear Society

S. Chwaszczewski (President)

International Society of Neutron Capture Therapy, International Society for Cf-252 Brachytherapy
N. Golnik (Member)

European Radiation Dosimetry Group (EURADOS)
N. Golnik

Joint Institute for Nuclear Research, Dubna, Russia. Department of Relativistic Nuclear Physics, Laboratory of High Energies
B. Słowiński (as a referee for scientific publications)

Joint Institute for Nuclear Research, Dubna, Russia. Collaboration Spallation-Transmutation
B. Słowiński (Member of Scientific Council)

International Scientific Collaboration PANDA, GSI, Darmstadt
B. Słowiński (Member)

Journal of Nuclear and Radiation Physics, Cairo, Egypt
B. Słowiński (international scientific advisor)

American Association for the Advancement of Sciences
M. Szuta

Society for Industrial and Applied Mathematics (SIAM)
Z. I. Woźnicki

International Linear Algebra Society (ILAS)
Z. I. Woźnicki

Gesellschaft für Angewandte Mathematik and Mechanik (GMM)
Z. I. Woźnicki

World Scientific and Engineering Society
Z. I. Woźnicki

European Academy of Sciences, Brussels
Z. I. Woźnicki (Member)

Journal of Nuclear Engineering and Design
A. Strupczewski (permanent Board Member)

Institute of Nuclear Materials Management
J. Kozieł (Member)

Journal of Powder Diffraction
L. Górski (corresponding member of the Editorial Staff)

POLISH ORGANISATIONS, ASSOCIATIONS AND SOCIETIES

Polish Society of Medical Physics
N. Golnik (Member of Executive Board, President of the Radiation Protection Section affiliated to International Radiation Protection Association as the National Society), **B. Filipiak, K. Jóźefowicz, M. Zielczyński**

Council of Polish Atomic Energy Matters, National Atomic Energy Agency
G. Krzysztozek

Commission on Nuclear Safety and Radiological Protection
N. Golnik

Commission of the Nuclear Methods for Condensed Phase Physics

A. Czachor, J. J. Milczarek, K. Wieteska

Commission on Nuclear Power

S. Chwaszczewski

Polish Physical Society

A. Czachor, K. Mikke

Warsaw University of Technology, Faculty of Physics, Didactic Committee and Committee for Scientific Development

S. Słowiński (Member of Scientific Council)

Polish Neutron Scattering Society

A. Czachor, K. Mikke, J. J. Milczarek, J. Jankowska-Kisielińska

Polish Committee for Standardization,

J. Licki (Member of Problem's Commission no 280 – Air Quality)

Society of Electricians of Poland, Nuclear Power Section

E. Strugalska-Gola

Polish Synchrotron Scattering Society

K. Wieteska

Scientific Council of OBRI POLATOM

K. Wieteska, L. Górski

Polish Solar Energy Society; Polish Photovoltaics Society

C. Pochrybniak

SCIENTIFIC, TECHNICAL AND ECONOMIC INFORMATION CENTRE

Ewa Szlichcińska

LIBRARY biblioteka@cyf.gov.pl

Ewa Szlichcińska, M. Sc.

Gabryela Kosicka

The library contains 17.710 volumes and 980 journal volumes., 80 current journals in the field covered by IAE research activity and serves as the national source of literature on nuclear techniques and radioactive waste management.

PUBLISHING ACTIVITY

Grażyna Swiboda, M. Sc.

Jadwiga Pustola

IAE Publications:

4 Institute of Atomic Energy Reports A, 2 Monographs IAE, Proceedings on Int. Conf. Nuclear Power Plants for Poland and Annual Report 2005 were published in 2006.

POPULARIZATION ACTIVITY

Gabryela Kosicka

Hanna Gryzińska

Andrzej Romanowski

The Information Centre provides organization and support for visitors to the IAE.

In 2006 over 4500 people visited Institute of Atomic Energy to obtain information on atomic energy, nuclear techniques and their applications in industry, agriculture, health and environment protection. The visitors represented universities, engineering colleges, secondary schools and various scientific and technical organizations.

The main topic of interest was MARIA Research Reactor and its equipment and facilities. Another point of interest was Material Research Laboratory and its research activity for power industry.

STANDARDIZATION ACTIVITY

Roman Trechciński, Ph. D.

Stefan Wójtowicz, Ph. D.

Klemens Kruszewski, M. Sc.

Standardization Commission for Nuclear Instrumentation, Area No 266

PN-EN 60601-2-9:2006 : Medical electrical equipment - Part 2-9: Particular requirements for the safety of patient contact dosimeters used in radiotherapy with electrically connected radiation detectors

PN-EN 60601-2-17 : Medical electrical equipment - Part 2-17: Particular requirements for the safety of automatically-controlled brachytherapy afterloading equipment

prPN-EN 60325 : Radiation protection instrumentation - Alpha, beta and alpha/beta (beta energy > 60 keV) contamination meters and monitors

pr PN-EN 60601-2-11: Medical electrical equipment - Part 2: Particular requirements for the safety of gamma beam therapy equipment (IEC 60601-2-11:1997)

prPN-EN 60761-1 Equipment for continuous monitoring radioactivity in gaseous effluents - Part 1: General requirements

Standardization Commission for Interfaces and Buildings Electronic Systems, Area No 173

PN-EN 12098-4:2006: Controls for heating systems-Part 4: Optimum start-stop control equipment for electrical systems

PN-EN 12098-5:2006: Controls for heating systems-Part 5: Start-stop schedulers for heating systems

PN-EN 13321-1:2006 (U): Open data communication in building automation, controls and building management-Home and building electronic system-Part 1: Product and system requirements

PN-EN 13321-2:2006(U): Open data communication in building automation, controls and building management-Home and building electronic system-Part 2: KNXnet/IP Communication

PN-EN 14908-1(U): Open data communication in building automation, control and building management-Building network protocol. Part 1: Protocol stack

PN-EN 14908-2:2006(U): Open data communication in building automation, control and building management-Building network protocol. Part 2: Twisted pair communication

PN-EN 14908-3:2006(U): Open data communication in building automation, control and building management-Building network protocol. Part 3: Power line channel specification

PN-EN 14908-4:2006(U): Open data communication in building automation, control and building management-Building network protocol.. Part 4: IP communication

PN-EN 50065-2-1:2005/A1:2006: Signalling on low-voltage electrical installations in the frequency range 3 kHz do 148,5 kHz. Part 2-1: Immunity requirements for mains communications equipment and systems operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in residential , commercial and light industrial environments.

PN-EN 50065-2-1:2005/A1:2006(U): Signalling on low-voltage electrical installations in the frequency range 3 kHz do 148,5 kHz. Part 2-1: Immunity requirements for mains communications equipment and systems operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in residential , commercial and light industrial environments.

PN-EN 50065-2-2:2005/A1:2006: Signalling on low-voltage electrical installations in the frequency range 3 kHz do 148,5 kHz. Part 2-2: Immunity requirements for mains communications equipment and systems operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in industrial environments.

PN-EN 50065-2-3:205/A1:2006: Signalling on low-voltage electrical installations in the frequency range 3 kHz do 148,5 kHz. Part 2-3: Immunity requirements for mains communications equipment and systems operating in the range of frequencies 3 kHz to 95 kHz and intended for use by electricity suppliers and distributions.

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- PN-EN 50090-4-2:2006:** Home and Building Electronic System (HBES). Part 4-2: Media dependent layers. Transport layer, network layer and general parts of data link layer for HBES class 1.
- PN-EN 50090-5-3:2006(U):** Home and Building Electronic System (HBES). Part 5-3: Media and media dependent layers. Radio frequency.
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- PN-EN 50310:2006(U):** Application of equipotential bonding and earthing in buildings with information technology equipment.
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- PN-EN 50412-2-1:2006(U):** Power line communication apparatus and systems used in low voltage installations in the frequency range 1,6 MHz to 30 MHz. Part 2-1: Residential, commercial and industrial environment. Immunity requirements.
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- PrPN-prEN 50173-2:** Information technology. Generic cabling systems. Part 2: Office premises.
- PrPN-prEN 50173-3:** Information technology. Generic cabling systems. Part 3: Industrial premises
- PrPN-prEN 50173-4:** Information technology. Generic cabling systems. Part 4: Residential premises
- PrPN-prEN 50173-5:** Information technology. Generic cabling systems. Part 5: Data centers
- PrPN-prEN 50491-3:** General requirements for Home and building Electronic Systems(HBES) and building automation and control systems(BACS). Part 3: Electrical safety requirements.

Promotion of the Institute of Atomic Energy**E. Szlichcińska** (Scientific, Technical and Economic Information Centre)**B. Mysłek –Laurikainen** (IAE –B3)

International Poznań Fair: Innovations, Technologies, Machines. Sciences for Economy, Poznań, July 20-23, 2006

International Ecological Fair, Poznań, November 21-24, 2006

COMPUTER CENTRE**A. Szarek, I. Wasilewski, G. Jaworski, P. Zduńczyk**

Computer network in the Institute of Atomic Energy is based on the star topology with individual twisted pair or fiber optic cables coming from each node and terminating at central network concentrator or hub/switch.

The total length of the fibre-optic cable is about 3600 meters. There are about 220 connected workstations, mostly PC computers. Network is split into 3 virtual LANs. Two of them cover both segments of thick ethernet cable. The third is a special area called demilitarized zone (DMZ) consisting of two servers. VLANs are connected by a second layer switch Cisco 2950-24.

Communication with the internet is realized through the SDSL link with a speed of 2Mbit/s. Router Lucent Technologies DSL-HST-E that connects the institute's network to internet node in NETIA, is separated from the switch by a firewall. Firewall is an OpenBSD server running packet filter.

There are two machines working in DMZ. One of them is a PC machine on FreeBSD Unix, that acts as a name resolver (DNS), mail, http and ftp server. The

second one is Hewlett Packard 9000 A-400 used for complex mathematical computation.

Local network, server area and the internet are strictly separated from each other. Communication between VLANs is routed, NATed and protected by a firewall:

- Communication between machines in the local network and internet can be initiated only by a local machine.
- Communication between machines in the local network and DMZ can be initiated only by a local machine.
- Computers can access the FreeBSD server from the internet only for specific services such as e-mail, ftp and http.
- HP A-400 machine can be accessed only from the local network or from the safe FreeBSD server.

Those rules guarantee easy access to the internet and local servers for local users and good protection against intrusion. In addition e-mail service is protected by a very effective scanner Kaspersky Anti-Virus Business Optimal.