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POBIERZ KARTĘ ZGŁOSZENIOWĄ

Serdecznie zapraszamy na szkolenie z dziedziny eksploatacji części elektrycznej elektrowni jądrowych, które w języku angielskim poprowadzą wybitni specjaliści z Ukrainy, wieloletni pracownicy Zaporożnej EJ i Rówieńskiej EJ.

Szkolenie poświęcone będzie systemom zasilania potrzeb własnych oraz systemom automatyki i sterowania bloku jądrowego.

Poniżej podajemy szczegółowy program szkolenia oraz biogramy prelegentów w języku angielskim.

Termin szkolenia:

Część 1 (Unit 1): 23-25 października 2023 r.
Część 2 (Unit 2): 16-17 listopada 2023 r.

Koszt szkolenia dla 1 osoby (zwolniony z VAT):

Część 1 (Unit 1): 4200.- zł
Część 2 (Unit 2): 2900.- zł

Zgłoszenia:

Katarzyna Gut
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tel. +48 662 186 213

Training subject:

The balance of plant power supply system and automation and control of standard BOP power distribution devices for a nuclear power plant unit

Unit 1

The training goal:

Understanding the operation of a balance of plant power supply system (BOP) in a nuclear power plant unit (NPP), includes 6 and 0.4 kV switchgears and 750/330/110/24 kV connections for NPP electric power output and off-site power supply for BOP systems. Understanding automation and system control principles of standard BOP power distribution devices of the 6 kV and 0.4 kV alternating current and 220 V direct current networks.

The target group:

People who want to expand their knowledge in the field of nuclear power plants, especially: electricians, automation and energy specialists; academic teachers; teachers of vocational subjects in secondary schools and courses.

Training organizer:

Central Training and Publishing Centre (COSiW) of the Association of Polish Electrical Engineers, which has been carrying out statutory tasks since 1960, e.g. in the field of organizing and conducting training activities, with particular emphasis on training and improving technical staff. The COSiW cooperates with industry specialists from around the world. It has decades of experience and specialized training staff that operates in 50 branches throughout Poland. Thanks to this, it is possible to conduct training in virtually any location. The Association of Polish Electrical Engineers is a main partner in four projects of Industry Skills Centres, which have been approved by the Ministry of Education and Science (2023). COSiW is entered into the Register of Educational Institutions (266305) and the Register of Training Institutions (2.14/00386/2005).

General information:

The training takes place in the training room of the Association of Polish Electrical Engineers in Warsaw, Świętokrzyska 14. The training lasts three days. A maximum of 20 people can participate in one training. Each participant receives training materials. Classes are conducted in the form of lectures and workshops.

Participants, after passing the final exam, receive a training certificate issued by the Association of Polish Electrical Engineers Central Training and Publishing Centre.

The training schedule:

The first day of training

10:00 pm – 10:15 pm Welcome and overview of the training.

The balance-of-plant (BOP) power supply system for an NPP Unit (375 minutes):

- layout of BOP electrical connections,
- layout of primary connections of 6 and 0.4 kV switchgears:

• **a.** inputs of working and backup power supply of buses (including power inputs of the emergency power supply system)

• **b.** power supply to electric motors and 6/0.4 (0.22) kV power transformers,

• **c.** power supply to voltage transformers,

• **d.** switching devices of the primary power circuit.

Meeting from 10:15 pm to 6:00 am, including two coffee breaks (from 11:45 pm to 12:00 pm and from 4:00 am to 4:15 pm) and a lunch break (from 1:30 am to 2:30 am).

6:00 pm – 6:30 pm Friends dinner.

The second day of training

8:30 am – 9:30 am Breakfast (at the accommodation).

Automation and control of standard BOP power distribution devices of the 6 kV and 0.4 kV alternating current and 220 V direct current networks (375 minutes):

• automatic monitoring and control circuits,
• switchgear devices,
• relay protection and automation (RPA) equipment,
• monitoring and registration means,
• algorithms of RPA equipment operation and alarm circuits,
• organization of power supply with control current.

Meeting from 10:15 pm to 6:00 am, including two coffee breaks (from 11:45 pm to 12:00 pm and from 4:00 am to 4:15 pm) and a lunch break (from 1:30 am to 2:30 am).

6:00 pm – 6:30 pm Friends dinner.

The third day of training

6:30 am – 7:30 am Breakfast (at the accommodation).

Main layout of electrical 750/330/110/24 kV connections for NPP electric power output and off-site power supply for BOP systems (375 minutes):

• **a.** layout of primary electrical connections of a power unit (generator - unit transformer - power transmission line from a power unit to the NPP open switchyard),
• **b.** layout of primary connections of the NPP open switchyard with communication autotransformers between open switchyards of different voltage classes,
• **c.** connection layout of main power lines to the NPP open switchyards,
• **d.** layout of primary connections for connecting BOP backup transformers to the NPP open switchyards and to the mains of backup power supply of the 6 kV network,
• **e.** switchgear devices of the primary power supply circuit of the open switchyards of various voltage classes used at NPPs.

Meeting from 8:00 pm to 2:45 am, including two coffee breaks (from 10:45 pm to 11:00 pm and from 1:15 pm to 1:30 pm).

2:45 pm – 3:30 pm The lunch break.

3:30 pm – 4:30 pm The final exam.

4:30 pm – 4:45 pm Handing over of certificates and completion of the training.

Training subject:

Automation and control systems in switching stations of nuclear power plant units

Unit 2

The training goal:

Understanding automation and algorithms of an NPP electrical circuit operation, includes automation and control of open switchyards.

The target group:

People who want to expand their knowledge in the field of nuclear power plants, especially: electricians, automation and energy specialists; academic teachers; teachers of vocational subjects in secondary schools and courses.

Training organizer:

Central Training and Publishing Centre (COSiW) of the Association of Polish Electrical Engineers, which has been carrying out statutory tasks since 1960, e.g. in the field of organizing and conducting training activities, with particular emphasis on training and improving technical staff. The COSiW cooperates with industry specialists from around the world. It has decades of experience and specialized training staff that operates in 50 branches throughout Poland. Thanks to this, it is possible to conduct training in virtually any location. The Association of Polish Electrical Engineers is a main partner in four projects of Industry Skills Centres, which have been approved by the Ministry of Education and Science (2023). COSiW is entered into the Register of Educational Institutions (266305) and the Register of Training Institutions (2.14/00386/2005).

General information:

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Participants, after passing the final exam, receive a training certificate issued by the Association of Polish Electrical Engineers Central Training and Publishing Centre.

The training schedule:

The first day of training

10:00 pm – 10:15 pm Welcome and overview of the training.

Automation and control of open switchyards (375 minutes):

• interaction circuits of switchgear devices with automation and control equipment,

• RPA devices and synchronization circuits,

• monitoring and registration means,

• operation algorithms of RPA devices and alarm circuits,

• organization of control current power supply.

Meeting from 10:15 pm to 6:00 am, including two coffee breaks (from 11:45 pm to 12:00 pm and from 4:00 am to 4:15 pm) and a lunch break (from 1:30 am to 2:30 am).

6:00 pm – 6:30 pm Friends dinner.

The second day of training

6:30 am – 7:30 am Breakfast (at the accommodation).

Automation and algorithms of an NPP electrical circuit operation (375 minutes):

• power supply for power unit's BOP systems from off-site power supply sources,

• emergency power supply system (in particular, backup diesel generators) in the event of power unit blackout,

• additional power supply means in case of NPP blackout,

• NPP emergency automation equipment to maintain stability of its operation in the power system.

Meeting from 8:00 pm to 2:45 am, including two coffee breaks (from 10:45 pm to 11:00 pm and from 1:15 pm to 1:30 pm).

2:45 pm – 3:30 pm The lunch break.

3:30 pm – 4:30 pm The final exam.

4:30 pm – 4:45 pm Handing over of certificates and completion of the training.

Training lecturers:

Volodymyr Komarytsia

Date of birth: 17 March 1963
Education: Diploma of electrical engineer, Faculty of Electrical Engineering, Department of Electrical Networks and Systems, Kyiv Polytechnic Institute (1980 – 1986).
Professional experience:
1986 – 2013: *Rivne Nuclear Power Plant (RNPP) Energoatom Company.*
Engineer of the Service for Electric Shop of Relay Protection and Automation (until 1998), Deputy Head of Electric Shop of Relay Protection and Automation (until 2001), Head of RNPP Electric Shop (until 2004); RNPP Deputy Chief Engineer for Electrical Equipment and Monitoring and Management Systems (until 2013);
2013 – 2017: *Elektronaladka LLC (DTEK ENERGY Service Subdivision).*
Chief Exert of Energy Department/Project Support Department.
2017 – 2020: *DTEK ENERGY LLC, Expert and Technical Council.*
Chief Expert of DTEK ENERGY Expert and Technical Decisions Group in DTEK ENERGY General Director's Office;
2020 – 2023: *State Enterprise "State Scientific and Technical Center for Nuclear and Radiation Safety" (SSTC NRS).*
Deputy Head of the Monitoring and Diagnosis Reliability Analysis Department (as of 2023).

Main activities:

RNPP

- operation and repair of NPP electrotechnical equipment;
- coordination of all construction, installation and commissioning activities on electrotechnical equipment in the completion of construction and commissioning of new RNPP unit 4 and new 750 kV open switchgear;
- coordination of all construction, installation and commissioning activities on electrotechnical equipment and instrumentation and control equipment in modernization at RNPP units 1, 2 to extend their lifetime;
- Chairman of the Electrotechnical Council of the Energoatom Company (2006 - 2010);
- support/contribution to the regulatory review of safety assessments, safety review reports, other licensing documents submitted to Ukrainian NPPs with VVER reactors;
- technical audits of DTEK ENERGY thermal power plants;

- development, agreement and implementation of internal technical documents to ensure reliable and safe operation of DTEK ENERGY thermal power plants;
- analysis of failures and operational events at DTEK ENERGY thermal power plants, development and applying corrective measures to all DTEK ENERGY thermal power plants;

SSTC NRS

- assessing the implementation of safety measures related to reliable power supply of NPP units and their protection against fire hazards;
- safety analysis of NPP power supply systems, emergency power supply of reliability groups I, II and III, monitoring and diagnostic systems;
- analysis of reliability improvement of NPP emergency power supply (implementation of mobile diesel generators);
- safety analysis of NPP automatic fire alarm and automatic (water, gas, powder) fire extinguishing systems;
- arrangement and conduct of training workshops related to NPP power supply (including emergency power supply), for personnel of operating and contracting organizations and personnel from other countries, namely:

a) Power Supply Peculiarities of Ukrainian NPPs in Violations of Connections with the Energy System;

b) Use of Common-Unit Diesel Generators in In-House Power Supply Systems; etc.;

- assessment of NPP operational events related to occurrences and deviations in operation of electrotechnical systems and electrical equipment. Assessment of correctness and adequacy in determining causes of operational events, correctness and adequacy of the proposed corrective measures, adequacy in considering all significant factors that influenced/triggered the occurrence of events, as well as making recommendations for safety improvement;
- participation in revision/development of the regulatory and legal framework of Ukraine on modification of electrical systems and equipment for nuclear power plants and their safety assessment;
- participation in the expert council for the operating organization's NPP electrical equipment.

Ihor Rezvik

Date of birth: 23 March 1979
Education: diploma of electrical engineer, faculty of electrical networks and systems, Sevastopol Institute of Nuclear Energy and Industry (1996 - 2001).
Professional experience:
2001 - 2016: Zaporizhzhya Nuclear Power Plant (ZNPP), Energoatom Company.
Electrician (qualification 4-6) of the maintenance group for electrotechnical equipment and fire-fighting automation systems (until 2014), head of the maintenance group for electrotechnical equipment and fire-fighting automation systems (until 2016).
2016 - 2023: State Enterprise "State Scientific and Technical Center for Nuclear and Radiation Safety" (SSTC NRS).
Leading engineer of the Laboratory for Electrotechnical Equipment Safety Analysis (until 2018), Head of the Laboratory for Monitoring and Diagnostic System Safety Analysis (until 2019), Head of the Monitoring and Diagnosis Reliability Analysis Department (as of 2023).

Main activities:

ZNPP

- maintenance of the primary (0.4 kV in-house switchgears, electric motor drives) and secondary (logical element equipment unit, microprocessor devices, relays) switching circuits, automation of electrotechnical systems important to safety (including fire-fighting automation);
- arrangement of maintenance and repair of electrotechnical systems important to safety (0.4 kV in-house switchgears, electric motor drives, logical element equipment unit, microprocessor devices, relays, automation), activities for their reconstruction and modernization. Analysis and work with project documents.

SSTC NRS

- assessing the implementation of safety measures related to reliable power supply of NPP units and their protection against fire hazards;
- safety analysis of NPP power supply systems, emergency power supply of reliability groups I, II and III, monitoring and diagnostic systems;
- analysis of reliability improvement of NPP emergency power supply (implementation of mobile diesel generators);

- safety analysis of NPP automatic fire alarm and automatic (water, gas, powder) fire extinguishing systems;
- arrangement and conduct of training workshops related to NPP power supply (including emergency power supply), NPP fire safety (including automatic fire alarm and automatic fire extinguishing systems) for personnel of operating and contracting organizations and personnel from other countries, namely:

a) Requirements for the Power Supply Systems Important to Safety of Nuclear Power Plants;

b) Use of Common-Unit Diesel Generators in In-House Power Supply Systems;

c) Fire Protection Standards for Design of Nuclear Power Plants with Water-Cooled Water-Moderated Power Reactors;

d) Fire Safety in Operation of Nuclear Power Plants;

etc.;

- assessment of NPP operational events related to occurrences and deviations in operation of electrotechnical systems and electrical equipment. Assessment of correctness and adequacy in determining causes of operational events, correctness and adequacy of the proposed corrective measures, adequacy in considering all significant factors that influenced/triggered the occurrence of events, as well as making recommendations for safety improvement;
- participation in revision/development of the regulatory and legal framework of Ukraine on modification of electrical systems and equipment for nuclear power plants and their safety assessment;
- participation in the expert council for the operating organization's NPP electrical equipment.

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