

# Conference program of the 6th International Scientific and Technical Conference on Relay Protection and Automation (RPA)

## 18<sup>th</sup> October (Wednesday)

### Conference Opening Day

**10:00 – 17:00**

**Section 'Trusted Technologies for Building Intelligent Systems for Security and Automation of Electrical Networks'.**

## 19<sup>th</sup> October (Thursday)

**10:00 – 10:30**

**Greeting from experts and representatives of CIGRE:**

**10:30 – 12:00**

**Conceptual issues of construction and development of relay protection systems, emergency and regime automatics (RPA) and automation systems of electric power facilities with considering of innovative development prospects of the electric power industry and the creation of intelligent networks**

1. *ALGORITHM OF TRANSFORMER'S TECHNICAL CONDITION INDEX FORECASTING FOR AUTOMATION OF MAINTENANCE AND REPAIR PLANNING.*  
*Speaker: Nikolaev A.S.*  
*NRU "MPEI"*
2. *AUTOMATION OF MAINTENANCE AND REPAIR PLANNING BASED ON A RISK-BASED APPROACH*  
*Speaker: Kovalenko A.I.*  
*NRU "MPEI"*
3. *AUTOMATIC GENERATION OF HUMAN-MACHINE INTERFACES OF SCADA SYSTEMS OF DIGITAL SUBSTATIONS.*  
*Speaker: Yegorov D.V.*  
*NRU "MPEI"*
4. *DEVELOPMENT OF SOLUTIONS FOR AUTOMATIC CALCULATION OF RELAY PROTECTION AND AUTOMATION TRIP PARAMETERS.*  
*Speaker: Vertoguzov D.A.*  
*NRU "MPEI"*
5. *DEVELOPMENT OF AN ALGORITHM FOR AUTOMATED ASSESSMENT OF THE TECHNICAL CONDITION OF A HIGH-VOLTAGE CIRCUIT BREAKER.*  
*Speaker: Sorokin A.S.*  
*NRU "MPEI"*
6. *ADAPTIVE UFLS FOR 0.4KV LOAD CONTROL IN CASE OF EMERGENCY POWER SHORTAGES IN A MICROGRID WITH MINI-HPPS*  
*Speaker: Kholov N. B.*  
*NRU "MPEI"*

<b>12:00 – 12:45</b>	<b><u>Coffee break</u></b>
<b>12:45 – 13:30</b>	<b>Issues of energy systems management of power generation nodes, electrical supply systems, and the integration of distributed active consumers and distributed energy sources into power energy system</b>
	<ol style="list-style-type: none"> <li>1. <i>THE USE OF GAUSSIAN PROCESS REGRESSION FOR SHORT-TERM WIND POWER FORECASTING.</i> <i>Speaker: Snegirev D.A.</i> <i>UrFU</i></li> <li>2. <i>ASSESSING AND PREDICTING DEGRADATION OF SOLAR PANELS USING MACHINE LEARNING APPROACH</i> <i>Speaker: Pronichev A.V.</i> <i>Samara Polytech</i></li> <li>3. <i>FAULT DIAGNOSIS METHOD BASED ON BAYESIAN NETWORK WITH SEMI-TENSOR PRODUCT OF MATRICES FOR DC DISTRIBUTION NETWORKS</i> <i>Speaker: Shiqiang Li</i> <i>NORTHEAST ELECTRIC POWER UNIVERSITY</i></li> </ol>
<b>13:30 – 14:45</b>	<b>Conceptual issues of the development and application of the "digital substation", including the evaluation of reliability indicators</b>
	<ol style="list-style-type: none"> <li>1. <i>RELAY SENSITIVATION PROTECTION OF DISTRIBUTION NETWORKS 6-10 KV</i> <i>Speaker: Zagilov Z.</i> <i>NORTH-CAUCASUS FEDERAL UNIVERSITY</i></li> <li>2. <i>Development of functional requirements for busbar Protection and Automation</i> <i>Speaker: Pakhmutova Arina Alekseevna</i> <i>NRU "MPEI"</i></li> <li>3. <i>HIGH-SPEED ALGORITHM FOR DETECTING THE MOMENT OF MODE CHANGE IN PROTECTIONS BASED ON THE DIFFERENTIAL PRINCIPLE</i> <i>Speaker: Vladimir A. Solovyev</i> <i>NRU "MPEI"</i></li> <li>4. <i>ANALYSIS OF ERRORS IN MEASURING CIRCUITS AND DETERMINATION OF THEIR CAUSES IN ORDER TO INCREASE THE RELIABILITY OF THE READINGS OF DEVICES FOR CALCULATING EQUIPMENT PARAMETERS AND THE ACCURACY OF THE RPA</i> <i>Speaker: Guseinov Ahmed Janbulatovich</i> <i>NRU "MPEI"</i></li> <li>5. <i>THE OPERATION OF THE DIFFERENTIAL PROTECTION OF A POWER TRANSFORMER WHEN USING CTS WITH NON-MAGNETIC GAPS.</i> <i>Speaker: Rotov N.K.</i> <i>NRU "MPEI"</i></li> </ol>
<b>14:45 – 15:15</b>	<b><u>Coffee break</u></b>

<p><b>15:15 – 15:30</b></p>	<p><b>Conceptual issues of the development and application of the "digital substation", including the evaluation of reliability indicators</b></p>
	<p>1. <i>DISTRIBUTED CONTROL SYSTEM OF RENEWABLE ENERGY SOURCES AND SOLAR ENERGY STORAGES BASED ON THE METHOD OF DIRECT LOGICAL INFERENCE</i>  <i>Speaker: Rogozinnikov Evgeniy Igorevich</i>  <i>NRU "MPEI"</i></p>
<p><b>15:30 – 17:30</b></p>	<p><b>Issues of ensuring cyber security for the protection and automation complexes, and control systems of a digital substation</b></p>
	<p>1. <i>ON SECURITY SUPPORTING IN EDGE COMPUTING-BASED SMART GRID</i>  <i>Speaker: Shakhov Vladimir</i>  <i>UNIVERSITY OF ULSAN</i></p> <p>2. <i>ANALYSIS AND FORMATION OF REQUIREMENTS FOR THE ROLE-BASED ACCESS CONTROL POLICY IN THE OPERATING SYSTEMS OF THE INTELLIGENT ELECTRONIC DEVICE RELAY PROTECTION AND AUTOMATION</i>  <i>Speaker: Mikhailov D.O.</i>  <i>NRU "MPEI"</i></p> <p>3. <i>QUANTITATIVE WAY TO ASSESS THE IMPACT OF MEASURES TO MANAGE SOFTWARE VULNERABILITIES ON INCREASING THE AVAILABILITY FACTOR OF IED RPA.</i>  <i>Speaker: Karpenko V.I.</i>  <i>NRU "MPEI"</i></p> <p>4. <i>OPTIMIZATION OF THE AVAILABILITY OF THE RPA SUBSYSTEM OF THE DIGITAL SUBSTATION UNDER THE INFLUENCE OF COMPUTER ATTACKS</i>  <i>Speaker: Karpenko V.I.</i>  <i>NRU "MPEI"</i></p> <p>5. <i>STUDY OF THE IMPLEMENTATION OF INTEGRITY CONTROL MECHANISMS IN SECURE OPERATING SYSTEMS APPLICABLE IN INTELLIGENT ELECTRONIC DEVICES FOR RELAY PROTECTION AND AUTOMATION</i>  <i>Speaker: Ryzhkova L.M.</i>  <i>NRU "MPEI"</i></p> <p>6. <i>DEVELOPMENT OF A METHOD FOR ASSESSING THE PROBABILITY OF A COMPUTER INCIDENT AT A HIGHLY AUTOMATED SUBSTATION.</i>  <i>Докладчик: Latyshov Kirill Vasilevich</i>  <i>NRU "MPEI"</i></p> <p>7. <i>PARTICULAR ISSUES OF IMPLEMENTATION OF EMBEDDED CRYPTOGRAPHIC INSTRUMENTS OF INFORMATION PROTECTION DIGITAL SUBSTATION DEVICES EXCHANGING MESSAGES IEC 61850-8-1 PROTOCOL (MMS)</i>  <i>Докладчик: Latyshov Kirill Vasilevich</i>  <i>NRU "MPEI"</i></p> <p>8. <i>PARTICULAR ISSUES OF IMPLEMENTATION OF EMBEDDED CRYPTOGRAPHIC INSTRUMENTS OF INFORMATION PROTECTION DIGITAL SUBSTATION DEVICES EXCHANGING MESSAGES IEC 61850-8-1 PROTOCOL (GOOSE)</i>  <i>Докладчик: Kiselnikov Stanislav Andreevich</i>  <i>NRU "MPEI"</i></p>

## 20<sup>th</sup> October (Friday)

<b>10:00 – 12:00</b>	<p><b>Development methods for modeling electric power processes considering global experience</b></p>
	<ol style="list-style-type: none"> <li>1. <i>A METHOD FOR DETERMINING THE COORDINATE MOMENTS OF APPLYING TOUCH AND TRANSITION OF THE ABSCISSA AXIS OF THE TRAJECTORY OF A FUNCTION BY ONE AND SOME FEATURES</i>  <i>Speaker: Minaev Dmitriy</i>  <b>NORTH-CAUCASUS FEDERAL UNIVERSITY</b></li> <li>2. <i>SELECTING CHARACTERISTICS OF CURRENT TRANSFORMERS AT THE DESIGN STAGE TO ENSURE THEIR CORRECT OPERATION UNDER TRANSIENT CONDITIONS</i>  <i>Speaker: Panaschatenko A.V.</i>  <b>IVANOVO POWER ENGINEERING UNIVERSITY</b></li> <li>3. <i>DEVELOPMENT OF A MATHEMATICAL MODEL OF A SYNCHRONOUS GENERATOR FOR MONITORING CHANGES IN ELECTRICAL AND MECHANICAL PARAMETERS OF THE GENERATOR</i>  <i>Speaker: Reznikov I.S.</i>  <b>NRU "MPEI"</b></li> <li>4. <i>CREATION OF A SPATIAL MODEL OF A SYNCHRONOUS GENERATOR FOR THE PROBLEM OF DIAGNOSING DEFECTS IN CURRENT OPERATION</i>  <i>Speaker: Balabanov A. M.</i>  <b>NRU "MPEI"</b></li> <li>5. <i>COORDINATION OF MODELS IN REAL TIME WITH AN INCREASE IN THE LEVEL OF RELAY PROTECTION DEVICES FOR ELECTRICAL NETWORKS</i>  <i>Speaker: Gordienko K.S.</i>  <b>NORTH-CAUCASUS FEDERAL UNIVERSITY</b></li> <li>6. <i>ANALYTICAL METHOD FOR ASSESSING THE RESISTANCE OF AN ELECTRIC ARC</i>  <i>Speaker: Nesterova E.A.</i>  <b>Prosoft-Systems"</b></li> </ol>
<b>12:00 – 12:45</b>	<b><u>Lunch</u></b>
<b>12:45 – 15:30</b>	<p><b>Application and development issues of technologies for phasor measurement of energy management parameters for management, control and protection (WAMPACS)</b></p>
	<ol style="list-style-type: none"> <li>1. <i>LINE DISTANCE PROTECTION BASED ON MULTI-SIDED MEASUREMENTS OF CURRENT AND VOLTAGE SYNCHROPHASORS</i>  <i>Speaker: Piskunov S.A</i>  <b>Engineering center «Energoservice»</b></li> <li>2. <i>IMPROVEMENT OF GROUND FAULT PROTECTION BASED ON EQUIVALENT SYNCHROPHASORS</i>  <i>Speaker: Piskunov S.A</i>  <b>Engineering center «Energoservice»</b></li> <li>3. <i>MULTITERMINAL IMPEDANCE BASED FAULT LOCATION THROUGH SYNCHRONIZED PHASOR MESURMENTS</i>  <i>Speaker: Tychkin Andrey Romanovich</i>  <b>Ivanovo Power Engineering University</b></li> </ol>

	<p>4. <i>NOVEL APPROACHES TO TURBOGENERATOR SYNCHRONOUS AND TRANSIENT PARAMETER ESTIMATION THROUGH REAL-FIELD PMU DATA</i>  <i>Speaker: Rafikov V.R.</i>  <i>Ivanovo Power Engineering University</i></p> <p>5. <i>INVESTIGATION OF THE POSSIBILITY OF APPLYING NEURAL NETWORKS FOR SELECTING METHODS OF REMOTE FAULT LOCATION BASED ON SYNCHROPHASOR MEASUREMENTS</i>  <i>Speaker: Titov V.A.</i>  <i>Ivanovo Power Engineering University</i></p> <p>6. <i>MULTIMODEL ANALYSIS OF FAULT LOCATION ERRORS FOR HIGH AND EXTRA-HIGH VOLTAGE TRANSMISSION LINES WITH A PMU SIMULATION</i>  <i>Speaker: Umnov, A.R.</i>  <i>Ivanovo Power Engineering University</i></p> <p>7. <i>ИСПОЛЬЗОВАНИЕ РАЗЛИЧНЫХ МОДИФИКАЦИЙ ДИСКРЕТНОГО ПРЕОБРАЗОВАНИЯ ФУРЬЕ В УСТРОЙСТВАХ РЕЛЕЙНОЙ ЗАЩИТЫ И АВТОМАТИКИ</i>  <i>Speaker: Revyakin V.A.</i>  <i>NRU "MPEI"</i></p> <p>8. <i>WAMS BASED SHORT-CIRCUIT POINT LOCALIZATION ALGORITHM FOR UNSUPERVISED HIGH VOLTAGE POWER NETWORK BY POWER SUPPLY SOURCES MEASUREMENTS</i>  <i>Speaker: S. E. Shende</i>  <i>Prosoft-Systems</i></p>
<b>15:45 – 16:05</b>	<b><u>Coffee break</u></b>
<b>16:10 – 1:40</b>	<b>Information on further steps for Publication in IEEE Xplore; closing remarks by Experts</b>

### **Venue of the Plenary Session:**

National Research University "Moscow Power Engineering Institute" (NRU "MPEI")

Address: 14 Krasnokazarmennaya Street, Moscow, Russian Federation

### **Speaking Time Allocation:**

Each speaker is allotted 15 minutes: 10 minutes for the presentation and 5 minutes for Q&A.

### **Contact Persons for Conference Participation Inquiries:**

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