



CENTURY-OLD TRADITIONS — STATE-OF-THE-ART TECHNOLOGIES

IZOLYATOR

Founded in 1896

#3/2018 (18) July - September, 2018

Results of the 47th CIGRE Session

A LOOK INTO THE FUTURE OF POWER INDUSTRY



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& MEHRU
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A look into the future of power industry. Results of the 47th CIGRE Session

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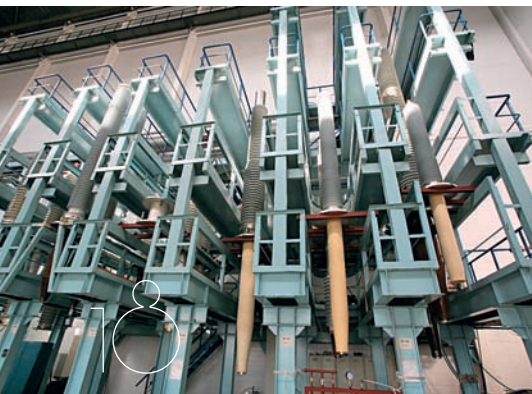
Practical steps for a steady interaction

At the meetings with European and Asian partners, we actively worked to have all paperwork done for making tender bids, set new targets and objectives to further develop our cooperation.

28 Point on the map

Sales geography of Izolyator bushings in the III Q 2018

In the third quarter, Izolyator shipped high-voltage bushings to partners from 13 countries!



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Our highly professional team, modern equipment, the highest quality standards and decades of experience make up the foundation of our ability to win and retain trust with partners all over the world.

34 Electrical Engineering

Using the best experience

Izolyator promotes the idea of having a personal, direct and open dialogue. The meetings and talks that we had in the third quarter of 2018 with representatives of electrical engineering companies proved our successful experience in creation of modern and reliable power equipment, fully meeting requirements and expectations of customers.

36 Power Industry of Russia We get recommended

It is a large part of our work to cooperate with the Federal Grid Company of the Unified Energy System of Russia. The Federal Grid Company recommends Izolyator plant as a reliable partner in production and delivery of high-voltage bushings.

42 Suppliers Aware of trends

Our unstoping discussion of current trends on the power equipment market with partners is factor of staying on top of the moment.

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We are always available!



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Quarterly

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«Sustainable development of power industry is a key condition of a dynamic growth of the global economy, improvement of life quality of people»

Vladimir Putin,
President of Russia

The most important event in the world power industry – the 47th CIGRE session in Paris

The biannual CIGRE session is the world's largest event in power industry. The purpose of CIGRE session is sharing best practice, scientific and technical information exchange between scientists and technical specialists from all countries in power generation, transmission and whole group of neighboring segments.

The Russian National Committee of CIGRE delegation of 150 members was led by Chairman of Russian NC of CIGRE CEO, Chairman of the Management Board FGC UES Andrey Murov. The delegation included big Russian scientists, experts and specialists from large Russian energy companies with state participation, sectoral research and development centers and institutes, leading domestic power and electrical equipment OEMs, innovative technologies design organizations and academic institutions.

The scientific part of the session included 36 reports of Russian experts, making an all-time record over the 95 years of partnership with the international association. ■



Andrey Murov (2nd on L) at the exhibition of the 47th CIGRE session (photo courtesy FGC UES)



Executive Director of Mehru Sandeep Prakash Sharma and Chairman of the Board of Directors of Izolyator Alexander Slavinsky are signing an Agreement to set up a JV

Joint venture between Izolyator and Mehru Electrical & Mechanical Engineers (P) Ltd.

At the 47th CIGRE session in Paris, Izolyator signed an agreement to set up a joint venture with the Indian Mehru Electrical & Mechanical Engineers (P) Ltd.

Mehru and Izolyator entered into agreement on strategic cooperation in a project to set up a joint venture to manufacture high-voltage bushings with solid RIP insulation on the territory of India.

The document was signed by Mr. Alexander Slavinsky, Chairman of the Board of Directors of Izolyator and Sandeep Prakash Sharma, Executive Director of Mehru.

The signing ceremony took place at the stand of the Russian National Committee of CIGRE in the presence of the Chairman of the Management Board

of FGC UES, Chairman of Russian NC of CIGRE Andrey Murov and the Chairman of Indian NC of CIGRE Mr. Indu Shekhar Jha.

The agreement institutes the principles of complete production cycle organization in the territory of India and further sales of various voltage high-voltage bushings with modern solid RIP insulation. The main constructional part, as well as know-how of the JV will be internal RIP insulation of own design, introduced by Izolyator.

Importantly, this is the first experience of Russian companies to establish a joint venture with Indian companies for high-voltage power equipment production. ■

75% of electricity produced in Russia is transmitted and distributed via Rosseti infrastructure

10th position in the world by Grid connection rate is held by Russia

Eastern Economic Forum 2018



Panel of the Eastern Economic Forum 2018

Every year, the Eastern Economic Forum becomes a venue to discuss the key issues of the world economy, regional integration, development of new sectors of industry and technology and global challenges that face Russia and other countries.

Russia President Vladimir Putin spoke of the forum as an important and demanded platform for dialogue between politicians, civic leaders, entrepreneurs and experts.

FGC UES delegation, led by Chairman of the Board Andrey Murov, took part in the business agenda of Eastern Economic Forum (EEF), including the plenary sitting «Far East: expanding the borders of opportunities». On the sidelines of EEF, FGC UES signed cooperation agreements with Pimorye and Sakhalin region to ensure higher rates of power supply in those regions by using facilities of distributed generation of its subsidiary Mobile GTPP.

One of the key directions for FGC UES's activities in the Far East is connected with tackling the energy deficit problem in technically isolated areas. Those measures will help to connect the isolated central energy hub of the Republic of Sakha (Yakutia) to the unified energy system of Russia. ■

Dmitry Medvedev at Sloboda SS

Prime Minister of the Russian Federation Dmitry Medvedev paid a working visit to the first digital distribution zone of electric networks of the Moscow region. Prime Minister was accompanied by the Minister of Energy of RF Alexander Novak and Moscow region's Governor Andrey Vorobyov.

General Director of Rosseti Pavel Livinsky demonstrated the effect of implementation of the new digital distribution zone, which includes Sloboda substation in Istra district, to the members of the delegation.

In the course of the tour, Dmitry Medvedev asked about the country of origin of the power equipment, used at Sloboda SS. Pavel Livinsky explained that the overwhelming majority of units are Russian-made or localized. Some of transformer equipment at Sloboda SS is equipped with Izolyator 110 and 220 kV RIP bushings. ■



Dmitry Medvedev is seeing Sloboda SS of MOESK (photo courtesy Rosseti)

6 | A Look Into The Future of Power Industry

On 26–31 August, in Palais des Congres in Paris, the largest international event in power industry – the 47th CIGRE session – took place. More than 3500 delegates and representatives of the world’s leading energy companies, research organizations, power equipment OEMs, regulators, materials suppliers to the power industry, design centers and universities participated in the event. The session’s agenda included meetings of technical committees, technical forums and training sessions in 16 specialized topics. This year, CIGRE’s technical committee selected over 600 articles, prepared by authors from all over the world.

Among participants of the session’s business program there were Izolyator and SC D1 RNC CIGRE «Materials and Emerging Test Techniques» representatives. Alexander Slavinsky, Doctor of Engineering Sc., Chairman of the Board of Directors at Izolyator and Russia’s representative at Study Committee D1 CIGRE and Head of SC D1 RNC CIGRE led the delegation.

The delegation members:

- Ivan Panfilov, Commercial Director.

- Vladimir Ustinov, Deputy Quality Director at Izolyator, SC D1 RNC CIGRE coordinator,
- Marcel Garifullin, Professor, Deputy Chair, Power Systems and Networks Dpt of the Kazan State Power Engineering University,
- Vladimir Kozlov, Professor, Power Systems and Networks Dpt of the Kazan State Power Engineering University,
- Irina Davydenkov, EngD, Professor, Ural Federal University named after the first President of Russia B. N. Yeltsin, Yekaterinburg,
- Valery Rusov, Chief Engineer at Dimrus Ltd., Perm,
- Sergey Samoilenko, General Director at SuperOx CJSC, Moscow,
- Alexander Kononenko, Head of Diagnostics and Testing of Electrical components of Nuclear power plants and facilities, NIIP, Lytkarino, Moscow region.

CIGRE President Robert Stephen addressed the delegates with a welcome speech. In his address, he said that the power industry still faces growing amount of challenges as the demand for inexpensive, secure and reliable electric energy only grows throughout the world, while power generation is depending

more and more on renewable sources of energy.

Because of the planet population’s concern with the environment condition, the technical issues that address integration of renewable sources of energy, using energy of wind and the sun, as well storage of energy in transmission and distribution systems, are becoming more important. This year’s conference was focused on a number of new technologies that were developed to ensure possibility of application of variable and hard to forecast renewable sources of energy in power systems. Besides, the ongoing development of HVDC – direct current high-voltage power lines – and construction of links for alternating and direct current on extra-high voltages allows for optimizing transmission capacity of power systems and promotes development of international electric power market.

Robert Stephen also marked the growing role of CIGRE as professional organization that makes it possible for power engineers of the world to share knowledge and experience for the sake of creation of a modern and sustainable energy system.

Russian specialists participate in the work of the association since 1923. The Russian National Committee of CIGRE has worked since 1957, and since 2015 Andrey Murov, CEO, Chairman of the Management Board FGC UES has headed it. By results of 2017, RNC CIGRE ranked the first in Europe by the number of members. In all the 95 years of participation in CIGRE, this year’s delegation was the most representative – 150 specialists from the leading power sector organi-

47th
CIGRE Session:
over **3500**
delegates
from **200** countries

zations of our country CEO, Chairman of the Management Board FGC UES PJSC, Chairman of the Russian National Committee of CIGRE Andrey Murov led the delegation. As he said, «there is an extremely high interest to the Russian energy sector, shown in two directions – not merely as a sales promotion market, but also as a supplier of advanced technologies and expertise».

The scientific program of the session included 36 reports of Russian experts. There were 40 reports made in three preferred topics under the research fields of SC D1 CIGRE Materials and emerging test techniques.

PT 1 Insulating Systems of HVDC (7 reports)

- Measuring techniques for checking electric fields modeling.
- New diagnostics for technical maintenance.
- Experience and requirements to new techniques and standards of testing.
- Compact insulating systems (direct and alternating current).

PT 2 Materials and aging (10 reports)

- New loads, e.g. from power electronics.

- Equipment, operating under high load, e.g. compact applications.
- Materials with less degree of environmental impact.

PT 3 Testing, monitoring and diagnostics (23 reports)

- Track record and added value of online-monitoring systems.
- Reliability of equipment and systems of testing, monitoring and diagnostics.

In-depth assessment of condition.

SC D1 CIGRE presented three reports:

- «Using optical spectroscopy for quality control of mineral transformer oils». Authors: SC D1 RNC CIGRE members: Professor M. Garifullin and Professor V. Kozlov;
- «Improving assessment of DGA using criteria of maximum permissible concentration of gases and degree of their growth». The reports was made by SC D1 RNC CIGRE member, Doctor of Engineer, Professor I. Davydenko. Co-authors: A. Moiseichenkov, K. Ovchinnikov (UFU n.a. First President of RF B.N.Eltsin), member of SC D1, V. Buzaev, PhD, V. Pelymsky (Rosseti PJSC);

On SC D1 topics 40 reports are listened from Russia — 3 reports

- «Assessment of paper insulation condition on power transformers, using dissolved methanol level in transformer oil». The report was presented by Francesco Sciocchetti (CAMLIN, Italy). Author: L. Daryan, EngD (Technical inspection of UES CJSC). Co-authors: A. Maximchenko (Technical inspection of UES), R. Obratsov, L. Le (Khanoi energy university, Vietnam).

At the poster session of SC D1 Materials and Emerging Test Techniques, the academic communities of the Ural Federal University and Kazan State Energy University presented findings of research that improved accuracy and ease of diagnostics of power transformers' condition. ➤



FEATURE STORY

► Foreign colleagues saw a presentation of an expert system to assess the technical condition of power transformers, using the analysis of dissolved gases (Irina Davidenko, UFU) and capabilities of optical spectroscopy for the purposes of transformer insulation control (Vladimir Kozlov, KSEU). Many participants and visitors of the poster session showed interest to the findings of the Russian scientists.

A discussion meeting to consider issues of Preferred Topics of SC D1 CIGRE was held.

Every discussion brought together a great many of power industry experts from different countries, who had an opportunity to share results of their research with their colleagues and receive constructive suggestions on further development of their topics, also finding out about results of similar research projects in other countries. Representatives of SC D1 RNC CIGRE

took part in the discussion meeting about SC D1 CIGRE reports.

During the discussion sitting, several concluding speeches were made to summarize the presented reports and reflect the modern situation around HVDC insulating systems, materials aging, new test techniques and means of diagnostics in electrical engineering. The above three topics received a closer study in:

- using the existing modes of factory acceptance tests (FAT) unit loads, such as alternating current, testing by switching and lightning impulses, sufficient for suppression of synergy effects, which may appear in any electric devices under voltage;
- suggesting measures for a steady decrease of equipment, using SF₆;
- studying experience of creation of cellulose aging models with time-sensitive aging rates and using this

factor in definition of heat index concept;

- using methods, applicable for expediting materials optimization either from calculations viewpoint, or with introduction of alternative modes and techniques of testing;
- introducing testing and assessment methods, used for finding residual life of filled insulators of siloxane rubber during their service life;
- studying calibration experience and testing for sensitivity to partial discharges in operating conditions;
- using voltage-time curves, depending on testing voltage, that are developed for systems on mineral oil, for alternative insulating systems.

A private session of SC D1 also took place. The chair persons of JWG and WG groups made reports about the work of consultative and work groups. Representatives of study committee D1 RNC CIGRE took part in that meeting as visitors.



CIGRE Technical Exhibition: over **300** exponents from **33** countries

At the meeting, the audience listened to the reports from SC D1 work groups, discussed plans for the coming period, coordination with other SC: SC A1 «Rotating electric machines», SC A2 «Transformers», SC A3 «High-voltage equipment», SC B1 «Insulated cables», SC B2 «Aerial lines», SC B3 «Substations» and corresponding technical committees IEC, such as TC 2 «Rotating machines», TC 10 «Liquids for electrical engineering», TC 14 «Power transformers», TC 28 «Coordination of insulation», TC 36 «Insulators», TC 42 «Testing techniques by high voltage and heavy current», IEC TC 90 «Superconductivity», TC 112 «Assessment and applicability of electric insulating materials and systems».

The Study Committee of CIGRE has planned several events:

in 2019 – SC D1/A2 colloquium in New Delhi, in 2020 – a session in Paris.

The most discussed issues of SC D1 committee at the 47th CIGRE session:

- practical insulation characteristics on real equipment (devices, electrode configurations, surface characteristics, voltage load, external parameters, etc);
- aging of alternative gas mixtures at partial discharges taking into account electrical endurance and ecologic safety (devices, electrode configurations – one or several emitters, load indicator (partial discharge level in pC, cumulative charge, duration, etc.);
- further steps in elaboration or definition of characteristics that are needed for taking those materials from laboratory to the field;
- functional requirements to dielectric materials for transformers;
- track record of continuous monitoring for equipment park management;
- application, using physical interpretation schematics or statistical methods, based on big data concepts;
- experience in the area of dielectric strength of various insulating transformer liquids in airtight conditions of fields with high coefficients of utilization;
- assessment of technical condition of transformers using dissolved gases analysis;
- possibilities of application of optical spectrometry for control of insulation condition on transformers.

During SC D1 meeting, Alexander Slavinsky and Chairman of SC D1 CIGRE

Ralf Pitch exchanged opinions on the prospects of interaction development. Alexander Slavinsky informed R. Pitch about the work of the study committee D1 in Russia, key achievements of the Russian specialists and raised the issue of organizing a joint SC D1 and SC A3 colloquium in Moscow in 2023.

Alexander Slavinsky and Vladimir Ustinov participated in training sessions in the topics of SC D1 «Guidelines on adjustment of insulator features in conditions of high pollution, moisture and altitude locations».

Besides, the Palais des Congres hosted the largest in CIGRE history technical exhibition, where expositions of over 300 exponents from 33 countries were allocated on 13 680 square meters of exhibition floor. At the exhibition hall, many world's leading manufacturers and service providers exhibited their newest technologies and prototypes. Among Russian exhibitors, there was a company member of RNC CIGRE SuperOx, showing unique solutions for power industry HTSC-current limiting device, developed on the platform of the company's key product HTSC cable of 2nd generation. The exhibition offered solutions of immense interest for all major directions, connected with functioning and development of electrical and transmission systems. Familiarity with these solutions would furnish the delegates with some practical experience of operating equipment and the newest software, called to design and manage systems of power supply on high and extra-high voltage.

On the sidelines of CIGRE session, there were several business meetings with representatives of the world's leading power grid companies and electrical equipment OEMs as well as executives of the Study Committees of CIGRE.

Izolyator and Mehru Electrical & Mechanical Engineers (P) Ltd. (India) signed an agreement on strategic cooperation and partnership in realization of a project to create a joint venture for establishing a plant in India

that would manufacture high-voltage bushings with solid RIP insulation. The signing ceremony took place at the stand of the Russian National Committee of CIGRE in presence of CEO, Chairman of the Management Board FGC UES Andrey Murov and Chairman of Power Grid Corporation of India Limited, Head of National Committee of CIGRE in India Indu Shekhar Jha. The document was signed by Alexander Slavinsky, Chairman of the Board of Directors, Izolyator Company, and Sandeep Prakash Sharma, Executive Director, Mehru Company.

After the signing ceremony, the leaders of the national committees of CIGRE of Russia and India discussed development of integrative ties between the national electric energy systems with CIGRE activities, priority directions of innovative research in construction and modernization of power complexes of the two countries as well as the track record of deliveries of modern electrical equipment, including Izolyator high-voltage bushings, to Indian power facilities.

Izolyator came out with an idea of organizing a working meeting of FGC UES and Vietnam's state power grid corporation EVN NPT management during the CIGRE session. Nguyen Minh Thang, EVN NPT's Board Member led the Vietnamese delegation.

The sides discussed their interaction within the Memorandum of Understanding between FGC UES PJSC and EVN NPT, which was signed during the visit of the Russian delegation to Vietnam in August 2017, as well as realization of other joint projects in other areas of cooperation.

The general results of Izolyator delegation's, SC D1 RNC CIGRE activities at the 47th CIGRE session and all the meetings were: expansion of international ties in scientific and technical exchange, productive dialogue on important issues of the global power industry development, forming arrangements and plans of further cooperation in various directions of research of the Study Committee D1. ■



«*There is a very strong interest to the Russian power industry. Development of high-tech exports is a key priority of Russia's involvement in CIGRE activities*»

Andrey Murov,
Chairman of Russian NC of CIGRE, CEO, Chairman of the Management Board FGC UES

Best Designs for Power Industry



Seeing the Russian part of the CIGRE technical exhibition

The delegation of the Russian National Committee of CIGRE saw the stands of the Russian companies that were represented at the technical exhibition of the 47th CIGRE session.

Chairman of Russian NC of CIGRE, CEO, Chairman of the Management Board FGC UES Andrey Murov led the delegation of RNC CIGRE.

At the technical exhibition, the Russian companies that cooperate with RNC CIGRE demonstrated the most recent solutions in digitalization, emergency control automatics, cyber security, development of complex digital substations. Besides, FGC UES demonstrated practical results of their studies in superconductivity and energy efficiency. These pilot projects were classified as having national importance by a decision of the Ministry of Energy of Russian Federation.

Chairman of the Board of Directors of Izolyator, Russia's representative in study committee D1 CIGRE Alexander Slavinsky also took part in the tour. During an extemporaneous discussion, he told Andrey Murov about the unique experience of Izolyator in development of electrical equipment for power systems using direct current.

The company member of RNC CIGRE SuperOx presented unique solutions for power industry: HTSC-current-limiting device, developed on the basis of the company's key product - 2nd generation HTSC -cable. ■

Integrative Cooperation With India

Izolyator took part in the working meeting of the chairpersons of the National CIGRE committees of Russia and India, heads of the largest power grid companies of the two countries – FGC UES and Power Grid Corporation of India Limited at the 47th CIGRE session.

The Russian side was led by Chairman of Russian NC of CIGRE, CEO, Chairman of the Management Board FGC UES Andrey Murov and the Indian – by Chairman of the Indian National Committee of CIGRE, Chairman of Power Grid Corporation of India Limited Indu Shekhar Jha (I. S. Jha).

The meeting participants discussed development of integrative ties between the national electric systems of Russia and India within CIGRE organization as well as priorities of innovative development in construction and modernization of power complexes of the two countries.

Over the past several years, a number of meetings were organized between FGC UES and PowerGrid as well as industrial companies – manufacturers of original HV equip-

ment in India and Russia. Also, with support from FGC UES, an open workshop, dedicated to power industry topics, was organized between Russia and India. ■



Working meeting of the Chairpersons of the National CIGRE Committees of Russia and India at the 47th CIGRE Session (photo: FGC UES)

since 1923 Russian specialists participate in CIGRE

150 150 specialists of Russian sectoral organizations took part in CIGRE session this year



Participants of the working meeting with EVN NPT's management during the 47th CIGRE Session (photo: FGC UES)

Working Meeting With EVN NPT

Izolyator participated in the working meeting between the management of FGC UES and the state power grid company of Vietnam EVN NPT. Nguyen Minh Thang, EVN NPT's Board Member led the Vietnamese delegation.

The sides discussed their interaction within the Memorandum of Understanding between FGC UES PJSC and EVN NPT, which was signed during the visit of the Russian delegation to Vietnam in August 2017, as well as realization of other joint projects in other areas of cooperation.

The Russian electrical products have been operating on power facilities of Vietnam for over half a century and proved their reliability. Today, the cooperative ties between the companies of the two countries are not merely confined by export — both experience exchanges and joint research activities take place — in pursuit of the power complex improvement.

Izolyator, over the past several years, initiates, organizes and actively participates in integrative processes that bring together

the experience and interests of national power and industrial companies of Russia and Vietnam. Our company is also a leader in promotion of Russian-made electrical products on the Vietnamese market. Izolyator delivers HV RIP bushings in the voltage range 72–220 kV for the needs of power generating facilities and transformer plants of the Republic of Vietnam.

In 2018, Izolyator came out with an initiative of organizing an open workshop for Vietnamese power engineers with participation of Russia's leading electrical engineering companies, which gathered over a hundred representatives of generating, power grid and industrial companies of Vietnam.

The meeting on the sidelines of CIGRE session opened new prospects for development of mutually beneficial cooperation and integrative development of the power industry between the national and regional power systems of Russia and Vietnam and outlined new directions for promotion of Russian energy production on the Asian market. ■

Study Committee D1 at the 47th CIGRE Session

Representatives of SC D1 of the Russian National Committee of CIGRE participated in several events at the 47th CIGRE session.

Each discussion brought together a great many of power industry experts from different countries, who had an opportunity to share results of their research with their colleagues and receive constructive suggestions on further development of their topics, also finding out about results of similar research projects in other countries. Representatives of SC D1 RNC CIGRE took part in the discussion meeting about SC D1 CIGRE reports.

During the meeting, Alexander Slavinsky and Chairman of SC D1 CIGRE Ralf Pitch exchanged opinions on the prospects of interaction development.

For more information about the work at the 47th CIGRE session and meetings of the study committee D1 Materials and Emerging Test Techniques, please address the report on RNC CIGRE webpage. ■



Alexander Slavinsky and Head of SC D1 CIGRE Ralf Pitch at the 47th CIGRE Session

12 | Meetings With Business Partners on the Sidelines of the 47th CIGRE Session



◀ Trilateral meeting at the 47th CIGRE Session. Center – Alexander Slavinsky, L-R: Chairman, f PowerGrid Indu Shekhar Jha, Commercial Ivan Panfilov and Executive Director at Mehru Sandeep Prakash Sharma

▼ Meeting with management representatives of Mehru, L-R: Ashok Singh, representative of Mehru Vinod Kumar, Executive Director of Mehru Sandeep Prakash Sharma, Alexander Slavinsky and Ivan Panfilov



▲ Meeting with the Technical Chairman of the Indian National Committee of CIGRE R.P. Sasmal – at the foreground in the center



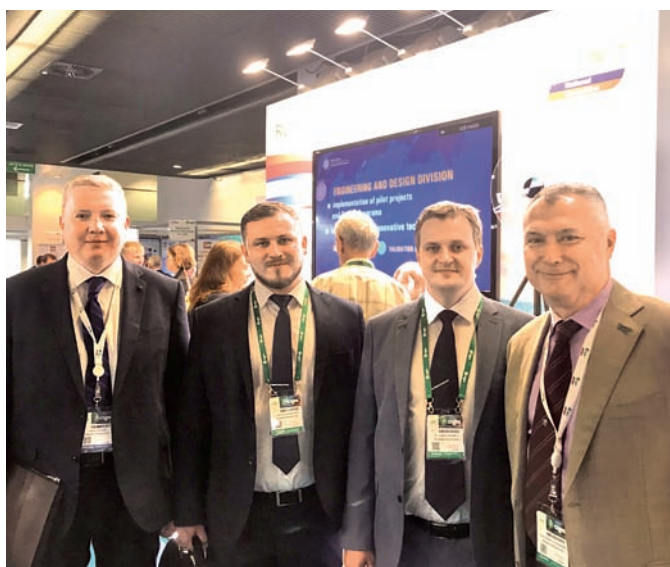
► Meeting with the General Manager of Transformers & Rectifiers (India) Ltd plant Jitendra U. Mamtora – in the foreground 2nd on the left





Meeting with management representatives of CTR, led by V. K. Wakchaure, Executive Director Group 3 – on the left

Meeting with management representatives of BHHV, L-R: Alexander Slavinsky, BHHV Director Zhian Tian, Ivan Panfilov and BHHV representative Lijhi Joa

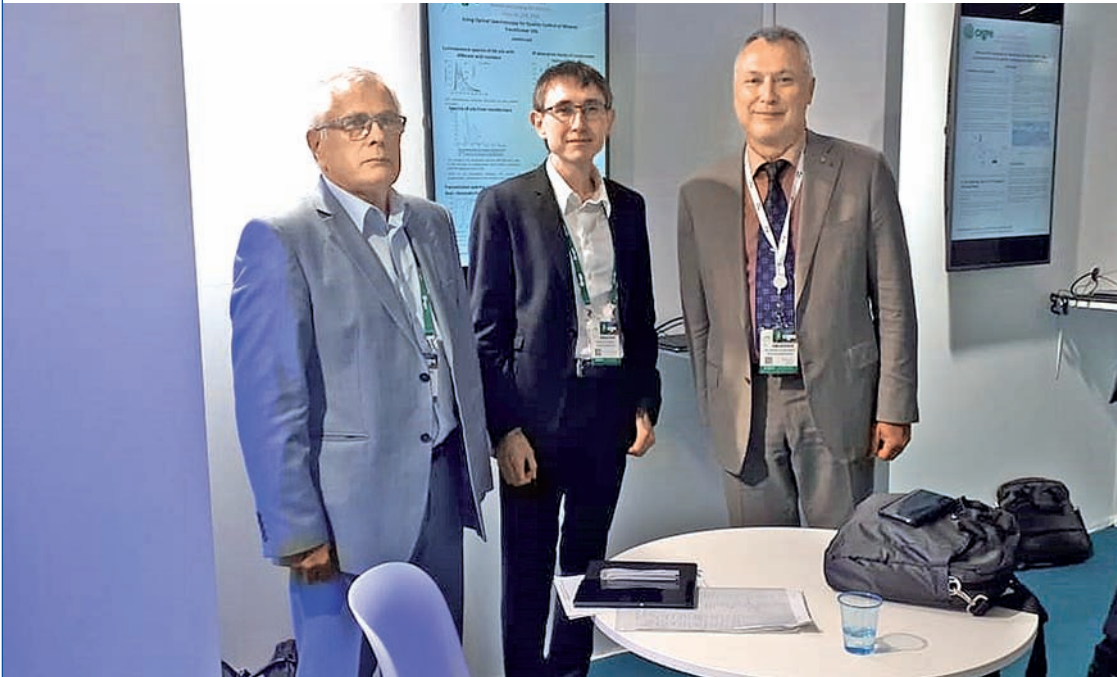


Meeting with Togliatti Transformer representatives, L-R: Ivan Panfilov, Alexander Zamula, Andrey Anufriev, Alexander Slavinsky

Meeting with President of the Moscow Power Engineering Institute Nikolay Rogalyov (L), next – Deputy Chairman of the Board at FGC UES Natalia Ozhegina, Alexander Slavinsky



14 | Poster Session of Study Committee D1 on the Side-lines of 47th CIGRE Session



◀ L-R: Vladimir Kozlov, Marcel Garifullin (Representatives of Kazan State Power Engineering University) and Alexander Slavinsky

▼ Alexander Slavinsky and SC D1 RNC CIGRE Coordinator Vladimir Ustinov

▼ Alexander Slavinsky and Irina Davidenko, Ural Federal University n.a. First President of Russia B.N.Eltsin



▼ Alexander Slavinsky and Francesco Sciocchetti, CAMLIN, Italy



CIGRE ESTABLISHED IN FRANCE IN 1921

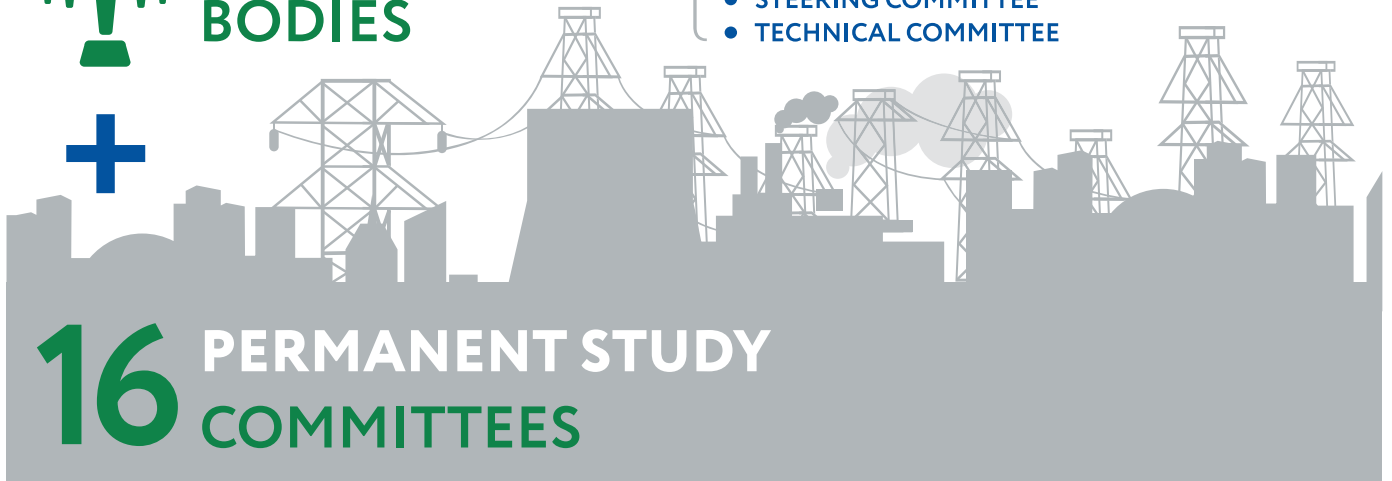
**THE LARGEST INTERNATIONAL
NON-GOVERNMENT ORGANIZATION
IN POWER INDUSTRY**

ORGANIZATION



GOVERNING BODIES

- GENERAL ASSEMBLY
- ADMINISTRATIVE COUNCIL
- STEERING COMMITTEE
- TECHNICAL COMMITTEE



**16 PERMANENT STUDY
COMMITTEES**

95

representations
of CIGRE across
the globe



>1 000

organizations
are members
of CIGRE



>7 000

experts,
across
the power
industry



**47 CIGRE
SESSION**

over 3500
delegates
from 200 countries



technical
exhibition

300
exponents
from 33 countries



40 reports
made
on topics
of Study
Committee D1



International Cooperation Development is a Key Part of our Work

Every new CIGRE session gives a powerful impetus to development of international cooperation and exchange of experience and knowledge in power industry. Chairman of the Board of Directors at Izolyator, Russia's representative at SC D1 CIGRE, Head of Study Committee D1 RNC CIGRE «Materials and Emerging Test Techniques», Dr.Eng Sc. Alexander Slavinsky told about setting up dialogue and cooperation development with foreign partners at the international energy forum.

— **Izolyator became one the most active participants of the past 47th CIGRE session in Paris. What are the key results of the delegation's work?**

— On the sidelines of the 47th CIGRE session, we had business meetings with representatives of the world's leading power grid companies and electrical engineering corporations. One of the most meaningful results is consideration of experience of the leading Russian power products manufacturers for modernization of electric power complexes of the South East Asian countries, primarily, promotion of Russian power products on the markets of India and Vietnam. For instance, in presence of the Chairman of the Board of Federal Grid Company of Unified Energy System, Chairman of Russian NC of CIGRE Andrey Murov and the Chairman Power Grid Corporation of India Limited, Chairman of Indian NC of CIGRE Indu Shekhar Jha, we signed an agreement on strategic cooperation with Mehru Electrical & Mechanical Engineers (P) Ltd. (India). From the Indian side, Sandeep Prakash Sharma, Executive Director and Mehru signed the document.

— **What areas of cooperation does this document entail?**

— According to the agreement, a unique project of J/V creation for

production of high-voltage bushings with solid RIP insulation will be realized.

It should be said that Izolyator and the Indian partners have been connected with old and strong ties as regards products delivery (by this moment, over 520 high-voltage bushings of various voltages have been delivered to different regions of India) and in terms of exchanges of experience

«A unique project of J/V creation for production of high-voltage bushings with solid RIP insulation will be realized».

in operation and maintenance of high-voltage bushings. The signed Memorandum will definitely mark the beginning of a new round of interaction. Creation of a manufacturing facility on the territory of India using Izolyator's technologies will allow for a significant decrease of costs of produced goods without loss in quality, cut lead time for product deliveries to the Indian power facilities and meet the growing demands of the country in this highly technological product.

Besides, we expect that our partnership with Mehru, one of the leading global suppliers of measuring transformers with strong ties in the countries of Middle East, Asia and Africa, will provide an impetus for promotion of our products in one of the most attractive regions.

— **What stage is the agreement realization at?**

— By the end of the year, we plan to perform the first assembly at so far rented floor space, yet through the already registered local legal entity – the joint venture. Then we will tackle the task of building and equipping own production capacities in order to localize production of completing parts and planting the end-to-end technology of RIP insulation technology in the country.

— **What other directions seem to be of interest for exports promotion?**

— Few of us know that the Soviet export of power equipment rivaled the exports of weapons by its scale. In times gone by, our specialists practically created energy systems in many countries of Asia, Africa, Latin America. Izolyator plant equipment was used on the signature construction sites, beginning from Aswan HPP in Egypt and ending by Bushehr NPP in Iran. Much of

what was installed with USSR's contribution, is still operating. For instance, only last year, we replaced the bushings that had worked for over 30 years on Hoabinh HPP in Vietnam.

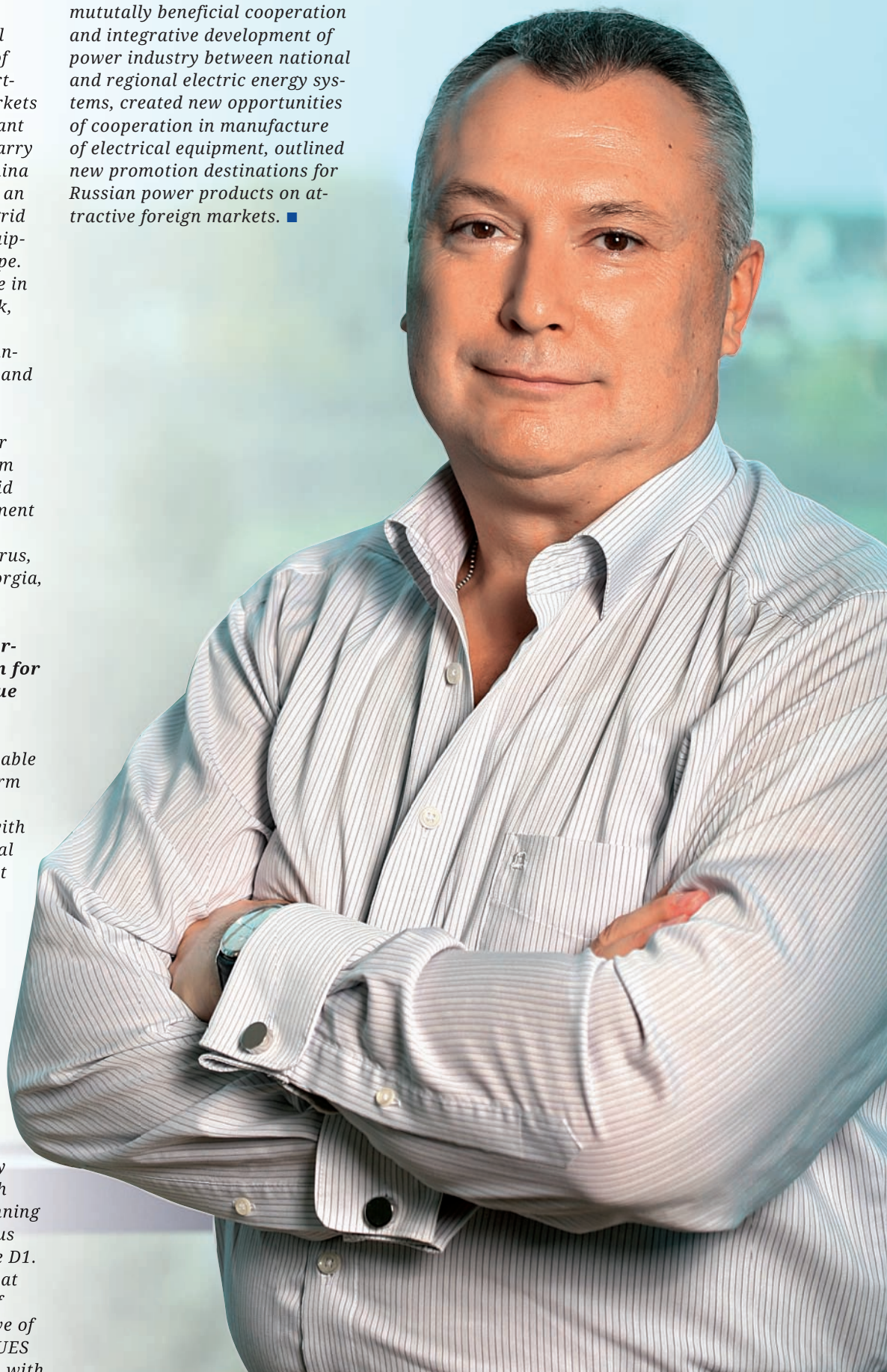
Development of international cooperation, strengthening of interactions with foreign partners, expansion on sales markets of our products is an important activity with Izolyator. We carry on with our large work in China in that respect. We maintain an active dialogue with power grid companies and electrical equipment manufacturers in Europe. The products of our plant are in demand in Belgium, Denmark, Norway, Turkey. We work to develop our ties with the countries of Latin America, Cuba and Venezuela in particular.

In 2018, we continued to strengthen relations with our old and reliable partners from the CIS countries – power grid companies and power equipment OEMs in Armenia, Moldavia, Tajikistan, Kazakhstan, Belarus, Ukraine, Uzbekistan and Georgia, and Mongolia.

— **How useful was your participation in CIGRE session for development of the dialogue with foreign partners?**

— CIGRE session is irreplaceable and highly productive platform for setting up and maintaining personal contacts both with leaders of the global electrical engineering and management representatives of the largest energy companies of the world. The work of Izolyator's delegation and SC D1 RNC CIGRE representatives resulted in expansion of international ties in scientific and technical exchange, maintaining a productive dialogue on important issues of global power industry development, forming arrangements on delivery of high-voltage bushings with solid RIP insulation and planning further cooperation in various activities of Study Committee D1. For example, the meetings that took place on the sidelines of CIGRE session at the initiative of Izolyator – meetings of FGC UES management representatives with

their colleagues from Power Grid Corporation of India Limited and the state power grid corporation of Vietnam EVN NPT opened new prospects for development of a mutually beneficial cooperation and integrative development of power industry between national and regional electric energy systems, created new opportunities of cooperation in manufacture of electrical equipment, outlined new promotion destinations for Russian power products on attractive foreign markets. ■



Sole manufacturer of bushings in Russia and CIS

12-1200 kV

16 16 years of successful production experience of RIP bushings

Exclusivity in Innovation



RIN bushings at the assembly shop of Izolyator plant

Izolyator passed a voluntary certification of its serial high-voltage bushings with RIN insulation for conformity to normative requirements.

The solid RIN insulation (Resin Impregnated Nonwoven) has been developed by Izolyator's design office with the aim to increase water-tight features of the internal insulation of high-voltage bushings in severe operating conditions or for situation when operating and storage conditions are violated. The main insulation is a nonwoven polymer material that has no cellulose, and as a consequence possessing extremely high hydrophoby and resistibility to atmospheric humidity, which virtually eliminates any moistening of insulation. The material is void of water in the first place, which allows to eliminate thermal vacuum drying of wound core. This means a more reliable insulation and a shorter production cycle.

In all other details RIN insulation making process is identical to RIP technology. RIN insulation can be used both with porcelain and polymer external insulation. Izolyator has patented RIN trademark and production technology and received certificates of conformity of RIN bushings to Russian and international standards.

RIN bushings were certified in the state certification system GOST R. Izolyator received respective certificates from the Federal Agency on technical regulation and metrology. ■



manufacturing
facility capacity

12 000 bushings
annually

620 000 bushings made
in Izolyator
plant's history



Tests of a 500 kV oil – SF6 bushing at Izolyator plant

Conformity to the Highest Standards

Izolyator plant obtained certificates of Integrated Management System in quality, ecological and health safety and health protection conformity to international standards.

The integrated quality management system is a combination of ISO 9001:2015 quality management system, ISO 14001:2015 ecological management and OHSAS 18001:2007 health and safety management system.

The IMS accumulates all those aspects of the company activities, systemizes requirements to the above and creates an efficient management system, which improves the competitiveness of the company and enhances its further development.

The certificates were received after an audit, which was done by TÜV Hessen auditors according to TÜV PROFICERT procedures on 24–26 April this year. ■



How does one boost productivity three times?

Izolyator plant launched a new process equipment for mechanical treatment of 500–750 kV solid RIP and RIN insulation of high-voltage bushings.

A specially made CNC lathe was designed and custom made for Izolyator plant.

The new equipment will improve the productivity of mechanical treatment of 500–750 kV internal insulation by more than three times. ■



The new machine for mechanical treatment of 500 – 750 kV insulation at the insulation making shop of Izolyator plant

Izolyator plant constantly expands product range of high-voltage bushings by introducing brand new designs and modernizing existing products.



Konstantin Sipilkin,
Research and Development
Director Izolyator



Alexander Shornikov,
Technical Director
Izolyator



Yury Nikitin,
Chief Designer
Izolyator



Our plant actively implements advanced technologies and innovative design concepts, unmatched in Russia or elsewhere in the world.

Presently, the most modern type of internal insulation of high-voltage bushings is the solid RIP insulation. However, even RIP insulation with significant advantages over other types of insulation is not void of weaknesses. One of them is possibility of moistening during a long-term storage, which is conditioned by presence of paper in the insulation structure.

Thus, by eliminating paper from the solid insulation, one can dramatically increase its hydrophoby and consequently lower requirements to storage condition of bushings in operating conditions. The type of insulation received the name of RIN – Resin Impregnated Nonwoven – saturated in resin non-woven fabric.

As of today, RIN bushings have passed all necessary tests and are certified. In 2019, we plan to start serial production of bushings with that type of insulation.



Today, Izolyator is the largest producer of high-voltage bushings and sole manufacturer of bushings of extra-high voltage classes in Russia and the CIS countries. The plant shops are equipped with the most advanced modern machinery from the leading international and Russian OEMs.

We continuously improve processes of high-voltage production and implement advanced manufacturing processes, increasing labor productivity and safety.

Our company pays a special attention to the technological process of high-voltage bushings production. Every technical specialist, worker in our team is confident of precision of his work.

Application of proprietary patented technologies, use of only the best in the world equipment and materials, work of highly qualified staff and stage by stage quality control on production allow us to produce highly technological world class products.



Summarizing results of our design office's work in the III quarter of 2018, it cannot escape our attention that the quantity of developed high-voltage bushings is growing every year. We expand the product range of high-voltage bushings by introducing brand new designs and regularly modernizing existing products.

If we speak about specific figures, in the III quarter of 2018 our designers created 13 new types of bushings (66 kV – 2 tps, 110 kV – 2 tps, 220 kV – 4 tps, 330 kV – 2 tps, 500 kV – 1 tp, 750 kV – 2 tps), among which 6 tps were designed under request of foreign customers. Among all those bushings, the 330 kV design with RIN insulation stands out. It was intended for delivery to one of transformer plants in Russia.

At present, we have completed all the testing of RIN bushings and we are confident that these bushings have significant advantages over any other types of bushings and will soon occupy a key share in the product range.

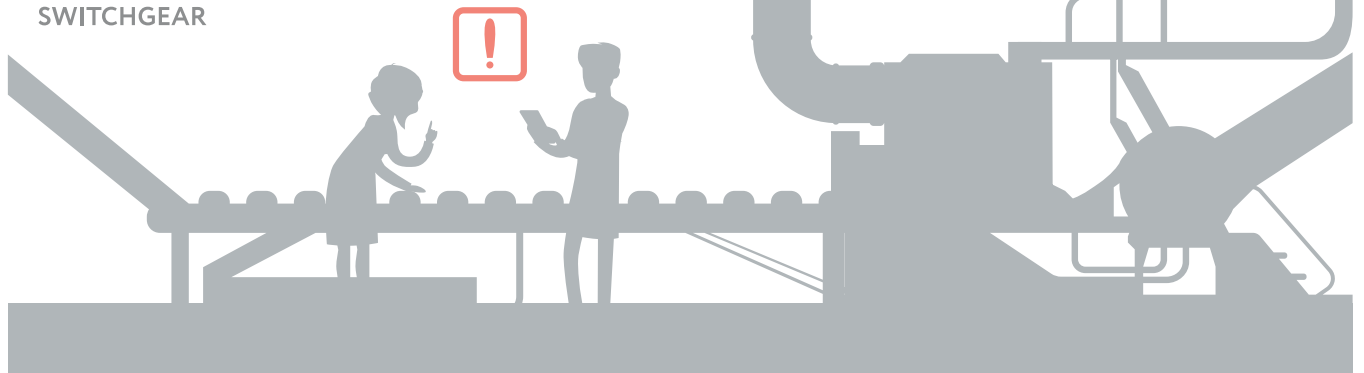
PRODUCTION

**ALTERNATING
AND DIRECT
CURRENT
BUSHINGS**
RATED VOLTAGES
10 - 1150 KV

**WALL HIGH-
VOLTAGE
BUSHINGS**



- FOR POWER TRANSFORMERS
- FOR SHUNT REACTORS
- FOR OIL SWITCHES
- FOR SF6 GAS INSULATED SWITCHGEAR



120 YEARS

production
experience
of high-voltage
bushings



16 YEARS

production
experience
of RIP bushings
with 10 - 750 kV
rated voltages



>620 THND

high-voltage
bushings
produced
by 2018



FIRST TIME IN RUSSIA **A 500 KV
OIL - SF6 BUSHING WAS CREATED**





«Strategics goals of the foreign economic activities of Izolyator can easily be called ambitious, yet only such goals help to go ahead»

Andrey Shornikov,
Head of International Business Development Department at Izolyator

Breaking New Ground



Management representatives of Mehru at the test center of Izolyator plant, L-R: Dmitry Ivanov, Mr. Singh, Andrey Shornikov, Alexander Shornikov, Executive Director of Mehru Sandeep Prakash Sharma, Alexander Slavinsky, CFO at Mehru Mandeep Prakash Sharma, Ivan Panfilov and Dr. Ashok Singh

Management representatives of the Indian transformer equipment OEM – Mehru Electrical & Mechanical Engineers (P) Ltd. – visited Izolyator plant.

Mehru was represented by Executive Director Sandeep Prakash Sharma and Mandeep Prakash Sharma, CFO.

The sides mainly discussed cooperation results and further practical steps of cooperation development.

The partners paid a special attention to planning joint activities and partner interaction at the coming 47th CIGRE session.

At Izolyator corporate museum, the visitors had an introduction to the century-long history and modern accomplishments of the company.

The hosts arranged for a plant tour, where Mehru representatives got an introduction to modern production and testing technologies of high-voltage bushings with solid internal RIP and RIN insulation.

The head of Izolyator's test center Dmitry Ivanov demonstrated the equipment to the guests, telling about the testing process of finished products. The participants of the talks, having marked a dynamic and successful pace of interaction between the companies, confirmed a shared intention to take the cooperation to a whole new level.

Mehru Electrical & Mechanical Engineers (P) Ltd. makes measuring transformers for voltages up to 420 kV. The company is one of the leading suppliers of measuring transformers for numerous customers in India and far beyond: its products are exported to 30 countries. ■

Practical Steps for a Good Interaction

Representatives of the Chinese trading company Bushing HV Electric Co., Ltd visited Izolyator plant.

BHHV was represented by: Xie Zhengbin, Mr Zhian and Lev Fischler.

At the talks, the sides discussed production and delivery schedule of Izolyator HV bushings to power facilities of China.

The sides discussed all technical and commercial terms of the contract in detail, defined the contents and sequence of further

practical steps to fulfil all the obligations of the sides.

During the visit, the guests also saw Izolyator corporate museum, where they got an introduction to the century-long history and modern achievements of the company.

The meeting turned out to be an important event that enriched the cooperation experience of the two companies in realization of large-scale projects and international cooperation development. ■



BHHV representative Xie Zhengbin at the talks at Izolyator plant

500 high-voltage bushings will be delivered to power facilities of India

800 kV maximum voltage of high-voltage bushings delivered to the Indian Power Grid



Participants of the talks at PowerGrid, 2nd on L – Dmitry Orekhov, next – Mr. Richik and Ashok Singh

Opportunities on the Indian Market

Several visits of Izolyator representatives to Indian power grid and electrical engineering companies were made. The meetings and talks went in such companies as Power Grid Corporation of India Limited, IMP Powers Ltd., CG Power and Industrial Solutions Limited, EMCO Limited, GE T&D India Ltd, Toshiba Transmission and Distribution Systems (India) Pvt. Ltd., Transmission Corporation of Telangana Limited. Ashok Singh contributed in all meetings.

Common Plans

There was a productive meeting at the Indian state power grid company Power Grid Corporation of India Limited.

Managing Director Jawaid Akhtar, Mr Richik, Deputy Managing Director S.R. Ravi, Superintending Engineer D. J. Divakara, Executive engineer H. R. Prakash, General Manager/C&S-Power Grid of India Sujana Singh received Izolyator representatives.

At the talks, the two companies, elaborated plans in all directions of joint activities in all directions of cooperation. Organization of

interaction at the coming 47th CIGRE session received much attention, too.

To share experience

Izolyator plant representative gave an open workshop for technical specialists of transformer equipment manufacturer IMP Powers Ltd.

The guests were received by Head Operation M. P. Singh, VP Design P. K. Mishra, Assistant General Manager – Procurement Sudhir Singh.

The workshop opened with a presentation about Izolyator and its products, followed by an open dialogue about the advantages of application and specifics of operation of high-voltage bushings with solid internal RIP insulation.

The sides also had talks concerning prospects and technical capabilities of equipping IMP Powers Ltd transformers with Izolyator bushings.

Practical steps

Izolyator had talks at the transformer plant of CG Power and Industrial Solutions Limited

in Mumbai. The guests were received by Deputy General Manager – Supply Pravin Dongarwar, Manager Purchase Mukesh Mahajan, Executive international marketing Mr. Omkar, Finance department Mr. Anil.

At the talks, the sides discussed progress of ongoing projects, agreed on practical steps of efficient coordination in pursuit of technical and commercial objectives.

They also spared much time planning further development of cooperation between the companies.

A Set of Measure for Development

A Set of Measure for Development

There was successful business meeting at the transformer plant EMCO Limited. Vice-President Transformers N. Yadav represented the receiving side.

The meeting was dedicated to coordination of works in the joint projects so that to optimize common effort and effectively move forward towards creating modern and highly demanded power equipment.

The sides agreed on further interaction and discussed a comprehensive set of measures of cooperation development in the near and distant future.

Technical issues

Izolyator also visited electrical engineering company GE T&D India Ltd. At the talks, the sides considered promising areas of mutually beneficial and long-term cooperation of the two companies.

They discussed technical and commercial aspects of future projects, taking into account prevailing power equipment market trends.

Besides, Izolyator representative visited the transformer plant Toshiba Transmission & Distribution Systems (India) Pvt. Ltd.

The guest was received by Deputy General Manager – Procurement Atmaram Shinde.

The meeting was mainly concentrated around the companies' participation in future common projects and efficient interaction in the process.

The sides discussed issues of coordinated and efficient utilization of technological and production potentials of both companies for bidding to power equipment buyers. ■



«Our company is rightfully proud of skill to combine the best practice from experience and modern innovative technologies»

Yaroslav Sedov,
International Business Development Manager at Izolyator

Open Dialogue – Way to Perfecting



At the test center of Izolyator plant, L-R: Dmitry Vavilov, Director of Diagnostics Dpt at VUJE Jozef Kovacik, Alexander Znamenskiy, Yaroslav Sedov, Senior Consultant at VUJE Karol Cesnek and Director of Maintenance at VUJE Robert Cesnek

Management representatives of VUJE a.s., Slovakia based EPC contractor, visit-

ed Izolyator plant. VUJE was represented by Jozef Kovacik, Director, Diagnostics,

Robert Cesnek, Director, Maintenance and Karol Cesnek, Senior Consultant.

The business meeting began with an overview of Izolyator corporate profile and the company products, its production capabilities, Russian and international cooperation experience as well as practical results of common activities with domestic and foreign transformer equipment OEMs and utility companies.

Later on, the sides had talks to discuss prospects and further steps to develop cooperation between VUJE and Izolyator, taking into account existing trends and forecasted volumes of the power equipment market in Slovakia.

Deputy Chief Designer at Izolyator Pavel Kiryukhin familiarized the visitors with the monitoring systems, used to control HV bushings' condition in operation, and with the technical features and advantages of RIP bushings.

At the museum of Izolyator, the visitors familiarized themselves with the century-long history and present-day accomplishments of the company. Traditionally, the staff members of Izolyator's international business development department gave a plant tour for the guests, demonstrating all the stages of production cycle: from quality control of materials and components till the moment of packing the tested products at the finished goods warehouse.

Head of Test Center Dmitry Ivanov demonstrated the equipment of the center and introduced the visitors to the techniques and range of parameters of electrical tests depending on the test objectives. ■

Answering Topical Questions

Izolyator plant gave a workshop for the technical specialists of the Slovak engineering company VUJE.

The workshop went in the atmosphere of open exchange on all raise topic in the form of an open dialogue. Jozef Kovacik, Director of Diagnostics Department at VUJE addressed the seminar participants with a welcome speech. Maintenance Director Robert Cesnek also joined the meeting. ■



Participants of Izolyator's seminar at VUJE a.s.

110 kV

rated voltage of Izolyator HV bushings, shipped in the third quarter to Belgium, Poland, Serbia and Turkey

60

specialists of electrical engineering companies took part in technical workshops of Izolyator

Presentation of Capabilities

Izolyator representatives visited the Slovenian transformer plant Kolektor Etra d.o.o.

Yaroslav Sedov, Head of International Business Development and Alexander Znamenskiy, International Business Development Specialist represented Izolyator.

Senior Purchasing Manager Miha Trczsan received the guests.

At the meeting, Izolyator made a presentation of its production capabilities.

The sides discussed the advantages of application of Izolyator HV bushings with solid RIP insulation and further steps to develop cooperation between the two companies.

At the end of the visit, the sides expressed satisfaction with the results of the meeting and intention to strengthen and develop business ties.

We appreciate Kolektor Etra d.o.o. for an invitation and a productive dialogue! ■



Alexander Znamenskiy (L) and Senior Purchasing Manager of Kolektor Etra d.o.o. Miha Trczsan



Mazandaran Regional Electric and Iran Transfo Co. representatives at the assembly shop of Izolyator plant

Century-Old History and Innovation

Representatives of the Iranian regional energy company Mazandaran Regional Electric Company and electrical engineering company Iran Transfo Co. visited Izolyator plant. Mazandaran Regional Electric Company was represented by: Executive Manager Sakhaei Seyedeisa, Engineer Yazdani Mohammad, Transmission

Affair Manager Shaheri Abolfazl, Electrical Engineer Mehralitabarfirouzjaei Moslem, Electrical Engineer Enayatikaliji Mohammadtaghi. Iran Transfo Co. was represented by Project Manager Ahmadi Amirhossein.

At the talks, the sides actively discussed cooperation prospects. ■

Business Tour in Iran

In September 2018, Izolyator plant representatives visited Iranian energy and electrical engineering companies.

Izolyator was represented by International Business Development Manager Alexander Znamenskiy and Lead Technical Support Specialist Victor Kiryukhin.

Our colleagues had multiple business meetings and talk, where they discussed prospects and possible areas of a mutually beneficial cooperation.

The business tour resulted in setting up business contacts and arrangements on development of joint activities. ■



Participants of one of the meetings in Iran

26 | Synergy of Efficient Cooperation



◀ Participants of talks at CG.
L-R: Ashok Singh, Purchasing manager
Mukesh Muhajan, Deputy General
Manager Supply Pravin Dongarwar,
R – Dmitriy Orekhov

▼ Participants of Izolyator's seminar
at IMP Powers Ltd.



◀ Meeting participants
at EMCO Limited.
L-R: Dmitriy Orekhov,
Ashok Singh and Vice
President Transformer
EMCO Limited N.Yadav



▼ Talks participants at Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. L-R: Deputy General
Manager Purchasing TTDI Atmaram Shinde, Dmitriy Orekhov, 2nd on R – Ashok Singh



▲ Management representatives of Mehru at the assembly shop
of Izolyator



▼ Audience of Izolyator's workshop at the Ministry of Energy of Iran (TAVANIR)



▲ Visit to transformer plant of Iran Transfo Corp.

▶ Business meetings in Iran, on L - General Manager, Power Transmission Bureau of the Ministry of Energy of Iran Dr. Hashem Alipour



◀ Participants of the visit to the company transformer maintenance company, part of Iran Trasfo Corp.

SALES GEOGRAPHY OF IZOLYATOR BUSHINGS



-  Kentau transformer plant
-  Togliatti Transformer
-  Vitebskenergo
-  GC Dnestrenergo
-  ZREW Transformatory

-  Balikesir Elektromekanik Sanayi Tesisleri A. S
-  Power machines - Toshiba. High-voltage transformers
-  Grodnoenergo
-  SVEL Group
-  TBEA Co., Ltd.

-  CG Power and Industrial Solutions Limited
-  Siemens AG
-  Zaporozhtransformer
-  Fortum
-  Uraleletrotiyazhmash

Arabian Sea

IN THE THIRD QUARTER OF 2018

14 COUNTRIES

-  Azerbaijan
-  Belarus
-  Belgium
-  India
-  Kazakhstan
-  Kyrgyzstan
-  China
-  Moldova
-  Poland
-  Russia
-  Serbia
-  Turkey
-  Uzbekistan
-  Ukraine

RUSSIA

CHINA

INDIA



Changji



National Power Grid of Kyrgyzstan



VNIIR Hydroelectroautomatica



Osteron



Electricgeneration INTER RAO



Gomelenergo



Chirchiq transformer plant



Moscow united power grid company



Hydrorepair-VKK



ATEF Group



Unipro



Production Enterprise Electroavod JSC



Federal Grid Company of Unified Energy System



Electroshield Samara



Energy Standard



Rosseti





«By growing our order portfolio and fulfilling our obligations, we shipped batches of bushings to the largest power facilities of the CIS countries»

Maxim Osipov,
Head of CIS Sales at Izolyator

First in Belarus 750 kV RIP Bushing

Reconstructions are a critical part of work with power equipment. As part of prep for 750 kV Belorusskaya SS reconstruction, an inspection of 330–750 kV bushings' readiness was made at Izolyator plant.

To inspect the bushings, a group of Belarusian specialists from engineering and electrical fitting companies arrived at the plant:

- staff member of the representative office of Slovenian engineering company Riko, d.o.o. in Belarus Maxim Knutovich,
- Supervision Superintendent at Electrocentrmontazh Plc Anatoly Avgustinovich,
- specialists of private manufacturing and trading unitary enterprise Montazhelectrotrade ChPTUP, electrical fitting foreman Maxim Zuev and production manager Sergey Kmito. Sergey Rusentsov, Commercial Direc-

tor of Alliancenergo Ltd participated in the inspection.

The inspection went according to the schedule: the group of inspectors received an opportunity to scrutinize any technological process of making and testing of high-voltage bushings, intended for the reconstruction of 750 kV Belarusian substation. All necessary technical information was provided upon first request.

As part of the Belarusian specialists' visit agenda, the guests were shown modern equipment and key stages of production and testing of high-voltage bushings with solid internal RIP and RIN insulation.

Izolyator specialists had an opportunity to contribute in a landmark happening – installation of the first 750 kV bushings with solid RIP insulation in Belarus. The bushing was installed in a shunt reactor RODC-1100000/750 U1,



Installation done. L-R: Dmitry Mashinistov, Lead Engineer at Riko representative office in Belarus Anatoly Tereschuk and Chief of 750 kV Belorusskaya SS Vyacheslav Maskalik

made by Electrozavod, at the 750 kV Belorusskaya SS.

Izolyator RIP bushing replaced the counterpart with oil-in-paper insulation, which was in operation before. ■

Workshop for Practitioners

Izolyator gave a workshop for technical specialists of Georgian State Electrosystem.

At the workshop, the speakers covered the following topics: advantages and design specifics of high-voltage bushings with solid internal RIP and RIN insulation, track record of operation and diagnostics of Izolyator bushings in a widest range of geographic and climate condition, new designs by Izolyator for ensuring given technical and operational characteristics of high-voltage insulating equipment.

The workshop went as an active and open dialogue and experience sharing. ■



Workshop participants, L-R: Substation Chief Davit Chkheidze, Konstantin Sipilkin, Head of Transformer Repair Service of GSE Nodar Gavasheli, Dmitry Mashinistov and Aetos Ltd's Director Tamaz Sharikadze

260 Izolyator high-voltage bushings shipped in the third quarter to power facilities of CIS countries

35-750 kV is range of voltage of Izolyator bushings, sent to energy companies in CIS



Participants of inspection of bushings for the needs of NPG Kyrgyzstan at the test center of Izolyator

As Planned

Izolyator received an inspection of tests of high-voltage bushings, made for the needs of the National Power Grid of Kyrgyzstan, which ended with success.

The group of NPG's inspectors included Head of Electrical Service at Talass enterprise of high-voltage electric networks, branch of NPG Kyrgyzstan Z.R. Mykyev, Lead Engineer of Operation and Maintenance K.T. Tilenbaev, Economist

of Purchasing and Logistics Dpt K.U. Abaskanov.

The tests went according the schedule and ended in success, proving the high reliability of Izolyator high-voltage bushings and their full conformity to the technical standards.

The inspection became yet one more practical step towards development of a fruitful cooperation between the National Power Grid of Kyrgyzstan and Izolyator. ■

An Outlook of Prospects

Izolyator representative Dmitry Karasev, CIS & Baltics Sales Manager represented Izolyator visited Asia Trafo transformer plant in Kazakhstan.

The guest was received by Technical Director of Alageum Electric dpt Bauyrzhan Khudaibergenov, Technical Director of Asia Trafo plant Omar Asanov, Procurement Manager of Asia Trafo Ascar Kobdikov.

The sides discussed the scope and volumes of deliveries of Izolyator HV bushings, planned for 2019.

At a plant tour, the guest familiarized himself with the most advanced equipment and technologies of power transformer equipment production.

Asia Trafo and Izolyator representatives put high expectations on cooperation prospects, expressing mutual interest and intention to actively develop beneficial business relations.



Procurement Manager at Asia Trafo plant Ascar Kobdikov (L) and Dmitry Karasev

We appreciate Asia Trafo for an invitation and a strive to cooperation development. ■

Productive Visit

Izolyator representative Lead CIS & Baltics Sales Manager Dmitry Karasev visited Kentau Transformer plant in Kazakhstan.

The guest was received by Technical Director Nurbol Tlemisov,

Procurement Manager Baiken Kalauov, Purchasing Specialist Maksat Kurmanaliev.

The meeting participants discussed results of joint activities in the past three quarters of 2018 and outlined delivery plans of Izolyator HV bushings in the fourth quarter. They also spoke about cooperation plans in 2019.

The guest saw the production facility where he familiarized himself with the manufacturing process of modern transformer equipment production.

The sides, having marked their successful cooperation in development and manufacture of reliable and highly demanded power equipment, expressed a common intention to keep developing business relations on a long-term basis. ■



Dmitry Karasev (L) and Purchasing Specialist at KTP Maksat Kurmanaliev

**Ivan Panfilov,
Commercial Director –
1st Deputy CEO
Izolyator**

A very professional team, modern equipment, the highest quality standards and decades of experience – that is the core of our ability to go an extra mile, winning and retaining trust with partners all over the world.



Strengthening partner relations with power grid and generating companies as well as transformer plants in Europe and Asia is a major objective that Izolyator is going for.

In the third quarter of 2018, we continued coordination with the power grid companies and power equipment OEMs in Belgium, China, France, Germany, India, Turkey, Vietnam and our long-term and reliable partners in Russia and the CIS countries. Setting up a productive dialogue

The stable quality, professionalism and the round technical support have won trust with clients. We value an opportunity to offer the best solutions to consumers both in Russia and abroad.

The highly professional, close-knit team of specialists uses all its efforts to retain and strengthen positions of Izolyator on the markets of power equipment in Russia and the world, dynamically grow sales and expands client base of our company.

Talking to the largest companies of the international energy market and especially – state energy corporations that are responsible for transmission and distribution of electricity, we have witnessed that Russia is the sole country in the world, where RIP bushings have already been used as a core product on power facilities and transmission and distribution power lines at present. With that said, RIP bushings have already operated in power systems for over 16 years.

«Success of our partners is the highest degree of recognition of our work!»

and cooperation development with Asian power grid companies and leading transformer and reactor equipment OEMs in that region are worth a special mention. We actively deliver our products to the key facilities of the Indian grid company Power Grid Corporation of India Limited and the state energy company Vietnam Electricity EVN.

The leading positions in development, manufacture and implementation of modern technologies in power industry place a great responsibility on our enterprise. We emphasize our readiness to openly share our unique experience with all our partners, following our mission – to create the foundations of a stable and sustainable power supply in the world.

Experience exchange in 2018 between Russian and foreign power grid companies and industrial manufacturers became a good foundation for further cooperation development between countries, a continued vector of development and direct support of exports promotion for Russian OEMs.

Thanks to established relations with such market leaders as Rosseti, including FGC UES, we have been able to accumulate a unique experience of mass application of high-voltage bushings with solid RIP insulation. With an active support from the Federal Grid Company, our dialogue with global energy corporation continues to develop.

Already now, the case study of innovative development of the power complex of Russia and activation of the international cooperation in the areas of implementation of innovative power equipment, including HV RIP bushings in power systems of various countries, as well as creation of a joint venture with Mehru on the territory of India to produce RIP bushings, became one of the visible results of all the meetings and talks that we had.

We appreciate our partners and consumers for cooperation and an active support and input in Izolyator's dialogue with international power grid corporations and integration of innovative products on the global electric energy market.



EXPORTS

TO OVER **COUNTRIES**
OF THE WORLD **30**

III QUARTER

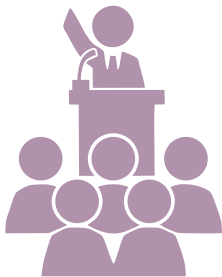
2018



> **340**
bushings
from 40.5 to 800 kV
shipped overseas



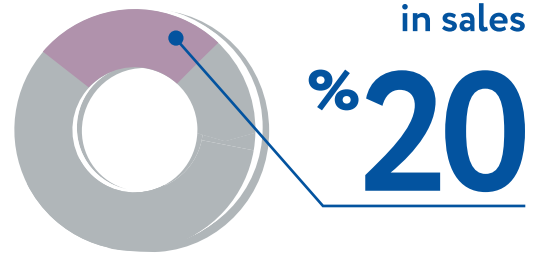
> **260**
bushings
from 35 to 750 kV
delivered to CIS
countries



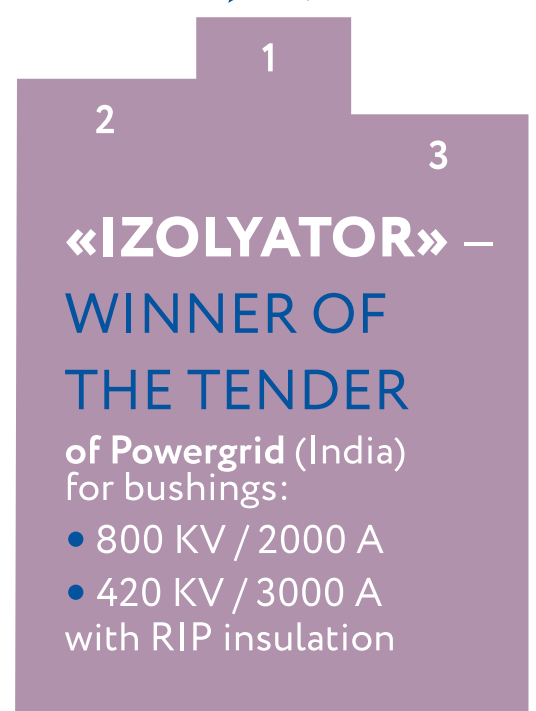
> **170**
specialists
of European
and Asian companies
visited Izolyator's
workshops

EXPORT SHARE

in sales



> **500**
bushings
will be sent
to India





« We are proud of the fact that our vision of development and a strive to excellence find recognition with our partners on all cooperation stages»

Maxim Zagrebin,
Head of OEM Sales at Izolyator

Using Best Practice



Participants of the meeting between SVEL Group and Izolyator, 2nd on R – Head of Sales at SVEL Group Elena Tishunova

Izolyator actively promotes an idea of having a personal, direct and open dialogue. Thus, Head of OEM Sales at Izolyator Maxim Zagrebin had talks at SVEL Group in Yekaterinburg.

At SVEL Group the guest was received by Chief Designer Boris Lesin, Chief Designer 500 kV Denis Guryev, Chief Designer 110–220 kV Alexey Rakov, Head of Purchasing Dpt Anastasia Kuznetsova, Head of Sales Elena Tishunova.

At the talks, the partners discussed progress of existing contracts and clarified volumes and term of expected deliveries of Izolyator high-voltage bushings.

The sides marked the successful and productive character of interaction between the companies and expressed intention to continue development of the mutually beneficial cooperation, based on the accumulated experience of common activities.

A new meeting took place already on the premises of Izolyator plant. In order to coordinate works on a joint project for Rosenergoatom Concern, Head of Sales at SVEL Group Elena Tishunova arrived at Izolyator plant for coordination of work under a joint project of Rosenergoatom Concern.

At the meeting, the sides exchanged interim results of the project realization, agreed the work schedule for the next stage and set up efficient forms of interaction when working on technical and organizational tasks.

The sides paid a special attention to adhering to special requirements of Rosenergoatom Concern to power equipment, intended for operation on nuclear power plants.

Meeting participants marked a high degree of accord in joint activities and confirmed readiness to stick to obligations during the project delivery.

The meeting made a strong contribution to the successful experience of cooperation between the companies within joint projects and ultimately – to the experience of creation of modern and reliable power equipment in full correspondence with customer requirements.

The visit of SVEL's Purchasing manager Danila Safin became another meeting at Izolyator. At the talks, the sides exchanged interim results, e.g. Danila Safin learned out about the details of production of 330 kV bushings for SVEL Group transformers.

The meeting resulted in an updated and agreed schedule of further coordination between the companies. ■



Maxim Zagrebin at Power Machines – Toshiba.
High-voltage Transformers plants by the first Russian-made phase-shifting transformer

Tapping Potential

Izolyator staff member paid a visit to Power Machines – Toshiba. High-voltage Transformers plant in Saint Petersburg.

At the plant, the guest was received by Director of Development and Corporate Affairs Konstantin Stafeev, Head of Purchasing Sergey Suvorin, Head of Sales Mikhail Melshin, Chief Designer Andrey Sidelnikov, Deputy Chief Designer Alexander Yuzhakov, Head of Strategy and Marketing Dpt Mikhail Petrov, Lead Design Engineer Alexander Smirnov.

At the talks, the partners discussed various aspects of

cooperation during realization of existing agreements and expected PMTT's demands in high-voltage bushings as well as Izolyator's potential in development and production of modern electrical equipment.

The sides will continue to develop a mutually beneficial and long-term cooperation on the basis of experience and practical results of joint activities.

We appreciate Power Machines – Toshiba. High-voltage Transformers plant for the invitation and an active cooperation. ■

Over
170 Izolyator high-voltage bushings shipped in the third quarter for transformer plants

500 kV is maximum voltage of Izolyator bushings, delivered to transformer plants

Answering in Detail

Izolyator plant representatives had talks with the management and gave a workshop for the technical specialists of Azerbaijanian electrotechnical ATEF Group of companies.

On behalf of ATEF Group, the guests were received by General Director Mustafa Gyunai, Deputy Chairman Nikolay Molodetsky, Plant Manager Large Transformer Plant ATEF Eldar Abbasov, HEad of Test Dpt Joshgun Malikov, Chief Engineer Vasif Salaev, Chief Assembly Shop Abas Abasov, Commercial Dpt Tural Nasyro, Process Engineer Subhan Jafarov, Assembly operator Aligusein Guseinov.

At the talks with the ATEF Group management representatives we discussed key aspects of joint activities and the strategy or relations development.

The workshop began with a presentation about Izolyator. It went in the form of an open dialogue and experience sharing.

During a tour of the palnt, the guests examined a 330 kV transforme that was made by ATEF Group for the first time. 330 kV Izolyator bushings are installed on it – the first bushings of that voltage class that were purchased by ATEF Group. ■



Participants of Izolyator's workshop at ATEF Group

Strategy and Planning



UETM's General Director Vladimir Kalaushchenko (L) and Maxim Zagrebin

In the third quarter, we had talks with management representatives of Uralelectrotyazhmash in Yekaterinburg.

At Uralelectrotyazhmash, the visitor was received by General Director Vladimir Kalaushchenko, Chief Designer Transformer and Reactor Equipment Alexey Borisenko, Head of Procurement Leonid Meshavkin, Lead Specialist Stanislav Zverev.

The sides had talks concerning the progress on current cooperation with discussion of various aspects of practical interaction between the companies. Besides, a lot of attention was given to the strategy and planning of further joint work, considering the forecasted UETM's demands in high-voltage bushings.

The partners appreciated the achieved results of cooperation highly and expressed intention to further develop business relations on the long-term basis.

We appreciate Uralelectrotyazhmash for their invitation and a productive cooperation. ■



«*Izolyator specialists are by right proud of their contribution to ensuring a fault-free operation of electrical equipment*»

Alexander Savinov,
Director of Strategic Sales at Izolyator

We Get Recommended



Alexander Savinov (L) and Chief Engineer at MES Siberia Alexander Terskov

Cooperation with the Federal Grid Company of the Unified Energy System draws a large share of Izolyator plant's specialists' activities. That makes it even

more pleasant to receive an FGC UES's Thank-you Letter for Izolyator plant for a timely and quality fulfilment of all obligations on delivery of equipment. The Federal Grid Company recommends Izolyator plant as a reliable partner in production and delivery of high-voltage bushings. In its turn, Izolyator would like to thank its partners for their trust and praise.

In the third quarter, we had several productive meetings with power engineers.

Thus, Director of Strategic Sales at Izolyator Alexander Savinov visited the head office of Main Power Systems of Ural in Ekaterinburg. The talks were dedicated to clarification of MES Ural's demands in high-voltage bushings till the end of 2018 and agreement of technical and commercial aspects of future deliveries.

Also, the partners discussed prospects and long-term plans of joint activities, involving a widest implementation of new insulating equipment on power facilities.

The sides, once again, confirmed intention to develop the longstanding successful cooperation.

At the meeting at the head office of the Main Power Systems of North-West in Saint Petersburg, the sides discussed the demands of MES North-West in high-voltage bushings till the end of the year, outlined plans of further interaction and discussed several other issues, related to cooperation. The sides marked the successful longstanding experience of cooperation, expressing intention to continue development of all-round business relations, based on common goals and mutual interest.

The visit to FGC UES's branch – Main Power Systems of East – allowed to familiarize MES East representatives with the advantages and specifics of construction design of Izolyator HV RIN bushings. The sides also covered topics of current coordination under existing agreements and prospects of further cooperation. The sides expressed satisfaction with the achieved results of cooperation and intention to continue developing business relations on a long-term basis.

At the talks at Main Power Systems of West Siberia, our colleague introduced Izolyator RIN bushings and entered a lengthy discussion about their technical, operational advantages and construction design features. Besides, he clarified about details and progress of current agreements performance and coordinated the common plans for the near future and long-term perspective. ■

Mutual Support of a Common Strategy

Representatives of the Territorial generating company No.11, led by Deputy General Director on Technical Policy and Investment, Technical Director Vladimir Soskov visited Izolyator plant.

At the meeting, the sides discussed prospects and key points of strategy of a mutually beneficial and long-term cooperation of the two companies. They agreed to explore the whole spectre of efficient forms of cooperation to successfully develop business and achieve common goals.

The hosts arranged for a plant tour, introducing the guest to the modern technologies of production and testing of high-voltage bushings with solid internal RIP and RIN insulation. ■



Alexander Slavinsky (L) and Deputy General Director on Technical Policy and Investment, Technical Director at TGC-11 Vladimir Soskov

24-750 kV

range of voltages of Izolyator bushings, sent in the third quarter to Russian power facilities

Stay on top of Trends

Izolyator representatives visited Sverdlovsk branch of T Plus Group in Yekaterinburg.

At the talks, the sides clarified and agreed the schedule of expected shipments of Izolyator high-voltage bushings to satisfy the demands of Sverdlovsk branch of T Plus Group till the end of the year.

Among other topic were cooperation plans in the future that take into account a steady trend of equipping power facilities with bushings that have a solid internal insulation.

Striking the balance, the sides expressed intention to further develop the mutually beneficial business relations. ■



Novo-Sverdlovsk TPP of Sverdlovsk branch of T Group (photo courtesy T Group)

The Lights of the Far East

In the third quarter, several visits were made to the companies, based in the Far East, with productive business meetings there.

We had a meeting at the Far-Eastern Generating Company.

The talks began with a presentation about the advantages and specifics of the construction design of Izolyator RIN HV bushings. Later, the sides discussed various aspects of interaction under the existing agreements as well as plans of future cooperation. The

sides intend to actively develop the mutually beneficial cooperation, based on the achieved results and common interests.

Ah the meetings at the branches Primorye Generation and Khabarovsk Generation of the Far-Eastern Generating Company, the talks were dedicated to the advantages and design specifics of Izolyator HV RIN bushings, assessment of results, which were achieved during interaction under the existing agreements. ■

Crimean Power Engineers Gave a High Praise to Izolyator Bushings

Director of Strategic Sales at Izolyator Alexander Savinov visited the state unitary enterprise of the Republic of Crimea Krymenergo.

The talks concentrated around the advantages and specifics of construction design of Izolyator HV RIN bushings. Also, the sides discussed the progress of current cooperation, discuss plans of its further development.

Representatives of both companies marked the good results of interaction and outlined plans of future work. ■

Interest to New Technologies

Izolyator paid a visit to Surgut SDPP-2.

At the talks, our colleague's presentation about high-voltage bushings with solid internal RIN insulation raised a keen professional interest. The team members of Surgut SDPP-2 praised highly the technical and operational features of those products, marking the innovative pitch of Izolyator's designs.

In conclusion, the sides marked the large mutual benefit of having a direct business communication and expressed intention to continue this practice in the future. ■



Surgut SDPP-2 (photo: Unipro)



110 kV Aeroport substation (photo courtesy SUE RC Krymenergo)



« We will carry on with our practice of having personal meetings with consumers of our products for discussion of issues, connected with deliveries of high-voltage bushings»

Oleg Bakulin,
Director of Partner Relations at Izolyator

Attracting Efficient Forms of Interaction



One of substations of Stavropolenergo (photo: Rosseti PJSC)

Director of Partner Relations at Izolyator Oleg Bakulin visited Stavropolenergo, branch of the Interregional Distribution Grid Company of North Caucasus.

The guest was received by Chief Engineer of Stavropolenergo – Pavel Zinchenko.

The sides discussed specifics of operation and new technical solutions in diagnostics of Izolyator HV bushings.

The visitor also made a presentation about bushings with internal RIN insulation: construction design and production technology, advantages as compared to other types of insulation, applicability on power facilities of Stavropolenergo.

The sides agreed to try new efficient forms of interaction to further develop cooperation.

Stavropolenergo ensures power supply via 0,4–10; 0,6–10; 35 and 110 kV networks on the territory of Stavropol region, ensures grid connection of consumers to distribution network, perform maintenance and diagnostics of electric networks and is engaged in construction and reconstruction of power lines, substations, distribution and switching devices. ■

Discussing Best Practice

In the third quarter, we had talks at Kabbalkenergo, branch of the Interregional distribution grid company of North Caucasus.

Izolyator representative was received by Chief Engineer of Kabbalkenergo Alibek Yaganov.

At the meeting, the sides analyzed performance of high-voltage bushings in Kabbalkenergo and our colleague offered new technical solutions of Izolyator to improve the quality of bushing diagnostics. The sides spent a lot of time, discussing the advantages of prospects of RIN bushings application on power facilities.

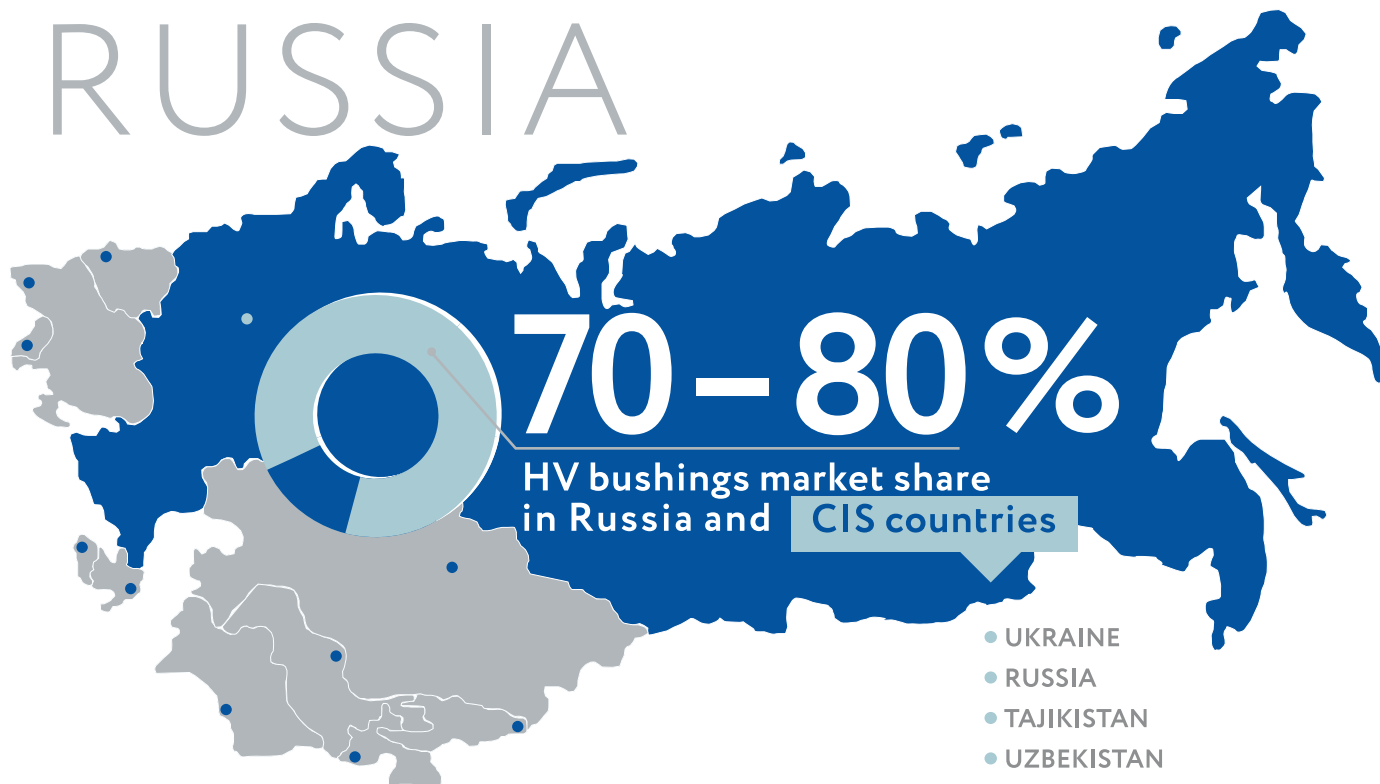
The sides expressed intention to actively develop all forms of cooperation on a long-term and mutually beneficial basis. ■



A Kabbalkenergo substation (photo courtesy RusCable media holding)

POWER INDUSTRY

RUSSIA



- UKRAINE
- RUSSIA
- TAJIKISTAN
- UZBEKISTAN
- AZERBAIJAN
- ARMENIA
- BELARUS
- KAZAKHSTAN
- TURKMENISTAN
- MOLDAVIA
- KYRGYZSTAN

III QUARTER 2018

> 800 

bushings from 24 to 750 kV
delivered for the
Unified Energy System
of Russia

> 170 

bushings up to 500 kV
delivered to transformer plants in
Russian Federation

> 70 

bushings from 24 to 220 kV
delivered for Moscow
united power grid
company

OUR

PARTNERS

70 
power systems
on the territory of

81 
Federal Districts of RF

40 | Coopreation with Leading Companies of Power Sector and Heavy Industry



Participants of talks between TGC-11 and Izolyator

Participants of plant tour of the large transformer plant of ATEF Group



Participants of talks at Uralelectrotyazhmash. L-R: Lead Specialist UETM Stanislav Zvered, Maxim Zagrebin and Chief Designer Transformer-Reactor Equipment at UETM Alexey Borisenko





Participants of talks between SVEL Group and Izolyator. Center – Purchasing Manager SVEL Group Danila Safin

Meeting of SVEL Group and Izolyator to coordinate joint activities



Izolyator's workshop at ATEF Group was a success



«*Discussing the power equipment market trends of the present moment with partners is one of the factors that helps to stay on top of the moment*»

Dmitry Abbakumov,
Deputy Commercial Director at Izolyator

Aware of Trends



Sales Manager of Wacker Chemie Rus Mikhail Spirin and Sales Director SER Jüergen Ismeier Wacker Chemie AG at the meeting table at Izolyator plant

Representatives of the German Wacker Chemie AG visited Izolyator plant.

Wacker Chemie AG was represented by Sales Director SER Jüergen Ismeier and Sales Manager of Wacker Chemie Rus Mikhail Spirin. SER Dpt (Southeast Region) operates in Eastern Europe, Africa and South America.

The talks opened with an overview of the latest trends on the market of silicone surface-active agents.

Then, the sides proceeded to a discussion of the status of scheduled deliveries of silicone oil and specified required quantities of that product in the near future and longer perspective.

The receiving side arranged for a plant tour, where the guests were demonstrated modern technologies of production and testing of high-voltage bushings with solid RIP and RIN insulation.

It is a shared opinion that the business meeting went productively, so the companies will continue to develop a successful cooperation on a mutually beneficial long-term basis.

Wacker Chemie AG is a multinational company, headquartered in Munich, Germany. Product portfolio ranges from silanes through silicone fluids, emulsions, elastomers, sealants and resins to pyrogenic silicas. ■

About Deliveries, Previous and Future Ones

Representative of hollow insulators manufacturer Reinhausen Power Composites GmbH Sales Manager Kinga Kastenberger visited Izolyator plant.

The sides had talks to discuss progress of deliveries of composite insulators under the existing agreement and clarified volumes and schedule of deliveries in the near future and long-term perspective. The sides highly praised results of cooperation and expressed intention to continue development of common activities on a long-term basis.

Maschinenfabrik Reinhausen GmbH (MR) is a leading company within the Reinhausen Group. For 30 years, MR has designed and manufactured insulation tubes from glassfiber reinforced epoxy resin. ■



EEU Sales Director of Reinhausen Power Composites GmbH Kinga Kastenberger at Izolyator plant

Over
70 reliable and
time-tested suppliers
of Izolyator

17 countries supply materials
and components for
production of Izolyator
bushings



Training on Functionality of the Web-portal of Cooperation of Industrial Companies of Moscow Region

Implementing New Formats



Dmitry Abbakumov at the training on functionality of the web-portal of cooperation of industrial companies of Moscow region

Izolyator took part in a training on the functionality of the web-portal of cooperation of industrial companies of the Moscow region.

The web-portal of cooperation of industrial companies of the Moscow region is a free-of-charge platform for interaction between the companies of the region.

The portal is an internet service for industrial companies to use information about manufacturers, their product range and source a supplier or a buyer in the region. The system would automatically select clients and supplier, based on the data, given by the corporate users.

Aside from interaction with partners, one can obtain fresh information and engage in correspondence with the municipality and the Ministry of Investment and Innovations of the Moscow region.

The training, organized by the Ministry of Investment and Innovation of the Moscow region, went at the Government House of the Moscow region.

Izolyator was represented by Deputy Commercial Director Dmitry Abbakumov at the training.

The training included an instruction of users about how to use the web resource.

The audience learned about specifics of interaction between industrial companies on the web-portal, methods of new partners' information search, advantages of having the company product range and member account at the resource as well as plans of further portal improvements.

The participants of the training shared their comments as to improving the portal's work and expansion of its functionality.

The training went successfully and marked an important stage in strengthening business ties between industrial companies of the Moscow region.

We appreciate the Ministry of Investment and Innovation of Moscow region for their invitation and a strong contribution to cooperation development between companies of the region. ■

Mutual Result Orientation

Representatives of Izolyator's supplier KME Germany GmbH & Co. KG. – Commercial Director (Special Products) of KME Engineering Copper Solutions Christof M. Dratner and KME Germany GmbH & Co. KG representative in EEC Andrey Vinogradov visited Izolyator plant. The sides established business contacts and made introductions.

At the talks, KME made a presentation about technological capabilities in manufacture of components of high-voltage bushings. In turn, Izolyator representatives outlined requirements to technical characteristics, range and delivery volumes of completing parts for bushings assembly.

The sides discussed possible directions and forms of efficient cooperation, based on mutual benefit and long-term business relations orientation.

As both sides admitted, the results of the talks open widest prospects for setting up and developing productive cooperation. ■



Business meeting with KME representatives at Izolyator plant



«*In order to efficiently implement our training program in company management disciplines, we attracted both company management and professional trainers*»

Julia Tyurina,
Head of Human Resources and Social Affairs Department at Izolyator

Best Manufacturers of Moscow Region



Mikhail Markin is receiving congratulations from Sergey Moisseev, General Director of Izolyator

The best employees and teams, working at industrial companies, were awarded during the Manufacturer's Day in Moscow region at the Government House.

Denis Butsaev, Minister of Investment and Innovations of the Moscow region handed the awards.

Mikhail Ivanovich Markin, metalworker at zolyator plant was awarded a Letter of Recognition from the Moscow region Governor Andrey Vorobyov for professionalism and large contribution to development of the industrial complex of Moscow region.

Mikhail Markin has worked for over 39 years at Izolyator plant! His high professionalism, complete dedication and devotion to occupation let him win respect among his colleagues and make a contribution to the development of production of modern domestic electrical equipment.

Among key topics of the business part of the forum were priority objectives for training staff for manufacturing companies of the Moscow region, state support measures for exports promotion and quality issues of exported products.

We wish to thank the Government of Moscow region for a high appreciation of Izolyator activities in development of the scientific and industrial complex of the Moscow region. ■

Open Dialogue With Voters

A meeting with the proxy of the candidate in the Moscow region Governor election took place at Izolyator plant. The proxy of the current Governor of the Moscow region Andrey Vorobyov is Chairman of the Board of Directors at Izolyator Alexander Slavinsky.

Alexander Slavinsky gave an account of key results of Andrey Vorobyov's activities in the post and his plans on further development of social, economic and other areas of the region's life for the audience.

An honest and constructive discussion with voters took place, taking shape as voters' mandate for the candidate's electoral program. ■



Izolyator staff members are meeting with Alexander Slavinsky - proxy of Moscow Governor's Office candidate in the Moscow region Governor elections

247

Izolyator staff members passed training in first aid administration

Over 40

employees raised their qualification under the company management training program in the third quarter 2018



An exam taken under the professional training program at Izolyator

Exams are Passed

Exams to check the staff members' knowledge of current legislation and general accounting principles of Russian Federation were held at Izolyator plant as part of the corporate training program in company management in 2017–2018.

These areas of legislation were selected for the exam: labor code, corporate law, civil law and supply contract as well as goals

and objectives of accounting procedures, fixed assets, inventory, finished goods, settlements with accountable persons, accounting statements, taxation in Russian Federation.

Management, specialists and employees of the company demonstrated solid and sufficient knowledge of the subject, earning good marks from the examination board. ■

To the Rescue

Izolyator staff member's were trained first aid and got practical skills in treatment.

The course of theoretic and practical parts was given by the medical officer of Izolyator plant Tatyana Panyukova.

The plant's team members had a good drill of the first aid procedure. They learned about how to check the patient's condition and observe an injury, administer first aid in cases of trauma, wound and bleedings and got an introduction to the reanima- tion techniques. ■



Training of Izolyator plant's staff members how to administer first aid

Theory and Practice for MPEI Bachelors



The board is announcing results of defense, PEMC dpt

Izolyator hosted visiting defense of graduate theses of BA students, finishing Physics and Electrical materials and components department of the National Research University MPEI.

The exam went with support from Study Committee D1 and Youth section of the Russian National Committee of CIGRE (RNC CIGRE).

Eight theses were presented:

- Mikhail Volkov «Internal insulation of high-voltage bushings»,
- Anastasia Morozova «Development and production of special optical fibers»,
- Artem Myasnikov «Modern polymer coatings, used in production of optical fiber»,
- Stanislav Nikitin «Dielectric spectroscopy method in assessment of high-voltage bushings condition»,
- Ilya Rozanov «Development of a manufacturing technology of heating cables for household electrical heating systems»,
- Artem Semenov «Resistibility to climate factors of optical cables with halogen-free polymer compound coatings»,
- Alexey Sidorov «Manufacturing and maintenance technology of electrical machines insulation»,
- Svetlana Shapran «Design of heating cables for household heating systems».

The Board highly praised professional qualifications of BA graduates of department. ■

46 | Visiting Defense of Graduation Theses of MPEI Bachelor Students



◀ Before the start of the visiting defense of graduation theses of BA students at Izolyator plant

▼ Alexander Slavinsky and Deputy Chief of Bely Rast Staff FGC UES PJSC's specialized Training Center and Head of Organizing committee of RNC CIGRE Youth section Andrey Gofman are discussing the theses of BA graduates of PEMC department



◀ Five minutes to BA

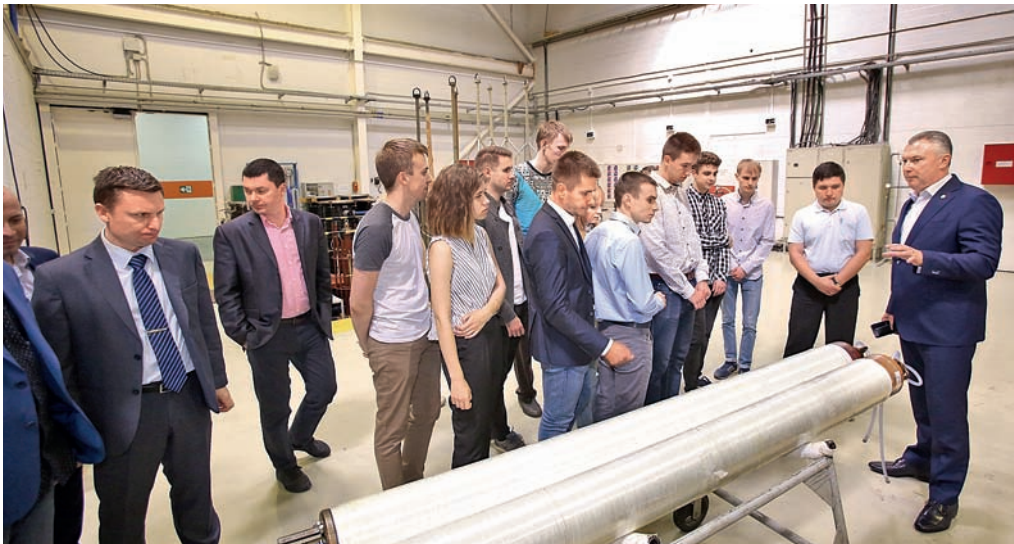


▼ Summarizing results of graduation theses defense



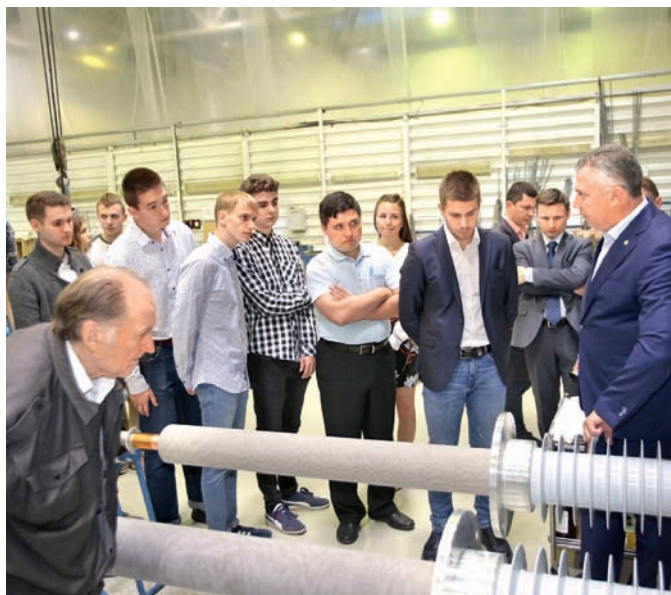
▲ Prof.Sergey Serebrennikov, PhD, Head of PEMC department is giving an appraisal to the works of students





▶ Alexander Slavinsky is giving a plant tour of Izolyator for the MPEI bachelors

▶ All the participants of the graduation theses defense at the test center of Izolyator plant



▶ Going into details with the design of a modern high-voltage bushing

▶ Visit to assembly shop of Izolyator plant





«Raising awareness of Izolyator brand and the company products is a key promotion activity on the power equipment market»

Nikolay Borichev,
Marketing and PR Director at Izolyator

Interview for Energy of Unified Grid Magazine



Alexander Slavinsky is familiarizing the reporters of the Energy of Unified Grid Magazine with the history of Izolyator plant

Reporters of Russian magazine Energy of Unified Grid visited Izolyator plant.

In the course of the plant tour, which was given by Chairman of the Board of Directors of Izolyator Alexander Slavinsky, the reporters received an introduction to the production process and advanced technologies of high-voltage bushings making as well as key achievements and stages of development of the plant.

At the meeting with the reporters, Mr. Slavinsky spoke about the outcomes of the work of Izolyator's delegation and representatives of the study committee D1 of Russian National Committee of CIGRE at the 47th CIGRE session that went on 26–31 August 2018 in Paris.

Having an open dialogue with sectoral, regional and international mass media help Izolyator to dramatically expand the information field around the company activities and promote innovative Russian designs.

An extensive coverage of the interview with Chairman of the Board of Directors of Izolyator Alexander Slavinsky was printed in the September issues of Energy of Unified Grid Magazine. ■

In the Spotlight

A shooting crew of Vector of Development TV program of the Television of the National Research University of the Moscow Institute of Electronic Technology visited Izolyator plant.

MIET TV is a division of the media center of the National Research University Moscow Institute of Electronic Technology. MIET TV has worked for over 10 years with more than 20 staff members working on production of TV programs and videos.

Programs of various targeting are broadcast via the television network of MIET and the internet, including Vector of Development television program, which is a joint project of the university and MIET TV alumni association. The show tells about career paths of MIET graduates, their achievements and professional activities.

The coming program release will be dedicated to the story of MIET graduate Chairman of the Board of Directors of Izolyator Alexander Slavinsky.

In 1985, Mr. Slavinsky graduated the evening department of the physico-technical department of the Moscow Institute of Electronic Technology without discontinuing

work and received qualification of physics engineer.

Alexander Slavinsky acquainted the TV show host Anastasia Denisova with the key achievements and milestones of the company development, gave a plant tour and

answered questions about the role that his alma mater played in his life.

The complete interview with Chairman of the Board of Directors of Izolyator Alexander Slavinsky will be shown in the nearest Vector of Development show on MIET TV. ■



Alexander Slavinsky is giving an interview to MIET TV show host Anastasia Denisova

3,8 thnd

views is the current result of our technical video about installation of Izolyator transformer bushings on YouTube

Over 520

people have subscribed to Izolyator's Facebook account

Open Workshop in Turkey in Video Mode

In July 2018, using the footage of the open workshop for the management and specialists of technical divisions of the Turkish state power grid company Türkiye Elektrik İletim A.Ş., Izolyator plant created a video, which was uploaded on the company's webpage mosizolyator.ru and YouTube channel.

The seminar on experience sharing in power industry and application of high-voltage bushings with solid RIP insulation gathered more than 35 attendees, representing different TEİAŞ divisions, in Ankara.

The event went in the atmosphere of live interest and high activity of the audience. Izolyator representatives gave exhaustive answers to numerous questions on the topics of the event.



A frame of the video about Izolyator's open workshop in Turkey

Izolyator will carry on with its practice of arranging open seminars to exchange ex-

perience on advantages of HV RIP bushings application and maintenance. ■

Watch and Learn



A frame from video about Izolyator products

Izolyator released a new video "Products of Izolyator plant" for partners and customers.

The video gives detailed information about Izolyator plant products, their design and technical features.

The video is available for viewing on Izolyator channel on YouTube and at Video section of our corporate webpage.

High-voltage bushings are an important link between an electrical transmission line and other electric equipment. For an uninterrupted and quality operation, bushings are created to meet design features of such equipment as transformers, shunt reactors, oil circuit-breakers, gas-insulated switchgear.

Today, Izolyator is a high-tech enterprise, equipped to the latest technologies, capable of designing, manufacturing and testing alternating and direct current bushings for 20–1150 kV rated voltage. The production output of the company approaches to 12 000 high-voltage bushings annually. The company constantly expands high-voltage bushings range by introducing brand new designs and modernizing existing products.

Videos on different company activities are uploaded to the official company page www.mosizolyator.com in Company Videos section and the office channel on YouTube: www.youtube.com/user/TheMosizolyator. ■

50 | Another success of Izolyator's futsal team



◀ Izolyator plant's team – winner of the third-place prize of the first league of Nakhabino street football, Moscow regions

▼ Izolyator football players are putting through a winning combination

The team of Izolyator plant received award, having made it into prizes of the Nakhabino Street Football Cup, Moscow region.

The annual Nakhabino Street Football Championship among the residents of Nakhabino residential area of the Moscow region is organized by the team of Nakhabinonasporte Internet portal with support from the telecom company Nakhabino.ru. The Tournament has two leagues: premier league and the first league. The premier league has 10 teams that took the top 10 positions by the previous year's results. The rest of the teams are seeded in the first league.

In the results of the championship that took place in 16 May – 23 August Izolyator team took the third place in the first league and took part in the award ceremony.

Thus, our team has significantly improved its standing as compared to the championships of 2016 and 2017.



▲ Izolyator team attacking

▼ The teams are ready for the second half



We would like to congratulate Izolyator team members with their prize and wish them every success in future competitions!

An Experienced Trainer Works With Izolyator Volleyball Team

▶ AVL volleyball school trainer Sergey Novikov is giving a drill of elements of the game to Izolyator plant's volleyball players



The volleyball team of Izolyator plant began to practice under the guidance of a trainer from the Volleyball school of the Amateur Volleyball League.

The new approach to developing Izolyator's volleyball team targets a whole new level of the game with a strong coordination in the team and purposefulness, flexible tactics and using all the moves from the arsenal of modern volleyball, a high individual mastery and many other components required for bright future sporting wins.

Sergey Novikov – AVL Volleyball schools's trainer, mater of sports, Bronze medalist of Russia Championship, World Champion among volleyball veterans.

▶ Drilling perfect serves and reception



▶ Sergey Novikov is giving a summary of the exercise



◀ Success sums up with elements, drilled to perfection



OUR PARTNERS

We appreciate all our partners



Inter RAO Group is a diversified energy holding, managing assets in Russia and European and CIS countries. The group's activities include production of electric and thermal power, wholesales of energy, international trading, engineering, export of power equipment, management of distribution networks outside Russia.



«Alageum Electric» is the largest electrical holding company in Kazakhstan, which includes more than 30 large enterprises and factories, successfully operating in the electric energy sector, electrical engineering and construction. The products of Alageum Electric meet Kazakhstan's and international quality standards and are exported to the CIS and Middle East countries.



Balikesir Elektromekanik Sanayi Tesisleri A. S. (BEST) is a manufacturer of high-quality and reliable distribution and power transformers. BEST is the largest national manufacturer in Turkey, which enjoys reputation of a reliable supplier to more than 50 countries.



Bushing HV Electric Co., Ltd. (BHHV) is a Chinese power equipment trading company. The joint activities of BHHV and Izolyator are carried out on the basis of the strategic cooperation agreement, signed on 28 September 2017.



CG Power and Industrial Solutions Limited (CG), earlier known as Crompton Greaves Limited, has received its new name on 27 February 2017. CG is an engineering conglomerate with a 2 bln USD turnover and a wide range of products, solutions and services for the power industry. It is a part of Avantha Group.



International Council on Large Electric Systems (Conseil International des Grands Réseaux Électriques – CIGRE) is the largest international non-profit Association in power industry. It is one of the most authoritative and significant international scientific and technical associations.



Founded in 1964, EMCO Limited is one of India's leading products and solutions providers up to 765 kV/ ± 800 kV for power generation, transmission, distribution utilities and industry. The products and technical solutions of EMCO Limited meet requirements of national and international standards IS, IEC, ANSI and are sold in more than 50 countries of the world.



The state power company of Vietnam EVN National Power Transmission Corporation (EVN NPT) was founded in 2008 as result of reorganization of activities of four transmission companies: Power Transmission Company No. 1, 2, 3, 4 and three power project management offices – Northern, Central and Southern.



GE T&D India Ltd makes equipment for power transmission on large distances, such as: switchgear for substations with air or SF6 insulation, circuit breakers, power transformers and measuring transformers.



IMP Powers Ltd., a flagship company of the \$120 Million IMP-Mangalam group, is a name to be reckoned with in the manufacturing of transformers and reactors up 315 MVA and up to 400 kV. This is one of the leading transformer companies of India in the equipment segment 132/220 kV with a park of over 35 000 transformers all over the world.



KME Germany GnbH & Co. KG is a European industrial concern that makes and sells semis and finished products from brass and brass alloys with leading position in the world. KME is a global company with a developed network of representations on five continents.



Kolektor Etra d.o.o. is a manufacturer of power transformers and generators up to 500 MVA and up to 420 kV. The plant has a modern laboratory to test transformers, equipped with sensitive measurement instrumentation, allowing for making accurate measurements and provide reliable results.



Mehru Electrical & Mechanical Engineers (P) Ltd. makes measuring transformers up to 420 kV. The company is a leading supplier of measuring transformers for numerous customers both inside India and the rest of the world: the products of the company are exported to 30 countries.



Maschinenfabrik Reinhausen GmbH (MR) is a leading company within the Reinhausen Group. For 30 years, MR has designed and manufactured insulation tubes from glassfiber reinforced epoxy resin. Since 2009, these insulators are made by Reinhausen Power composites GmbH, a 100% subsidiary of MR.



Power Grid Corporation of India Limited (PowerGrid) is an India-based state power grid operator engaged in construction, operation and maintenance of inter-state transmission system. This is one of the largest companies for electric power transmission in the world. The company is largely specialized in construction and operation of electric networks in India.



TBEA Co., Ltd., based on the advanced experience of power facilities construction in China, offers ecological, intellectual, reliable and highly efficient power equipment in more than 70 countries and regions of the world.



The Transmission Corporation of Telangana Limited (TSTRANSCO) was founded in the result of India's power industry reform. In 2014, APTRANSCO was divided into regional grid companies TSTRANSCO and APTRANSCO.



Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. (TTDI) is a transformer manufacturer since establishment in 2013. Toshiba Transmission & Distribution Systems group of companies is a global leader in delivery of integrated solutions for transmission and distribution of electric power.



VUJE a.s. is an engineering company, which is engaged in project, contractor, sales, research and training activities mainly in nuclear and traditional power industry. All the projects are done for the customers on turn-key basis, i.e. a project is fulfilled from design documentation to completing complex testing.



Wacker Chemie AG is multinational chemical company, headquartered in Munich, Germany. Its division Wacker Silicones is among the world's biggest manufacturers of silanes through silicones. Wacker Silicones supplies components of organosilicon compound to Izolyator for high-voltage bushings' polymer external insulation making.



ZREW Transformatory is based in Lodz, Poland. The company has worked on the market of transformers for over 60 years. It manufactures, maintains, modernizes and runs diagnostics of oil power transformers.



The state production association of electric energy Belenergo (SPA Belenergo) organizes secure, reliable, economically efficient operation and innovative development of production, distribution and sales of electric and thermal energy.



VNIIR Hydroelectroautomation JSC offers its customers a complete services range in design, configuration, supply, installation, commissioning and putting into operation of power facilities. The enterprise operates as a full cycle engineering company.



JSC Georgian State Electrosystem (GSE) is a power grid system operator, rendering services in electric power transmission and exclusive dispatch services all over the country. It also controls the power lines of interstate transmission, which connect the country with its neighbours: Russia, Turkey, Armenia and Azerbaijan.



ATEF Group is specialized in the manufacture of high-quality electrical equipment and turnkey services of substation installation for industrial, utility, transportation and energy sector customers. The technologies that ATEF Group created are exported to 35 countries of the world.



SverdlovElectro Group (SVEL Group) is a leading power equipment manufacturer in Russia. The company boasts one of the impressive growth modernization rates in the industry. Cooperation of SVEL Group with the key Russian companies allows for an efficient contribution to the Government program of import substitution.



State Unitary Enterprise GC Dniestrenergo (SUE GC Dniestrenergo) services 35–330 kV substations and power lines and effects the central dispatch control function over the energy system of Transdniestr Moldavian Republic.



Zaporozhtransformator (ZTR) is the largest in CIS and Europe company to manufacture oil power transformers and electric reactors with production capacity 60 thnd MVA per year, concentrated on a single manufacturing site. ZTR trademark is well-known for an exceptional operational reliability of equipment.



The state unitary enterprise of the Republic of Crimea Krymenergo (SUEP RC Krymenergo) is the largest power company of the Crimea that was created to ensure stability of the power grid operation and energy security in the region. The service area of SUE RC Krymenergo is the whole territory of the Crimean peninsula.



National Power Grid of Kyrgyzstan (NGP Kyrgyzstan) is an energy company, which transport electric power, produced by power plants via high-voltage power lines across the entire Kyrgyzstan to distribution companies and large industrial consumers.



The Public listed company Rossiiskie Seti (Rosseti PJSC) is a power networks operator in Russia, one of the biggest power grids in the world. The company manages 2.3 mln km of power networks, 490 thnd substations with transformer capacity exceeding 761 GVA.



The Public Listed Company Federal Hydrogenerating Company – RusHydro Group – is one of the largest Russian energy holdings. RusHydro is a leader in electric power production from renewable sources of energy, which develops generation on the basis of energy of water streams, sea tides, wind and geothermal energy.



Unipro PJSC (E.ON Russia JSC until June 2016) is the most efficient company of the thermal power generation sector in the Russian Federation. Unipro PJSC consists of five heat power plants. Company's core operations comprise electric power and capacity generation and sales.



Sverdlovsk branch of T Plus Group comprises generating and thermal assets in seven cities of Sverdlovsk region. There are six power plans (TPS, SDPP, HPP) within its structure and in operational control - Ekaterinburg heat supply company, Sverdlovsk heat supply company and Engineering and technical center of Sverdlovsk region.



Power Machines – Toshiba. High-voltage transformers Ltd is a joint venture of Power Machines JSC and Toshiba Corporation. The key product of the plant are power transformers and autotransformers in 110–750 kV range with capacity exceeding 25 MVA, including three-phase execution.



SuperOx was established in 2006 by investor Andrey Vavilov for development of production technology of high-temperature superconductive second generation wires. The company has manufacturing branches in Russia and Japan.



Surgut SDPP-2 supplies electric power to the regions of West Siberia and Ural and is the largest producer of electricity in Russia and third by capacity thermal power plant in the world: total installed capacity of the power plant is 5657.1 MW. It is a branch of Unipro generating company.



Togliatti Transformer Limited is one of the largest designers and makers of electric engineering equipment in Russia and the CIS countries. As of today, the company's main business is highvoltage power transformers production.



JSC «Uralelectrotyazhmash» (UETM) is the biggest Russian developer and producer of electric power equipment for generation, transmission, distribution and consumption of energy. The company makes over 2000 items of products for 3000 customers in Russia and abroad.



Fortum JSC is a leading producer of thermal and electric energy in Ural and West Siberia. The company structure includes eight TPPs. Fortum is a part of Russia division of the Finnish state energy company Fortum corporation.



The Public listed company Federal Grid Company of the Unified energy system (FGC UES PJSC) is one of the largest public power grid companies in the world, tasked with operation and development of the Unified national (all-Russian) electric network. The company is listed as a systemic company in Russia.



Chirchiq Transformer Plant JSC was founded in 1942 and for over 70 years now, has worked in machinebuilding of Uzbekistan, producing transformers and packaged transformer substations. Today, it is a leading company of electrical engineering in the Republic of Uzbekistan.



Open Joint Stock Holding Company «Electrozavod» (OJSHC Elektrozavod) is the leading Russian and world-wide manufacturer of various transformer equipment being supplied for all industries including electric-power industry, metallurgy, machine building, transport, oil and gas complex, housing and utilities infrastructure.



Electroshield Samara is an advanced technology industrial company, boasting 70 years of history, and the largest domestic manufacturer 0,4–220 kV distribution equipment. This is one of the leading engineering companies comprising two design institutes, construction company, several manufacturing sites in Russia and the CIS and a well-developed regional offices network.



Energy Standard Ltd is a dynamically developing company that promotes products of the largest CIS plants on the Russian market, including products of Zaporozhtransformator. The company offers a wide range of equipment for oil, gas, chemical, ferrous and nonferrous metallurgy, rail transport and mining industries.

We appreciate our partners for any information about our companies' joint activities, which we will gladly print on the pages of the next issue of our corporate edition. We look forward to your news on this email address: n.borichev@mosizolyator.ru

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IZOLYATOR'S SALES TEAM WOULD LIKE TO EXPRESS ITS DEEP INTEREST AND READINESS FOR COOPERATION IN ANY FORM SUITABLE FOR YOU



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Do you lack information?

We will send all materials of your interest by e-mail or in hard copy on request.

Would you prefer multimedia?

Videos about Izolyator, its products and key activities are available on the corporate webpage and YouTube videohosting.



WE CREATE

A STABLE AND SUSTAINABLE SYSTEM OF
POWER SUPPLY



IZOLYATOR

PLANT IN
FOUNDED **1896**



**NEW MANUFACTURING FACILITY
IN PAVLOVSKAYA SLOBODA**

2007

launch of industrial facility
in Pavlovskaya Sloboda



special design office

300

highly qualified staff
members



advanced production technology

12 000

high-voltage bushings
a year



test center with the best
equipment

24 000

floor space



service center with an all-around
support