

IZOLYATOR

Established in 1896

THE IZOLYATOR GROUP

IMPULSE

FOR THE FUTURE

**THE INNOVATED
BRAND** p. 4

**BUSHING
NUMBER
600 000!**

In the anniversary year the high-voltage bushing number 600 000 was produced / p. 14

THE MIM JV IS PICKING UP PACE

The first shipment of products to the power market on India has been sent / p. 24

EXPANDING HORIZONS

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IZOLYATOR

The corporate edition of the Izolyator Group
Biennially

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Impulse for the future

The main principle of development is moving forward. The cornerstone principles of power industry are sustainability and reliability. Izolyator manages to combine these principles and take a leading position in the electrical industry. "The recipe is ingenious and simple at the same time," says Dr. Alexander Slavinsky, CEO of Zavod Izolyator LLC. — "We try to keep up with the times in all meaning — scientific, industrial, economic. Often, in order to meet the realities, it is necessary to foresee possible challenges in many respects, determine the direction of development in advance, and offer solutions at the stage of request formation. To implement any ideas and directions of development, you need to be ready to change yourself — structurally, organizationally, ideologically. Now we believe in the need to develop and we are ready to change in order to reposition and create a new brand with a century-old history and modern principles of operation."



Dr. Alexander Slavinsky,
CEO of Zavod Izolyator LLC,

Everything is rapidly changing in the electrical technology, and those companies that develop and offer options for applying innovative developments in practice and in real life can be called innovative, initiators and engines of progress.



Ivan Panfilov,
Commercial Director, Izolyator Group



Achievements that are based on the active work and experience of previous years are always the most valuable and form the basis for strong success in the future. We have changed dramatically, and we have a lot to change in order to make the best use of our experience, modern technologies, and market requirements.

Changes are inevitable

With more than a century of development, Izolyator has become the leader of the Russian electrical engineering market and is actively working for export. Now the plant's products are sold in more than thirty countries, and the innovative technologies introduced by the company are leading in the world market.

Over the past few years, Izolyator has grown to the level of an international multi-product group of companies providing a full range of services from development to maintenance of the supplied products. The company has reached a new quality level, at which it is prepared to offer



Development is possible only together with other market participants and in accordance with its needs.

not only high-quality service, a variety high-tech products and services, but a whole new lifestyle and a concept of renewed reality.

"Our ultimate goal is to fill the world with energy and light, sending a creative charge in various parts of the planet through high-quality, smart and promising solutions in the power industry," continues Alexander Slavinsky. — We create conditions for everyone to show their abilities, talents and skills on the basis of sustainable energy supply. We want not only to ensure a stable and reliable power supply, but to help each person to realize himself, one's creative potential, to make one's life more meaningful and comfortable.

"The leap into the future" and success in the international markets were the result of fundamental changes within the company. The structure of the enterprise has changed, the range of services provided has significantly expanded, and the product line has been renewed.

"We have changed: our structure has become more complex, our capabilities — wider, and goals and objectives — more global, — Ivan Panfilov, Commercial Director of Izolyator is telling. Today our mission is to do so that people all over the world have access to electricity — the main

energy resource, without which it is impossible to imagine human life."

The goals set by the company are tremendous so that they cannot be achieved alone. The management of Izolyator is confident that sooner or later the rest of the market participants will face the same tasks: now is the time not so much for progress and innovative technologies, but for a change in consciousness towards a universal interaction. "We understand that the growth of the company is impossible in conditions of isolation," continues Ivan Panfilov. — Development is possible only together with other market participants and in accordance with the market's needs. I am confident that all companies are perfectly and fully aware of the need for changes in their approach to business, to the organization of their own work, the formation of a dialogue with partners, customers, and consumers. Now we are positioning ourselves on the market in a completely new quality. We need partners to know that we are pursuing the same goals."

From the Arctic to the Equator

The Izolyator plant has been known since the 90s of the XIX century — then the first enterprise in the Russian Empire was founded to start making porcelain insulators. Even before the revolution, the enterprise achieved great success and recognition. Then the plant was modernized and entered the list of enterprises fulfilling the state order as part of the implementation of the famous GOELRO plan. In the 30s the specialization of the enterprise was finally determined — the production of high-voltage bushings. The main achievement was the mastering of the production of bushings of an ultra-high voltage class, in particular 1150 kilovolts, on the line that still operates in our country and connects Kazakhstan and Siberia.

For 125 years Izolyator has been creating bushings that are functioning properly in the most severe areas of the globe: from permafrost zones to deserts near the equator. In the last quarter of a century the accident rate of products does not exceed 0.1 %, many bushings have long outlived a warranty period of 25 years and still continue to operate smoothly. "We bear a high responsibility, because our products ensure the operation of power systems in various parts of the world. That is why we are constantly working to improve our solutions, focusing on world experience and creating our own unique developments," says Konstantin Sipioplkin, Director of the Research and Development Center of Izolyator Group.



Konstantin Sipilkin,
Director of R&D Center, Izolyator Group

We have a proven track record of developing and manufacturing products for application in various operating conditions and climatic zones. That is why we are continuously working on improvement of our solutions, focusing on the world.

Innovative technologies and proactive scientific research work is what seriously increases the value of the company in the global market. The many years of successful work of employees of Izolyator have led to the fact that today Russia is one of the leading countries in the creation and production of high-voltage insulating structures and is on par with the world leaders in the industry.

Modern technologies and products based on them can not be created in one month. To retain leadership in one's segment, it is necessary not only to master modern technologies, designs, materials, but rather to create absolutely new things. Yet at the same time you need to understand exactly what the industry needs in order for consumers around the globe to appreciate your product. "To a large extent, this became possible due to a change in the concept of work," Konstantin Sipilkin continues. — For our company, from the line operator to the designer, quality is a state of mind, and not just the result of good work. Any problem that we or

our customer face is a challenge that helps the company to become better, it is an opportunity to set a relevant goal and strive to achieve it."

Now the plant and the Izolyator brand are known without exaggeration from the Arctic to the Equator. The plant's products are supplied to the countries of Southeast Asia, India and China, and Latin America. The company maintains a stable position in the markets of Eastern and Western Europe.

At the beginning of the 2000s the company proposed a completely new product to the market — bushings with solid RIP-insulation developed in the research and development scientific and technical center of the company. Modern bushings have proved successful in the Russian power industry and are actively exported to world markets. The company is already prepared to offer consumers a new generation of bushings with RIN insulation, which are beginning to win their place in the world of electrical engineering. High





Andrey Shornikov,
Deputy Commercial Director, Izolyator Group

Our joint activities with the leading electrical engineering enterprises of Russia to promote innovative domestic products to Asian and European markets allow us to develop a dialogue with partners from different countries, to bring the Made in Russia brand to the world level.

hydrophobic properties of such bushings ensure maximum efficiency of the equipment. Products with RIN insulation are easy to transport, do not require special storage conditions and show high resistance to severe weather conditions.

The entire range of RIN bushings received a positive conclusion of the attestation commission of Rosseti PJSC and is recommended for use in the power grid of Russia.

Another step in the development of the company is the diversification of the product line. In 2020 Izolyator opened



Izolyator Group systematically created conditions and reasons for the rapprochement of Russian manufacturers and foreign partners.

a new line of business and began to produce high-voltage voltage cable accessories for voltage 110-220 kV and in the short term 500 kV.

Before Russian power engineers had to purchase that equipment abroad. The key consumers for that product will be federal power grid companies, cable plants, transformer plants and switch gear manufacturers.

Due to the emergence of a new business line, the company's capabilities have significantly expanded. Now Izolyator is ready to supply not just a separate product, but complex solutions in power sector that are designed turn-key and have warranty service coverage. It is also important that now potential consumers of these products in Russia will not depend on fluctuations in the currencies exchange rate, as they will be able to buy domestic products.

The international expansion

A characteristic feature of Izolyator's is a proactive outlook into the future and purposeful development through a marketing strategy, the ability to see several steps ahead, forming the basis for development and entry into promising markets, the search and development of innovative and sought-after technological solutions, and the development of a product portfolio.

"One of the goals that the company has set and achieved over the past 10 years — fruitful development of international cooperation, the introduction of unique innovative technologies, the expansion of the product line, as well as the use of new methods in working with partners and customers," — says Andrey Shornikov, Deputy Commercial Director at Izolyator Group.

Izolyator systematically created conditions and reasons for the rapprochement of Russian manufacturers and foreign partners. Thus the plant became the initiator of meetings, seminars and conferences for representatives of generating, electric grid and industrial companies of Vietnam, as well

Sandeep Prakash Sharma,
Executive Director at Mehru Electrical & Mechanical
Engineers (P) Ltd.

Establishment of the JV with Izolyator became our general push towards the leadership positions of our companies in the global energy market.



Pavel Kiryukhin,
Chief Engineer of R&D Center
Izolyator Group



Our experts continuously conduct scientific and technical research to source the most optimal and efficient solutions and they are open to cooperation, transfer of experience and knowledge in the field of innovation.

as leading manufacturers of power equipment in Russia — SVEL Group, Uncomtech Holding and JSC VO Elektroapparat. The plant took part in organizing a series of open conferences in India, Turkey, Saudi Arabia, Italy, neighboring countries, thanks to which many Russian enterprises got the opportunity to enter the international market or strengthen business ties.

A key event for the development of Izolyator was the signing of an agreement on strategic cooperation and interaction with the Indian company Mehru Electrical & Mechanical Engineers (P) Ltd. A unique project to create the joint venture for the production of high-voltage bushings with solid RIP insulation has been implemented in India.

The MIM joint venture (Massa Izolyator Mehru) with a leading stake of 65 % from Izolyator is gaining impulse: in the shortest time, a production facility was built for the assembly and testing of high-voltage bushings up to 420 kV on the territory of India. Products of the new enterprise have already been accredited by the Indian state power grid company Power Grid Corporation of India Limited.

The openness of Izolyator was confirmed by a series of successful seismic tests of its high-voltage bushings in one of the leading global testing laboratories CESI S. p. A. in Italy, as well as an international conference and a set of type tests of high-voltage bushings with solid RIP insulation for ultra-high voltage classes based on the Central Energy Research Institute (CPRI) in Bangalore and Hyderabad in India.

Testing of Izolyator brand products in leading world testing centers followed by open technical conferences

provided an excellent opportunity to discuss at the international level all aspects and technical features of operation, installation and maintenance of high-voltage bushings with internal RIP insulation for high and ultra-high voltage classes, designed and manufactured at the Izolyator plant.

“We are a dynamically developing company and we believe that the advanced level of our solutions together with the flexibility in approaches and an effective management model in commercial activities are an excellent basis



We have implemented a clear and transparent management system that helps speed up workflows at all stages

for our successful expansion in foreign markets,” Ivan Panfilov is convinced.

Shaping reality

Over the past few years Izolyator has grown to the level of an international multi-product group of companies providing a full range of services from development to maintenance of the supplied products. And now the company

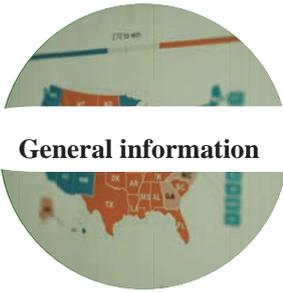


Yaroslav Sedov,
Head of Marketing Department
Izolyator Group

Our company is among the first in the country to start marketing research of power markets that are of potential interest for cooperation. High-level professionals from various fields were involved in monitoring and comprehensive detailed analysis.



What do the country power market reviews include?



General information

- About the country
- Social characteristic
- Demography
- Natural resources
- External policy
- Political relations with the Russian Federation
- National characteristics



Economy

- GDP
- Inflation
- Ease of Doing Business Index
- Corruption Perceptions Index
- Economic Freedom Index
- Exports
- Import
- Trade turnover with the RF
- Taxation



Power sector

- Generation
- Transmission
- Power companies
- High-voltage bushings market
- Projects

has reached a new quality level, at which it is prepared to offer not only service, maintenance and products but a whole new lifestyle and a concept of renewed reality.

“We can safely say that we have switched from exporting products to exporting technologies,” stressed Alexander Slavinsky. “And this is one of the major achievements that the company can be proud of over the past few years.”

Izolyator has seriously prepared for a new rebranding in international markets — this is a well-thought-out and well-prepared step. The company conducted a large-scale marketing research of the world's energy systems and identified the most promising areas. Thanks to such data, the specialists of the enterprise have a detailed understanding of current and future needs of energy systems of the countries of Eastern Europe and neighboring countries, Asia, Africa and South America, as well as the countries of



We guarantee quality in all aspects of work and responsible approach to comprehensive delivery of a range of services

the Persian Gulf — India, China, Malaysia, the United Arab Emirates, Saudi Arabia.

“Marketing in our company consists, first of all, of comprehensive market analytics. We are deeply immersed in the study of the characteristics of our partner with whom we plan to work. This information is indispensable in our work, and may be useful to representatives of other areas in our market,” explains Yaroslav Sedov, Head of Marketing Department at Izolyator Group.

The marketing research is also based on the unique information obtained as a result of long-term cooperation of the enterprise with foreign partners.

The monitoring reflects the tasks and needs of the industry at the moment and in the future. In addition specialists prepared data on the economic development of the regions, the political situation, the cultural component — the information that can facilitate the interaction between international partners as much as possible.

Internal organization as a path to success

Important changes also affected the very structure of the company. Over several years with the support of Izolyator, several new electrical engineering enterprises — projects of the company — entered the world and the Russian market. Among them there are a Russian-Indian enterprise for the production of high-voltage bushings MIM (Massa Izolyator Mehru), Izolyator-AKS cable accessories plant. There is also an ongoing activity to develop our presence in neighboring countries.

Facing the difficulty of creating new, competitive in the global market products, the company established its own Research and Development Center on the basis of a special design and technology bureau of the plant. The RDC also includes pilot production, Izolyator service department — SVN-service and the technical control department. Thus all stages of the product life cycle are covered — from the inception of an idea to its testing in pilot production, high-tech production, testing, delivery and service directly at the power facility.

“We have implemented a clear and transparent management system that helps speed up workflows at all stages,” says Pavel Kiryukhin, Chief Engineer at Izolyator Group — our own R&D activities give us a basis for optimal decision making. The optimized organization of production operation helps to efficiently solve problems of any complexity offering unconventional ways to achieve assigned tasks. We are not afraid of new challenges and are open to communicate with any partners and customers in any point of the planet. We value transparency of processes and decisions.

Now Izolyator is capable to provide the entire range of services in the electric power industry — starting from the

Sergey Moiseev,
CEO of Massa LLC



The core principle of our company is personal responsibility of each employee, his or her involvement in a common cause, desire and readiness to apply knowledge to the limit of one's potential

personnel training and ending with testing at its own high-voltage test center.

The company is ready to consider any proposals from partners to expand the sales market and international cooperation, and for more fruitful cooperation — to present their own marketing research on countries of strategic interest in the development of the electric power industry.

Man — in the focus

In the era of globalization and the rapid development of high technology, there is an obvious need for fast, high-quality and modern education. It implies access to the most relevant scientific research, the possibility of practical application of the acquired knowledge and constant communication for the exchange of experience.

Izolyator is here at the forefront of the world electrical science: in 2020 the company opened its own university, Izolyator. In just a year, this platform has become a popular and in-demand service.

In-house competency development programs and training courses have already been completed by both Izolyator employees and specialists from partner companies and customers.

In 2021 CEO of Zavod Izolyator LLC Alexander Slavinsky headed the Department of Physics and technology of electrical materials and components of NRU MPEI. This appointment made it possible to bring the company's activities in the field of education and training of young professionals to a new level. In particular the active position of Izolyator

in the work of the largest international research electrotechnical and energy organizations contributes to building interaction between students and scientific community, provides future Russian and foreign power engineers an opportunity to participate in large-scale international projects.



The new approach to the formation of corporate culture, which is reflected in the rebranding is focus on the person.

The new approach to the formation of corporate culture, which is reflected in the rebranding is focus on the person. After all it is he or she who is the end consumer of electricity, for whose benefit the world electrical engineering and electric power industry works and changes, and it is every human being who is the main driver of that development.

“One important quality that the company has acquired is a developed organizational and corporate culture, which is focused primarily on caring for the well-being of each employee, says Sergey Moiseev, CEO of Massa LLC, because



Julia Turina,
HR Director
Izolyator Group

We are interested in training of high-qualification personnel, capable to ensure an efficient development in a long-term perspective and already today we are actively implementing corporate and individual training programs.

the future of the company depends on how comfortable a person is at work, how much he is involved in the processes of achieving common goals and is able to bring a piece of his creative energy into them".

"Now is the time for high-tech solutions and high-qualified specialists who will be able to manage innovation processes," says Julia Turina, HR Director at Izolyator Group. — The future of the power industry depends on the specialists training. For this reason our company is so active in training programs for our partners and young specialists attraction.

"We believe that every person should have an opportunity to influence the quality of one's present and the future, and it is in our power to let him do it. Therefore today we do not see our global goal as selling many times more products, winning several more markets or creating ten more joint enterprises in promising regions. We are trying to help everyone to show their inner potential by participating in the creation of a stable and reliable energy supply. This is what we, as Izolyator Group, see as our most important task, which motivates us to move forward," says Alexander Slavinsky.

New vision — new brand

For Izolyator, it is important that partners — multinational, state-owned, public and private companies — know that they are dealing with a high-tech group and can always count on high-quality and timely execution of orders. All production, scientific, educational and service capabilities of Izolyator make it possible to implement projects of any complexity in a one-stop shop. And we are talking not only about specific products, but also complex solutions and technologies.

"We have been moving towards this for all 125 years of our development, and today we have everything necessary to work in the global market on a par with global companies producing electrical equipment. Little remains for us — to convey to potential consumers around the world our experience, our unique knowledge in the development and production of high-voltage insulating equipment. That is why we are creating a new brand concept," says Alexander Slavinsky.

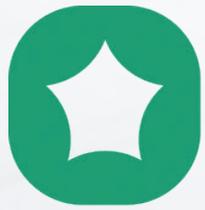
The new brand should also attract the attention of colleagues from the international scientific community. They can always count on support and joint work in scientific, technical and educational activities.

"The company is open to everything new — ideas, technologies, cooperation," continues Ivan Panfilov. — We offer partners and clients to jointly achieve set goals and objectives, choose the most optimal solution in the most difficult situations. For our part, we guarantee quality in all aspects of work and a responsible approach to the comprehensive provision of a range of services — from the product itself to the training service that ensures the reliability of its operation. Our company provides continuous flow line production of components for integrated solutions in the power industry that make our lives comfortable, active and productive."

"We are ready to develop together with the market and with the wishes of our partners," summed up Ivan Panfilov. — Our company will enter the new 2022 completely renewed, with a new organizational structure, goals, principles and mission. It will be rapid and important for us to hear the opinion of our colleagues and partners on all the changes that are taking place in the company. We plan to place a kind of questionnaire on our website, where anyone can leave their comments and suggestions on how we can become even better and more accessible in the common cause of developing the electric power industry. We are grateful for any feedback. In the meantime, we are ready to talk about all the changes and innovations that we have already announced and which we are only planning to introduce.

Despite the big changes, the Izolyator Group is not going to stop there. "Our team is constantly working to ensure that the next project is more successful than the previous one, even if the previous one was flawless," sums up Alexander Slavinsky. — Therefore in 2022 we will continue to work on creating a new brand. After all forward thinking is the quality that allows a company to stay relevant in any environment. And that is exactly what we are striving for — to be a modern enterprise with a century-long history and a tradition of quality, capable of solving any challenges and tasks."





IZOLYATOR

group

THE STRUCTURE OF THE IZOLYATOR GROUP

ZAVOD IZOLYATOR LLC



Overall management of the zolyator Group. Strategic planning of production and sales markets.

MASSA LLC

IZOLYATOR PRODUCTION COMPLEX



Design, production, sales and maintenance of high-voltage bushings for power equipment. Izolyator Corporate University.

IZOLYATOR-AKS

HIGH-VOLTAGE ACCESSORIES PLANT



Development and production of 110 - 220 kV cable accessories

MASSA-IZOLYATOR-MEHRU JV



Production and sale of high-voltage bushings for power equipment on the territory of India and Asian countries

**REPRESENTATIVE OFFICE
IN UZBEKISTAN**



Sales of high-voltage equipment on the territory of Uzbekistan and neighboring countries



Complete range
of testing according to
Russian and International
standards



Products:
- high-voltage bushings
- cable accessories



Sales and logistics
worldwide



International
production:
Russia and India

INTERNATIONAL MULTIPRODUCT INDUSTRIAL GROUP OF COMPANIES WITH A WIDE RANGE OF CAPABILITIES, INCLUDING PRODUCTION OF ELECTRICAL PRODUCTS, RESEARCH AND DEVELOPMENT AND EDUCATIONAL ACTIVITIES, AS WELL AS FULL SUPPORT OF ENGINEERING AND TECHNICAL PROJECTS



Research and
development center:
research,
innovations,
development



Marketing research and
promotion
strategy development
for partners



Corporate university:
- educational programs from
partners
- retraining of specialists



24/7
Technical service

14 | The anniversary bushing number 600 000



▲ Celebration in connection with the release of Izolyator high-voltage bushing number 600 000

The high-voltage bushing number 600 000 was assembled at the Izolyator Production Complex on 28 October 2021! The assembly of the bushing took place in a festive atmosphere in the presence of Izolyator management and employees of production divisions.

It is especially pleasant that this event took place in the year of the 125th anniversary of the Izolyator plant - an enterprise that has gone a long way from making the first domestic high-voltage bushing to mass production of hundreds of thousands of bushings, which perform flawlessly around the world.

The high-voltage bushing number 600 000 was a 220 kV transformer bushing with internal RIN insulation of our proprietary design. The characteristics and operating conditions of such bushings go beyond the usual, designed to give power engineers complete confidence in the reliable and long-term operation of power equipment.

It is deeply symbolic that the previous "hero of the day", Izolyator bushing number 500 000, assembled in August 2006, was equipped with the insulation of the previous generation. At that time solid RIP-insulation was a progressive and

promising solution, which made it possible to significantly increase the reliability and operational excellence of high-voltage bushings.

Thus the figure "600 000" is not only a quantitative indicator of the strength and stability of the production potential of the Izolyator Group. It conveys the enterprise's focus on the practical implementation of the latest scientific and technical achievements, the search for the most effective engineering solutions that ensure the continuous progressive development of electric power systems both in the present and in the foreseeable future.



◀ The core impregnation - key process operation in the production of a bushing



▲ Testing of the bushing number 600 000

▼ Izolyator HV bushing number 600 000 on a technological rack in the assembly shop



National Study Committee D1 of RNC CIGRE: results of the year



Traditionally at the end of the year not only people, but also organizations sum up the results. So we recall the results of the work of the National Study Committee (NSC) D1 of RNC CIGRE Materials and Emerging Test Techniques

The committee was established on the basis of Izolyator by the decision of the RNC CIGRE Technical Committee dated December 1, 2015 No. 09.02-4 (09). Izolyator was granted the status of Leading Science and Technology partner of RNC CIGRE. Alexander Slavinsky, CEO of Zavod Izolyator LLC, Head of the Department of Physics and Technology of Electrical Materials and Components of IETE NRU MPEI, Head of NSC D1 RNC CIGRE has been the Russian Federation's representative in SC D1 CIGRE since 2016.

Since 2020 Timofey Shadrikov, Ph.D, member of NSC D1 RNC CIGRE, Associate Professor of the Department of High-Voltage Power Engineering, Electrical Engineering and Electrophysics, FGBOU VO ISUE joined SC D1 from the Russian Federation as an additional regular member. Representatives of NSC D1 RNC CIGRE work as experts in 4 international work groups, including two joint working groups JWG B1/D1.75 and JWG B1/B3/D1.79.

NSC D1 representatives work in IEC TC 36 "Insulators", Subcommittee 36 A "Insulated bushings". Experts from Russia in the IEC (working group JMT 5 of subcommittee 36A) are Alexander Slavinsky and Director of the Moscow branch of the Izolyator plant Vladimir Ustinov. In total, 5 corporate members of RNC CIGRE and 33 specialists contribute to NSC D1 activities, including 11 Individual members of RNC CIGRE and 22 specialists who are not members of RNC CIGRE.



Lecture "Power transformers and high-voltage bushings", part of professional development program in company management disciplines

In 2021 despite the pandemic and the restrictions associated with it, the work of the Committee was actively progressing.

Representatives of NSC D1 RNC CIGRE in the middle of February took part in the work of the International Symposium "Sustainable Energy and Power Engineering - 2021: SUSE-2021", held on the basis of Kazan State Power Engineering University. The Symposium was attended by more than 800 representatives of universities from 14 regions of Russia, as well as from abroad: Kazakhstan, Tajikistan, Kyrgyzstan, Italy, Bulgaria, Turkey, Belarus, Moldova, Mongolia.

A class for employees of the enterprise as part of staff development program "Advanced training in company management topics" including a lecture "Power transformers and high-voltage bushings" was held at the end of February. This training program was developed and implemented by Izolyator Corporate University together with the leading specialists of the enterprise and invited experts. The lecture was given by Vladimir Ustinov, Director of the Moscow branch of Zavod Izolyator LLC, coordinator of NSC D1 RNC CIGRE. During the class, the classification, purpose and design features of power transformers were considered in detail as well as types of testing at the manufacturing plant.



Open hearings of abstracts of reports for the 49th CIGRE Session in the SC D1 study area



24th All-Russian scientific and technical conference "Ways to improve the reliability, efficiency and safety of energy production" in the village of Divnomorskoye

In early March Izolyator employees attended another lecture-class "Regulatory documents on power transformers and high-voltage bushings. Russian National Committee of CIGRE". This advanced training program has been developed and is being implemented by Izolyator Corporate University together with the leading specialists of the enterprise and invited experts.

A joint meeting of NSC D1 RNC CIGRE and leading specialists of Izolyator was held on the territory of the Izolyator plant via videoconference. Within the framework of the meeting, open hearings of abstracts of reports for the 49th CIGRE Session in the SC D1 study area were held.

A special project was participation in the CASE-IN International engineering championship for solving engineering cases among students, schoolchildren and young professionals. The topic of the IX International Engineering Championship CASE IN of the student league was: "Power industry - sustainable development of electrical networks".

Online meetings also continued. For example, at the beginning of April in KSUE, an international scientific conference "Electric networks: Reliability, Safety, Energy saving and Economic aspects" was held on the ZOOM platform. The event was held for the first time - together with the Oryol State University named after I.S. Turgenev and the Khujand Polytechnic Institute of the Tajik Technical University named after Academician M.S. Osimi.

The Kazan State Energy University hosted the International Youth Scientific Conference Tinchurin Readings - 2021 "Energy and Digital Transformation" on April 28 - 30, 2021. The conference is held annually at KSEU and bears the name of Forel Tinchurin (1926–2002), who for many years headed the Kazan branch of MPEI.

The purpose of the conference is to develop the scientific and creative potential of young researchers in the field of energy.

In May representatives of NSC D1 RNC CIGRE took part in the 15th scientific seminar "Methods for assessing and ensuring the radiation resistance of electronic products" - "Radiation resistance" named after V.N. Ulimova 2021.

More than 50 participants from 23 organizations of Rosatom, Roscosmos and higher educational institutions took part in the event. Lectures were given by employees of NIIP, NIIKP, the National Nuclear Research University MEPhI and the Experimental Research and Production Association "Specialized Electronic Systems".



Representatives of the National Study Committee D1 of the Russian National Committee of CIGRE at the opening of the 48th session of CIGRE in a virtual format



One of the meetings on the sidelines of the conference, L-R: Alexander Slavinsky, Chairman of the Council of Specialists for the Diagnostics of Power Electrical Equipment at the UralEnergEngineering Engineering and Technology Center Alexey Utefov, Leading Specialist of the UralEnergEngineering Engineering and Technology Center Vadim Osotov, Head of the Diagnostics and Surge Protection Service of Chelyabenergo, a branch of Rosseti Ural, Dmitry Prosvirnin and Vladimir Ustinov

XXIV All-Russian Scientific and Technical Conference "Radiation resistance of electronic systems" went on 8 and 9 June in the city district of Lytkarino in the PC Mir.

The program of the event included 23 spoken and over 100 poster presentations on the most developing areas of study of radiation and electromagnetic effects on electronic systems.

NSC D1 took part in the 24th All-Russian scientific and technical conference "Ways to improve the reliability, ef-

Studies of PJSC Kubanenergo and other companies in the industry, as well as foreign partners - representatives of Jean Muller GmbH Elektrotechnika Fabrik (Germany).

The Centennial Session of CIGRE was held from 18 to 27 August 2021. Video broadcasts of panel discussions and meetings of the anniversary CIGRE Session were held at the Izolyator plant, which is the basic scientific and technical partner of RNC CIGRE.

NSC D1 RNC CIGRE became a partner of the "Power transformers - production, operation, diagnostics and repair. General issues of diagnostics and operation of electrical equipment" Conference. Representatives of NSC D1 RNC CIGRE took part in the work of the scientific conference and the XXVI plenary meeting of the Council of Specialists on Diagnostics of Power Electrical Equipment at Engineering and Technical Center Ural-EnergEngineering, which took place in Yekaterinburg at the site provided by the SVEL Group.

More than 130 specialists took part in the conference, including representatives of grid and generating companies, industrial enterprises and scientific centers. Alexander Slavinsky took part in the conference both as a member of the presidium and as a speaker on the topic "High-voltage insulating equipment: centuries-old traditions - advanced developments."

In the branch of the Federal State Budgetary Educational Institution of Higher Education NRU MPEI in the city of Volzhsky, the 93rd meeting of the International Scientific seminar named after Yu.N. Rudenko took place. More than 60 participants came to the conference, almost the same number spoke online. The audience listened to 92 reports (36 online reports + 56 in-person reports). Participants represented 7 countries: Russia (19 cities), Belarus (Minsk), Azerbaijan (Baku), Kyrgyzstan (Bishkek), Uzbekistan (Tashkent), Kazakhstan (Nur-Sultan), Vietnam.



Vladimir Ustinov, member of the Autumn Cup Expert Commission from the National Study Committee D1 of the Russian National Committee of CIGRE

iciency and safety of the energy production" in the village of Divnomorskoe, held from 30 May to 3 June 2021. The conference was attended by delegations from Rosseti Kuban, KKA RNTOOE,

Massa LLC, Energomera Electrotechnical Plants JSC, Ensto Rus LLC, Matrix LLC, NPP Bresler, TD MIRTEK LLC, ErgoService LLC, Corporate Energy Institute for Advanced

The II International Scientific and Technical Conference "SMART ENERGY SYSTEMS 2021" (SES-2021) was held at KSEU in September as part of the agenda of the International forum Kazan Digital Week 2021. The objective of the II International scientific and technical conference "Smart Energy Systems 2021" (SES-2021) is to provide a comprehensive analysis and discussion of fundamental problems of heat and power industry, energy saving, problems of reliability of large energy systems, as well as issues of development of new energy systems and technologies.

NSC D1 took part in the International Engineering Championship "CASE-IN" - an international competition system for solving engineering cases among students, schoolchildren and young professionals at the end of November.

The Autumn Cup of the CASE-IN Student League is a competition consisting of correspondence qualifying stages held on the basis of universities, remote semi-finals in federal districts, as well as the final stage in Moscow.

The National CIGRE Committee (NC) of Austria held the 3rd SEERC CIGRE conference - 2021 on 30 November. The conference was held online.

The online event was organized in four consecutive sessions and opening and closing sessions, including a welcoming speech by the NC Chairman.

Traditionally, the year ended with the reporting meeting of D1 RNC CIGRE Materials and emerging test techniques, dedicated to the past 48th CIGRE Session in the SC D1 study area and the results of the activities of NSC D1 in 2021. The event took place on 7 December.

At a meeting with their leading scientific and technical partners on 8 December, the Russian National Committee CIGRE summarized the results of its activities in 2021 and outlined plans for the next period. The meeting was attended by the head of the National Study Committee D1 RNC CIGRE, CEO of Zavod Izolyator LLC Alexander Slavinsky.



Certificate in the category "Individual members of RNC CIGRE" was awarded to Alexander Slavinsky

At the end of the meeting, an awards ceremony was held for the most active corporate and individual members of RNC CIGRE as well as the national study committees of the organization for the period from September 1, 2018 to September 1, 2021.

According to activity rating's key performance indicators in the category "Individual members of RNC CIGRE", the certificate was awarded to the head of NSC D1 Alexander Slavinsky.

During the reporting period, 21 publications were published in the journal of the information partner Energoexpert and other scientific and technical journals, including the E3S Web of Conferences indexed in the Scopus database and publications in publications recommended by the Higher Attestation Commission of the Russian Federation.



Alexander Slavinsky (R) at a meeting of leading scientific and technical partners of RNC CIGRE

A strong brand - new opportunities



Ivan Panfilov
Commercial Director
Izolyator Group

The Izolyator brand is now well known not only in Russia, but also in many countries abroad. We always emphasize that our goal is to be a global leader in the production of high-voltage insulation equipment. So we put our best effort in both winning trust of buyers of our products all over the world and prove it year after year. By expanding and improving our communication, we always strive to grow our own efficiency and the business of our partners.

Izolyator held the annual meeting to hear the report of Izolyator's commercial division on the sales results and plans for the coming year.

Alexander Slavinsky, CEO of Zavod Izolyator, Alexander Sorokin, one of company founders and divisional managers listened to the reports.

The most important areas of development of the Izolyator Group in the coming years are: expansion of the presence and increasing of the supply of high-voltage bushings with RIN-insulation to electrical enterprises and

electric power companies in Russia, neighboring countries and overseas; increase sales volumes of high and ultra-high voltage bushings; expansion of presence in neighboring countries, including the creation of joint ventures; rebranding of Izolyator in the market of electric power equipment in order to consolidate the activities of all enterprises under a single brand, reflecting the qualitative expansion of the product line, historical experience, innovative nature and international status of the company.

Today we are considering the possibility of introducing to the market a innovative brand that will unite all our business lines. We want to send a clear message to both external partners and our employees what Izolyator Group represents today, what its goals are, what its positioning is.

And I am convinced that the century of experience of Izolyator will become a powerful support in creating a uniform and strong brand capable of having its own weight in the Russian and international energy markets.



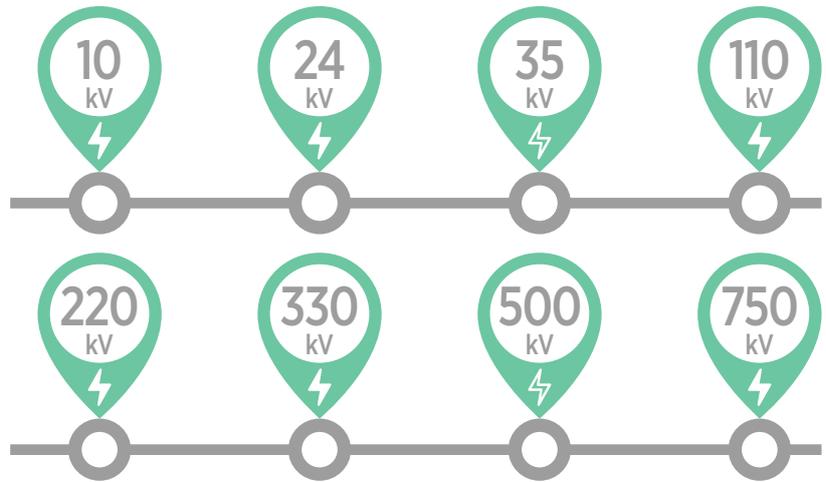
The annual report of the sales division of Izolyator Group

EXPORTS 2021

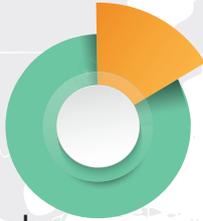
Over
1300

high-voltage bushings
delivered to
the neighboring countries
and overseas

VOLTAGE CLASSES



Export
share



20-30%

Supplies
to over
30 countries
of the world

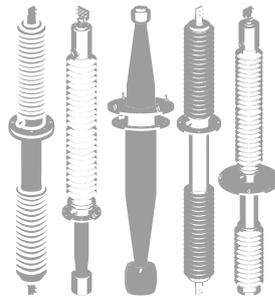


BUSHINGS SHIPPED TO

OVERSEAS

Belgium
Vietnam
Germany
Mexico
India

Italy
Portugal
Poland
Finland
Switzerland



NEIGHBORING COUNTRIES:

Armenia
Belarus
Georgia
Kazakhstan
Kyrgyzstan

Moldavia
Ukraine
Uzbekistan



MIM manufactures /
supplies
high-voltage
RIP bushings
(OIL - AIR)
rated voltage

MIM has been certified by
the state energy power grid
company of India (PGCIL) as
manufacturer of
RIP bushings up to 420 kV
on the territory of India

52-420kV 420kV

MIM: from the first shipment to new objectives



Pavel Kiryukhin
Chief Engineer of the R&D Center at Izolyator Group,
Technical Director of the Massa Izolyator Mehru Pvt. Ltd. a
Russian-Indian Joint Venture

The enterprise, following the needs of the electrotechnical market, continues to develop continuously, make plans for the future and set new goals that will certainly be achieved thanks to the experience, energy and determination of the Massa Izolyator Mehru Joint Venture

Massa Izolyator Mehru Pvt. Ltd. a Russian-Indian Joint Venture (MIM JV) focused on the production of bushings with RIP insulation, is an actively developing company that regularly ships products to its customers. Today MIM JV already has a large package of orders for 2022, and the entire product line has passed all required type tests in accredited laboratories. Pavel Kiryukhin, Chief Engineer of the R&D center, spoke about how the plant works and what plans MIM JV is developing.

Joint venture today

Massa Izolyator Mehru Pvt. Ltd. a Russian-Indian Joint Venture was created by the Russian company Izolyator and the Indian Mehru Electrical & Mechanical Engineers (P) Ltd.

The company manufactures, maintains and sells high-voltage bushings with RIP insulation up to 420 kV for power equipment in India and other Asian countries.

MIM joint venture is certified by Indian state-owned power grid company Power Grid Corporation of India Limited as a supplier of RIP bushings up to 420 kV.

The production site of MIM JV is located in Bhiwadi, India.

The first shipment of products

At the beginning of 2022 the first batch of high-voltage bushings manufactured by the MIM JV was shipped.

The first customer of the company became the Indian industrial com-

pany Transformers & Rectifiers (India) Limited: 13 units of 145 kV bushings will be used as components in the production of single-phase shunt reactors with rated power of 5 MVAR each.

These reactors are designed for the needs of the Indian state-owned power grid company Power Grid Corporation of India Limited.

The supplied high-voltage bushings are assembled entirely from parts and assemblies made in India, with the exception of insulation cores delivered from Russia, which are manufactured at the Izolyator Production Complex using the proprietary RIP technology.

The enterprise, following the needs of the electrical market, continues to develop continuously, make plans for the future and set new goals that will be surely achieved thanks to the experience, energy and determination of the staff of the MIM JV.

Constant work with the customer

The specifics of the work of a company producing high-voltage equipment in India are such that manufacturers are under the constant control of their customers. No customer will place an order with you until they visit the factory and make sure that the conditions are in accordance with generally accepted standards for this type of equipment.

It is equally important that you strictly follow all the required technological processes, and that the personnel is trained and assumes all the responsibility for the operations performed.

In 2021, MIM has done a great job by passing certifications and audits of various client companies.

There are grid companies among them such as Power Grid Corporation of India Limited and transformer plants, for example, TBEA Energy (India) Private Limited, Transformers & Rectifiers (India) Ltd., GE T&D India Ltd.

Today these companies are our customers, and their employees regularly participate in finished product inspections, which is also the norm for high-voltage equipment manufacturers in India.

Localization of components production

From the very beginning of the existence of the MIM JV, it was obvious that the maximum localization of the components is imperative for successful future development. It



Acceptance control of aluminium parts in presence of their supplier

was necessary to study the materials produced in India, to select among them counterparts used at the Izolyator plant as well as to select potential suppliers of components, having prequalified them.

The result was that the Russian-Indian MIM team managed to localize the whole set of components necessary for the assembly of bushings and only the insulation core is now supplied from Russia. And that is a really wide range of various products: these are aluminum, copper, brass parts, also parts with galvanized coating, cast parts, fluorosilicone and cork seals, composite insulators, fasteners, sealants and packaging materials. Thanks to this work, today MIM manufactures bushings using components localized in India.

Plans for the near future

All that great work that preceded the start of the operation of the enterprise gave us vast experience, which allowed us to accumulate the potential to achieve new goals. One of these goals was the production of 420 kV bushings at the production facilities of MIM. This is a new challenge for the international team of the company, but we accept it with confidence in our abilities. We will definitely tell you about how we will overcome difficulties and solve problems in the coming publications.

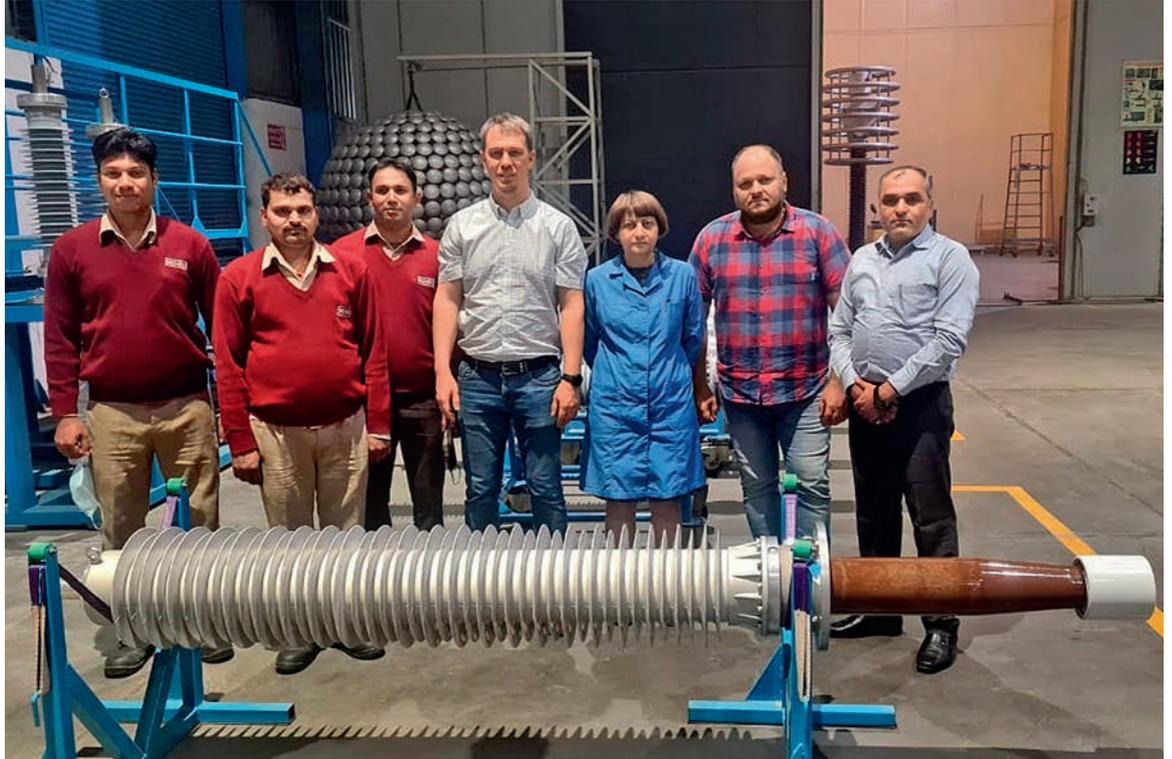


Inspection of manufactured bushings by the Power Grid Corporation of India Limited

24 | The first MIM JV shipment sent!



▼ An assembled 145 kV bushing, C – Technical Director of the JV MIM Pavel Kiryukhin



▼ Assembling of 145 kV bushings Massa Izolyator Mehru Pvt. Ltd. a Russian-Indian Joint Venture



▲ The tests are completed successfully!



▲ The shipment of the first batch of high-voltage bushings manufactured by the Massa Izolyator Mehru Pvt. Ltd. a Russian-Indian Joint Venture

▼ Packaging the bushings into the shipping containers

▶ 145 kV bushings, prepared for packaging in shipping containers



▼ Loading bushings for delivery to the transformer plant Transformers & Rectifiers (India) Limited





Dmitriy Orekhov
Head of Sales — Asia & America
Izolyator Group

The whole 2021 and its second half in particular, turned out to be rich in bright, and without exaggeration, landmark events. Among them there was Izolyator's participation of in the International Exhibition Expo Electrica Internacional in the capital of Mexico, Mexico City. For us participation in an event of this magnitude allows not only to hypothetically assess the prospects for cooperation with energy and industrial companies in Latin America, but to also engage in "live" communication with representatives of companies operating in the electrical and power sectors.

First in the world!



The world's first 420 kV shunt reactor with liquid ester dielectric

A unique shunt reactor designed and manufactured by the Indian company Transformers & Rectifiers (India) Limited (T&R), equipped with Izolyator high-voltage bushings, was commissioned in August 2021. It is the first in the world 420 kV shunt reactor using natural ester fluid filled instead of traditional transformer oil.

The environmentally friendly and biodegradable natural Cargill FR3 essential liquid is used as a dielectric.

In the production of FR3 fluid, vegetable oils and highly effective additives are used, which do not contain the elements of oil or halogens, sulfur or any other harmful components that negatively affect the environment. The liquid

completely decomposes in a short period of time in the environment and is absolutely non-toxic.

Izolyator is the only manufacturer of high-voltage bushings, which, after appropriate own tests, confirmed the readiness of the bushings to operate in an "ether liquid - air" environment at a voltage of 420 kV and delivered them to the T&R plant.

At the end of March this year T&R successfully completed type tests of the reactor. 50 MVA three phase shunt reactor is successfully commissioned at Maithon substation (West Bengal) of the Indian company Power Grid Corporation of India Limited. ■

Meeting the strictest standards

The Indian state power grid company Transmission Corporation of Telangana Limited (TSTRANSCO) and Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. (TTDI) carried out a joint test inspection of Izolyator high-voltage bushings in July and September 2021. During this period acceptance tests of 252 and 420 kV RIP bushings, manufactured under TTDI's order and intended for installation on new transformers, were carried out at the test center of the Izolyator Production Complex.

TTDI transformers with Izolyator high-voltage bushings will be operated at TSTRANSCO's power facilities.

The work of the inspection group was facilitated and supported by Izolyator employees: Head of Sales Asia and America Dmitry Orekhov and Sales Manager Denis Grankin. At all stages of testing the inspection team was provided with absolute accessibility to all technological operations and the results obtained.

The tests were carried out in full compliance with the international standard IEC



Inspection of Izolyator bushings tests by the Indian state power grid company Transmission Corporation of Telangana Limited and Toshiba Transmission & Distribution Systems (India) Pvt. Ltd.

60137 and were completed successfully, confirming the high quality of Izolyator products.

The needs of TTDI in high-voltage RIP bushings for 2022 were also discussed. While doing that the parties paid special

attention to the types of bushings that form the quantitative basis of TTDI's plans.

As a result, an arrangement was made on the agreement procedure for framework contract between TTDI and Izolyator for the next year. ■

Expanding presence in Latin America



Joint exposition of the companies Comercial Especializada de Materiales, S.A. de C.V. and Izolyator at the Expo Eléctrica Internacional in Mexico City

Izolyator took part in the Expo Eléctrica Internacional in Mexico City. Izolyator's products were presented as part of a joint exposition with

a Mexican partner - the engineering and trading company Comercial Especializada de Materiales, S.A. de C.V. (CEMSA), which installs, maintains

and upgrades electrical power equipment. At the joint exhibition stand, 35 kV Izolyator bushings with RIP and moisture resistant RIN insulation were exhibited.

Dmitriy Orekhov, Head of Sales — Asia & America of Izolyator, and Maria Orekhova, Assistant to CEO Zavod Izolyator LLC gave the visitors of the exposition detailed information on the advantages, characteristics, and design of the presented samples.

At the same time details about Izolyator, the range of its products, achievements in international market and directions of development were made available for visitors.

While seeing the exposition of the exhibition, Izolyator representatives had several meetings at the stands and established contacts with Mexican enterprises operating in the electrical and power engineering sectors. Arrangements were made with some of the companies about their next visit

The successful results of participation in the International Exhibition Expo Eléctrica Internacional made it possible to have a practical assessment of the potential and prospects for cooperation with energy and industrial companies of the South American continent. ■

New horizons of cooperation

Izolyator Group representatives negotiated with the largest energy and industrial companies in Mexico. Some of the arrangements to visit Mexican companies were reached remotely earlier, others were set up during business networking at the Expo Eléctrica Internacional in Mexico City.

Negotiations took place at the following enterprises:

State energy company Comisión Federal de Electricidad in Mexico City, IEM transformer plant in Tlalnepantla, engineering and trading company Comercial Especializada de Materiales, S.A. de C.V. in the city of Santa Catarina, transformer plant Prolec GE in Apodaka.

Comisión Federal de Electricidad

Negotiations in CFE's New Transmission and Substation Development Department were mainly concerned with the formal entry into the electrical market in Mexico. To this end, CFE will assist in passing the appropriate certification, which is carried out by the CFE-LAPEM Material and Equipment Testing Laboratory.

IEM

During the negotiations, the parties agreed on interaction should the IEM plant need high-voltage bushings with solid internal RIP insulation.



Izolyator representatives are getting acquainted with the activities of Comercial Especializada de Materiales, S.A. de C.V.

Comercial Especializada de Materiales, S.A. de C.V.

Izolyator representatives visited the production facilities of the enterprise, getting acquainted with the technologies and equipment for the repair and modernization of power transformer equipment.

Prolec GE

At negotiations talks the procedure for acquiring and assigning the status of an official supplier to Prolec GE was discussed in detail.

All negotiations were successful and went on the agreed schedule. Cooperation with Latin American companies has received a new impetus and will be actively developed. ■

28 | Strategic meetings in India



▲ Participants of the working meeting at the office of the Massa Izolyator Mehru Pvt. Ltd. a Russian-Indian Joint Venture in New Delhi, L-R: Commercial Director Mr. Ashwani Aggarwal, Managing Director Mr. Sandeep Prakash Sharma, Chairman of the Board of Directors Dr. Alexander Slavinsky, Vice-Chairman Dr. Ashok Singh

Employees of the Izolyator Group had several meetings with the management of leading energy and industrial companies in India. Among the key topics on the agenda there were the formulation of a strategy for long-term cooperation with customers of Izolyator products and the Massa Izolyator Mehru Pvt. Ltd. a Russian-Indian Joint Venture (MIM JV), as well as the further development of partnerships and improvement of interaction with transformer plants in the region.

All the points of the business visit's agenda to India have been successfully solved: the MIM JV is steadily developing both in terms of equipping with modern technological equipment with new capabilities, and in establishing and developing long-term cooperation with leading energy and industrial companies in India.



▲ Participants of the meeting at the Power Grid Corporation of India Limited (PowerGrid) in Gurgaon (L-R): Deputy General Manager of PowerGrid Mr. Rohit Jain, General Manager of PowerGrid Mr. RPS Yadav, Managing Director of MIM JV Mr. Sandeep Prakash Sharma, Deputy General Manager at PowerGrid Mr. Amandeep Singh, Deputy Chairman of the Board of Directors of MIM JV Dr. Ashok Singh, Chief General Manager at PowerGrid Mr. Adish Kumar Gupta, Dr. Alexander Slavinsky, Mr. Dmitriy Orekhov

▶ Participants of the meeting at the Prime Meiden Limited (PML) in Nelluru, L-R: PML Vice President (Factory Operations) Mr. Takayuki Sano, PML Plant Head Mr. Ramesh Chandra Singh, Dr. Alexander Slavinsky, Mr. Dmitriy Orekhov, Mr. Mandeep Prakash Sharma, Ms. Olga Pamyuk, Senior Manager (Purchase) of PML Mr. Shailendra Pratap Singh





◀ Negotiators at the Transmission Corporation of Telangana Limited (TSTRANSCO), Hyderabad, third from left — FIE Director (Lift Irrigation Schemes) of TSTRANSCO Mr. J. Surya Prakash

▶ Negotiators at the Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. (TTDI) in Hyderabad, L-R: Mr. Mandeep Prakash Sharma, Mr. Dmitriy Orehov, Dr. Alexander Slavinsky, Chairman & Managing Director of TTDI Mr. Hiroshi Kaneta, Vice president — Marketing & Sales (EHV Transformers Division) Mr. Santanu M Lahiri



▼ Izolyator Group representatives at the test hall of Prime Meiden Limited, on the background - transformer with 252 kV Izolyator bushings



▼ Negotiations at Transformers & Rectifiers (India) Limited (T&R) in Ahmedabad, L-R: Head of Purchasing of T&R Mr. Vivek Raval; Chairman of T&R Mr. Jitendra Mamtora; Dr. Alexander Slavinsky; Mr. Dmitriy Orehov; Director of Marketing, Sales and Sourcing at MIM JV Mr. Mandeep Prakash Sharma





Natalia Shornikova
Head of Sales — Europe & Asia
Izolyator Group

Our experience of working with European companies proves that even in the face of strong and rather tough competition, we offer solutions and conditions that allow us to become participants in truly impressive projects.

This year it can be seen in the example of joint work with companies in such countries as Poland, Belgium, Portugal. We managed to establish the first contacts with partners in Finland and I sincerely hope that it will be the beginning of a long journey together.

With positive impressions



240 MVA transformer with 252 kV Izolyator bushings at Dolna Odra power plant in Poland

Engineering company ZUT Energoaudyt sp. z o.o. reported on the reliable operation of Izolyator high-voltage bushings installed at the transformer of the Dolna Odra power plant in Poland. The

240 MVA transformer is equipped with 126 and 252 kV bushings with solid internal RIP insulation.

Thermal power plant Dolna Odra is a coal-fired condensing power plant. It is the

main one in the group of power plants Zespół Elektrowni Dolna Odra, which is located in the north-west of Poland and is a branch of the PGE Górnictwo i Energetyka Konwencjonalna S.A. concern.

In its review, ZUT Energoaudyt sp. z o.o. announces the installation of 252 and 126 kV bushings manufactured by Izolyator on the TFBN 240000/220 transformer of the Dolna Odra power plant. The installation work was completed in February 2021 and equipment was put into operation.

The bushings operate reliably and meet the customer's expectations.

ZUT Energoaudyt sp. z o.o. is an engineering company that provides maintenance of power transformers at large industrial and energy enterprises in Poland, including the state power grid company Polskie Sieci Elektroenergetyczne S.A., as well as power generation facilities.

The head office of the company is located in Warsaw. ■

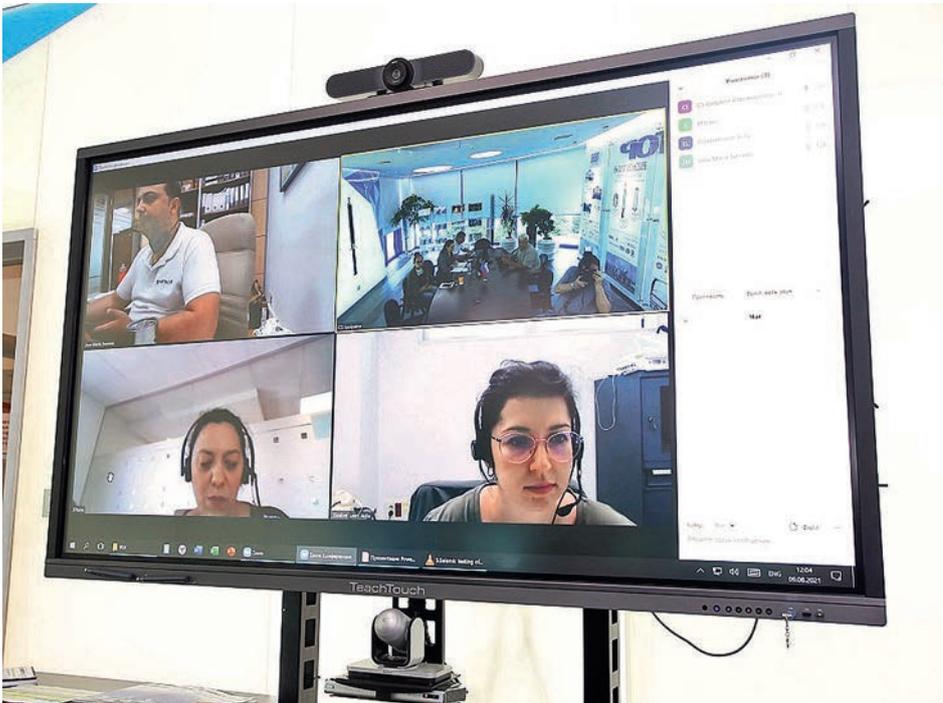


Dolna Odra thermal power plant in northwestern Poland, part of the PGE Górnictwo i Energetyka Konwencjonalna S.A. (photo: PGE Group)

Proving reputation by deed



Remote technical seminar of Izolyator Group for specialists of the Spanish branch of the generating company ContourGlobal PLC



Participants of remote seminar from Spain

In the European market, the name of Izolyator has long become a synonym for quality, and more and more partners are getting convinced of that.

Projection of successful experience

Remote negotiations between Izolyator and the British generating company ContourGlobal PLC showed mutual interest. The subject of the negotiations was the establishment of contacts and a preliminary study of the possibili-

ties of using Izolyator high-voltage bushings on the power equipment of solar power plants of ContourGlobal PLC in Spain.

The negotiations were held by Elisabet León Ávila, Electrical and I&C Maintenance Supervisor - CSP Palma del Río of the solar power plant in Palma del Río in Spain, and Natalia Shornikova, Senior Sales Manager Overseas.

As a result of the negotiations, the parties agreed to discuss the topic in a broader format.

Revealing the details

Izolyator specialists held a remote technical seminar for employees of the Spanish branch of the generating company ContourGlobal PLC. The seminar was the result of agreements reached at the negotiations between ContourGlobal PLC and Izolyator, which took place in July 2021.

From the office of the solar power plant in Palma del Río in Spain, the seminar was attended by Plant Manager - CSP Palma del Río Jose Ramon de Castro Monedero and Electrical and I&C Maintenance Supervisor - CSP Palma del Río Elisabet León Ávila.

The Spanish engineering companies EROM and Fatsur also took part in the seminar via videoconference.

Izolyator was represented at the seminar by Pavel Kiryukhin, Chief Engineer of the Research and Development Center, Natalia Shornikova, Senior Sales Manager Overseas, and Ksenia Parfenova, Assistant.

The seminar was mainly devoted to high-voltage bushings with solid internal RIP- and RIN-insulation: advantages in relation to counterparts with paper-oil insulation, production technology, installation procedure on electric power equipment, storage conditions, operation and diagnostics features.

The main activities of Izolyator and the product range were also presented. The seminar was held in an atmosphere of mutual interest and active dialogue. The parties will continue to work together to expand and further develop cooperation. ■



Maxim Osipov
Neighboring Countries Sales Director
Izolyator Group

Despite the global situation related to work in the context of the coronavirus pandemic, 2021 turned out to be a productive and eventful year for Izolyator plant. Among the big news there is the opening of the representative office of the Izolyator Group in Tashkent, the capital and largest city of Uzbekistan.

It is difficult to overestimate this achievement, because it has become a landmark for us: in the year of the 125th anniversary of the enterprise, we opened the first foreign representative office in the history of the company! I am sure that this is the beginning of a long journey, because it was preceded by a really large preparatory work.

Exploring the prospects

Representatives of the management of the Izolyator Group visited the Chirchiq Transformer Plant in Uzbekistan in July 2021.

Commercial Director Ivan Panfilov, Andrey Shornikov, Deputy Commercial Director, Maxim Osipov, Neighboring Countries Sales Director, and Roman Levintsov, Assistant of Neighboring Countries Sales Director countries made up the delegation.

The guests were received by General Designer Enver Vililyaev, Head of the Department of Foreign Economic Affairs Elmira

Shafikova, Chief Designer for power transformers Akmal Ernazarov, Chief Designer for distribution transformers Artur Abuzyarov and Lead Designer Maria Kim.

A detailed discussion took place on the directions and prospects for expanding cooperation between the two enterprises, taking into account the latest trends in the power sector and in the regional electrical markets.

During the meeting, representatives of the Chirchiq Transformer Plant showed great interest in the technical and opera-

tional advantages of Izolyator high-voltage bushings with moisture-resistant internal RIN insulation. The parties decided to jointly and comprehensively study all aspects of the application of new bushings on power equipment manufactured by the Chirchiq transformer plant.

Chirchiq Transformer Plant was founded in 1942 and has been successfully operating in the mechanical engineering market for more than 75 years, producing transformers and complete transformer substations. ■



Representatives of the management of Izolyator Group at a meeting at the Chirchiq Transformer Plant (ChTZ) in Uzbekistan. The hosts, R-L: Chief Designer for Distribution Transformers Artur Abuzyarov, Chief Designer Enver Vililyaev, Head of the Department of Foreign Economic Affairs Elmira Shafikova, Lead Designer Maria Kim and Chief Designer for power transformers Akmal Ernazarov

Continuing a mutually beneficial cooperation



Plant tour for representatives of Izolyator Group around the Asia Trafo plant, L-R: Andrey Shornikov, Asia Trafo's General Director Omar Asanov, Ivan Panfilov, Maxim Osipov, Roman Levintsov, Asia Trafo's Technical Director Adilbek Tazhibayev and Commercial Director of Asia Trafo Ruslan Tokmurzin. In the background - Asia Trafo test transformer with Izolyator 110, 500 (without external insulation) and 750 kV bushings

A meeting between the management of Izolyator and the Asia Trafo transformer plant

took place in September 2021 in Shymkent, Kazakhstan.

A new stage ahead

Management of the trading company private unitary enterprise Sagrat from Belarus visited Izolyator in August 2021.

Sagrat - a long-standing and reliable partner of Izolyator, was represented by the founder Ali Churaev and Assistant General Director for Security Tagir Magomedov.

Izolyator Group of Companies was represented by Commercial Director Ivan Panfilov, Deputy Commercial Director Andrey Shornikov, Neighboring Countries Sales Director Maxim Osipov, Assistant of Neighboring Countries Sales Director Roman Levintsov.

At the Asia Trafo plant, the guests were received by General Director Omar Asanov, Commercial Director Ruslan Tokmurzin and Technical Director Adilbek Tazhibayev.

A sightseeing tour of the enterprise was organized, where the guests got acquainted with modern technologies for the production and testing of transformer equipment, including the units equipped with Izolyator high-voltage bushings.

The sides had negotiations, which opened with a presentation on Izolyator products — high-voltage bushings with internal RIN- and RIP-insulation. Also the management of the Asia Trafo plant was presented with a new line of activity - the development and production of cable fittings for voltage classes of 110-220 kV.

The key outcome of the negotiations concerned the range and volume of deliveries of high-voltage bushings agreed by the parties in 2022, as well as the planned scope for the development of medium- and long-term cooperation between the Asia Trafo plant and Izolyator. ■

The guests were received by Maxim Osipov, Neighboring Countries Sales Director, and Anna Zubakova, Sales Manager.

At the negotiations parties discussed the achieved results of joint activities and plans for further development of cooperation, including the range and volumes of supplies of high-voltage bushings in the short and long term.

Viktor Kiryukhin, Lead Technical Support Specialist gave a tour of the Izolyator Production Complex, during which the guests were introduced to the most advanced technological equipment and full production cycle high-voltage bushings with solid internal insulation, including testing for compliance with the requirements of Russian and international standards.

They also visited the Izolyator-AKS cable fittings plant, where Technical Director Viktor Pshennov introduced the guests to the latest developments and technological equipment of the enterprise. Summarizing the course of the meeting, it can be noted that the visit of the management of the Sagrat enterprise was rich and productive, and ahead there is the next stage of strengthening and developing cooperation between the two companies, between Russia and Belarus. ■



The management of the Sagrat enterprise at the 150 kV station of the test center of Izolyator Group: Founder Ali Churaev (center right) and Assistant General Director for Security Tagir Magomedov (second left)

The first overseas representation of Izolyator Group has been opened!



The large preparatory work has been done and at last, the Representative office of Izolyator Group has been opened in Tashkent, Uzbekistan on 2 December!

The biggest contribution to the establishment of the Representative Office was made by Maxim Osipov and Artur Nazarov, who completed the bulk of the work on preparing the required package of documents and organizing the office as well the Chief Legal Officer

of Izolyator Group Elena Zubakova, who provided legal support for the project and accreditation of the Representative Office in Uzbekistan.

Then the Trade Representative of Russia in Uzbekistan Andrey Mokrousov took word, who congratulated the man-

The ceremony begins!

The opening was personally announced by the management of Izolyator Group: Alexander Slavinsky, CEO of Zavod Izolyator LLC, Ivan Panfilov, Commercial Director - 1st Deputy CEO, Maxim Osipov, Neighboring Countries Sales Director, Artur Nazarov, Director of the Representative Office of Izolyator Group in Uzbekistan.

At the same time the opening of the Representative Office was the result of an extensive analytical work, many years of positive experience of being present in the local electrical market, an optimistic assessment of the potential and prospects for further development of partnerships with Uzbek companies. A new level in the organization of international cooperation begins, which makes it possible to extremely effectively coordinate joint activities and search for new partners.



The symbolic opening of the Representative office of Izolyator Group in Tashkent, L-R: Maxim Osipov, Ivan Panfilov, Alexander Slavinsky and Artur Nazarov



Participants of the International conference "High-voltage equipment - 125 years of creation", organized by the Izolyator Group with the support of Uzbek and Russian partners

agement of the Group on expanding its presence in the Uzbek market, and also noted the readiness of the Trade Mission to assist in promoting the Group's products and establishing cooperation with potential Uzbek partners. The trade representative also read out a welcome letter sent to the participants of the event by the Ambassador of Russia to Uzbekistan Oleg Malginov, who concluded his message with the words: "I am sure that today's event will become the starting point for further multi-vector cooperation between Russia and Uzbekistan in the energy sector and will contribute to strengthening our interaction. I wish you fruitful work and all the best".

And then came the culmination and in many ways historical moment - Alexander Slavinsky announced the Representative office of Izolyator Group in Uzbekistan officially open.



Alexander Slavinsky is presenting the rebranding

On experience and practice

Following the opening ceremony, the International Conference "High-voltage equipment - 125 years of creation" began its work, which became the first event of the Representative Office and the start of its activities.

In accordance with the conference program, Alexander Slavinsky made a report specially prepared for the event on the rebranding as a result of production diversification and expansion of its presence in the global electrical market.

Another important focus of the report was the educational aspect, as the most important factor in a systematic approach to strategic planning for the development of such science-intensive industries as modern electrical engineering and energy.

Dr. Alexander Slavinsky, heads the Department of Physics and Technology of Electrical Materials and Components of the Institute of Electrical Engineering and Electrification of the National



Words of gratitude to everyone in Uzbekistan and Russia who contributed in the new beginning

Research University MPEI - one of the largest technical universities in Russia. He spoke about the activities of the department and invited everyone to cooperate in training highly qualified personnel for the developing electric power complex of Uzbekistan.

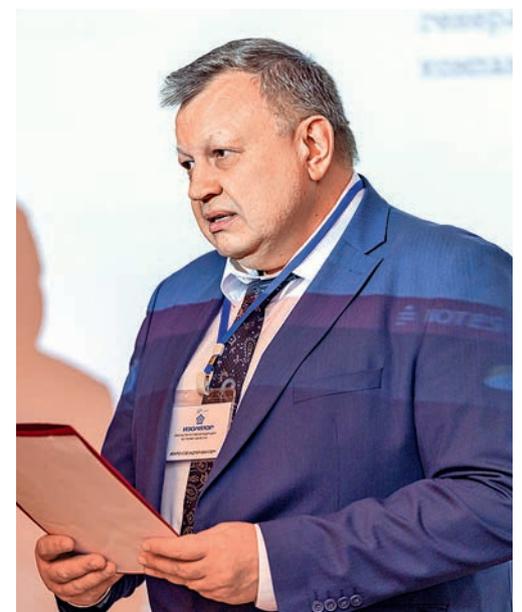
The relevance of this initiative is confirmed by the Agreement between



The representative office of Izolyator Group in Uzbekistan is open!

the Ministry of Education of the Russian Federation and the Ministry of Public Education of the Republic of Uzbekistan on cooperation in the field of education - one of the documents signed on the sidelines of the Moscow meeting of the presidents of Russia and Uzbekistan.

Summing up the results of the conference, Alexander Slavinsky stressed that the opening of a representative office in Uzbekistan, a state located in the central part of Central Asia, is very important. The region has an impressive potential for economic development and, in particular, large-scale programs for the modernization of the energy sector are planned and implemented here. It opens up broad prospects for international cooperation and creates the most favorable precon-



Welcome speech by the Trade Representative of Russia in Uzbekistan Andrey Mokrousov

ditions for effective interaction of the Representative Office with partners both in Uzbekistan itself and in the countries of the Central Asian region. Networking and discussion of the event continued on the sidelines of the conference.

Possible scenarios in the energy sector



Yaroslav Sedov
Head of Marketing Department
Izolyator Group

The key objective for the marketing department - market research with a view to subsequent integration into the most promising regions. In 2021, we focused on market research in such countries as Lithuania, Latvia, Estonia, Ukraine and Kazakhstan. Geographically, these countries are quite close to each other, have a number of historical communities, and in general, Russia has had a long history with them. One of our hypotheses was that globalization forms common trends and neighboring countries will have similar trends in energy development. Undoubtedly, the cumulative potential of the CIS countries has a significant weight: large reserves of oil, natural gas and coal.

At the same time we note a desire to reduce the volume of production of the above energy carriers in such countries as Kazakhstan, Uzbekistan and the Baltic countries, the long-term plans of the states include a movement aimed at the use of renewable energy sources.

Analyzing the results of the previous two years, we can not that there are various scenarios and forecasts for the development of the energy sector. Many major analytical publications and experts sometimes have diametrically opposite opinions, respectively, when making assumptions about the market volume, one cannot take into account the opinion of only one research center - the situation should be considered from different angles in order to form a more voluminous picture of the world.

When making forecasts, it is also worth considering a number of events and circumstances that can indirectly affect on the situation in the power sector - political stability, changes in geopolitical situations, demand for certain energy sources, prices for raw materials and materials, and in the past 2 years, a factor such as COVID-19 has occurred: situations with the introduction of lockdowns, opening and closing borders, change in the number of cases and, as a result, in the population in countries and life expectancy.

Of course, in all strategies, the trend is to increase the share of renewable energy sources. At the same time, there is a reduction in the use of nuclear energy and oil. The focus is on the environmental agenda, which is why the use of coal as an energy carrier is rapidly declining.

It is forecasted that the share of renew-

able energy sources (RES) will tend to 20–21% of the total global primary energy consumption, and wind energy will prevail among RES (about 72%), while its gradual replacement with solar and biomass energy will follow. Certainly all these changes are associated with the active environmental policy of most countries of the world. According to Bloomberg New Energy Finance, over the past 3 years there has been an increase in investments in renewable energy sources, while in non-renewable ones it is declining.

The German Fraunhofer ISE is one of the largest research centers in the field of renewable energy. Its research activities covered changes in the cost of electricity prices up to 2030. The specialists presented an updated schedule of changes in prices for energy obtained using various energy carriers. Globally, it can be concluded that the cost of renewable energy will either remain unchanged (e.g. land-based wind farms) or the cost will decrease (energy from photovoltaic cells).

At the same time the imbalance regarding the cost of traditional energy sources will grow. According to forecasts, by 2030, prices for hard coal are expected to increase by almost 2 times, which will lead to the unprofitability of coal-fired power plants.

Of course, all those movements are in line with goal 7 of the 17 sustainable development goals proposed by the UN General Assembly. The key goal is to provide access to affordable, reliable, sustainable and modern energy sources for all. Access to high-quality, uninterrupted, as well as inexpensive energy is one of the key factors of world development in the 21st century.

This challenge affects every country and every person in it. UN reports note that one of five residents does not have access to electricity, especially residents of Asia and Africa. Approximately 3 billion people in the world are still dependent on the use of traditional biomass as an energy source - wood and plant residues.

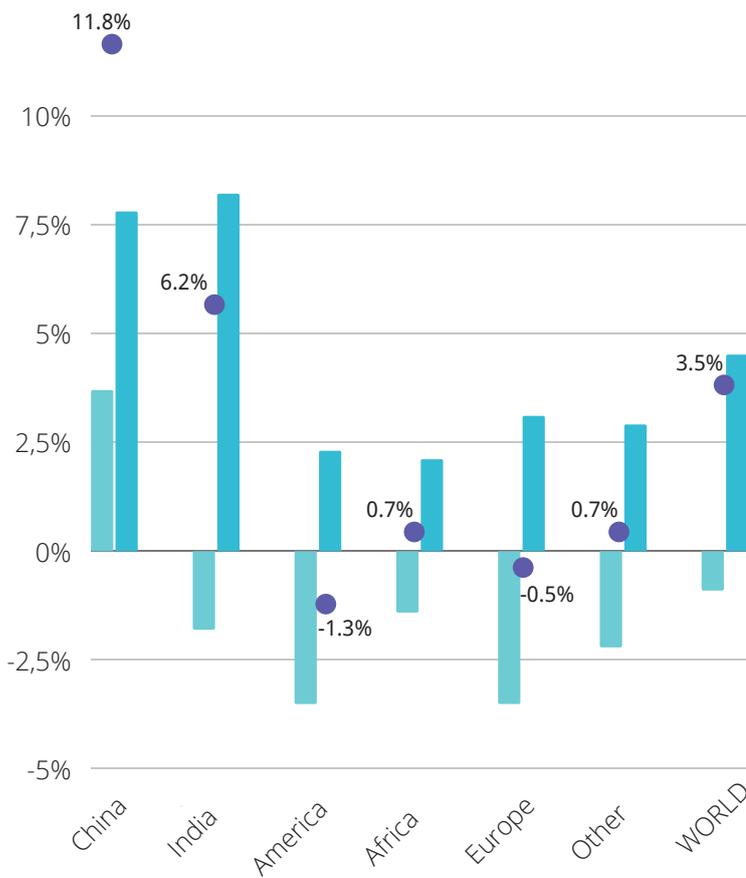
To address the issue of universal electrification, 5 tasks were developed:

1. Universal access to modern energy supply;
2. Increasing the share of energy from renewable sources;
3. Doubling global energy efficiency improvements;
4. Development of research, technologies and investments in the field of clean energy;
5. Expansion and modernization of energy supply technology in developing countries.

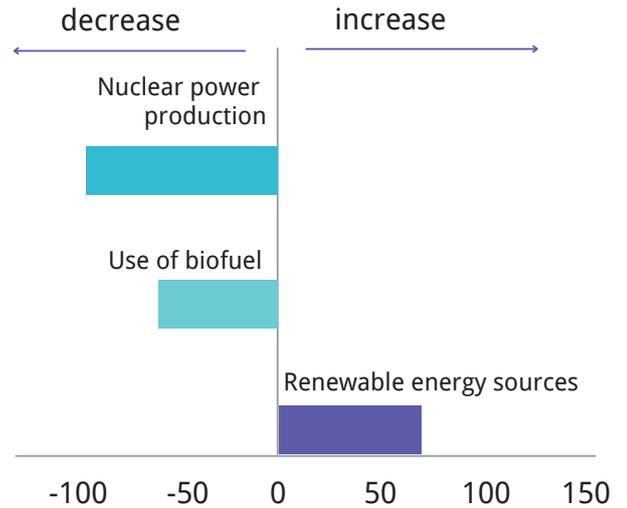
We see a versatile, but at the same time an integrated approach, which is indivisible. At the same time each country, within the framework of the tasks set, can identify priority national tasks, guided by their characteristics and conditions. According to calculations, it is necessary to increase the volume of investments in sustainable energy infrastructure by about 3 times - in the example of the United States, these figures should rise from \$400 billion to \$1.25 trillion by 2030.

Today there is an imbalance between the production and consumption of energy in countries, but the process of globalization, which is increasingly taking over today's world, makes it possible to smooth out this imbalance by establishing the import and export of energy.

Electricity demand chart in 2020 and 2021 by regions



2030 trends compared to 2011 forecast



Energy consumed by 1 person **per year**



Average life expectancy

Early XX century

1 MW



Nowadays

10-15 MW



Early XX century

40 years



Nowadays

70-80 years



2 as faster

expected growth rate of demand in energy in general than demand in energy carriers in general



Maxim Zagrebin
OEM Sales Director
Izolyator Group

In an era when personal meetings are specially valued, we are really happy to have the opportunity to meet our partners in person. We maintain strong partnerships with such manufacturers of electrical equipment as SVEL Group, Togliatti Transformer, ERSO Holding, Siemens Energy Transformers, Elmash, Electroshield Group and other companies - manufacturers of transformer-reactor equipment.

About results and new projects

Maxim Zagrebin, OEM Sales Director at Izolyator Group met with the management of the Togliatti Transformer plant at the end of December. The meeting took place at the plant administration in Togliatti.

The parties summarized the results of joint projects in 2021: as a result of well-organized, effective interaction between the two companies, all the goals set were achieved; the market positions of both companies are further strengthened and consolidated in the process of common tasks fulfillment.

In the second part of the meeting, plans for the development of cooperation for 2022 were outlined. At the same time special attention was paid to the mutual coordination of joint work on upcoming and promising projects, building the most favorable and long-term relationships with common customers. ■



40 MVA 110 kV power transformer in the test center of the Togliatti Transformer plant (photo: Togliatti Transformer)

With mutual interest

Maxim Zagrebin, OEM Sales Director at Izolyator held negotiations at the SVEL Group in Yekaterinburg. The guest was received by Chief Designer Boris Lesin and Procurement Specialist Alexey Shcherbinin.

The parties summed up the results of cooperation over the past period, discussed the implementation of existing agreements, agreed on the procedure and the most effective forms of further interaction.

Further the partners had a discussion of the prospects for joint participation in projects related to the modernization and development of the Unified Energy System of Russia. The developed priorities will be reflected in the mid and long-term planning of the product range and production activities of both companies.

The negotiations were held as efficiently as possible and with mutual interest in further expanding cooperation between SVEL Group and Izolyator. ■



Maxim Zagrebin at the office of SVEL Group, Yekaterinburg

Cooperation coordination

Transformer plant PMTT. High-Voltage Solutions is one of the long-term reliable partners of Izolyator. The second half of 2021 was marked by a number of meetings with company representatives in St. Petersburg.

Thus, Maxim Zagrebin, OEM Sales Director at Izolyator had a working meeting at the plant on 17 August 2021. The event had for its purpose coordination mainly: the progress of work under the existing agreements was discussed, the achieved results were analyzed, priorities for immediate tasks and the procedure for further interaction were determined. The parties also discussed promising projects with joint participation and ways of their effective implementation.



220 kV transformer at the test center of PMTT. High-voltage solutions (photo: PMTT. High-voltage solutions)

A new meeting took place on November 17, 2021. Together with the CEO of PMTT. High-Voltage Solutions Alexander Mayorov, Quality Director Bogdan Zvezdilin, Chief Designer Andrey Sidelnikov, Head of Sales Mikhail Melshin and Head of Procurement Irina Mamatova, Maxim Zagrebin, discussed topical issues.

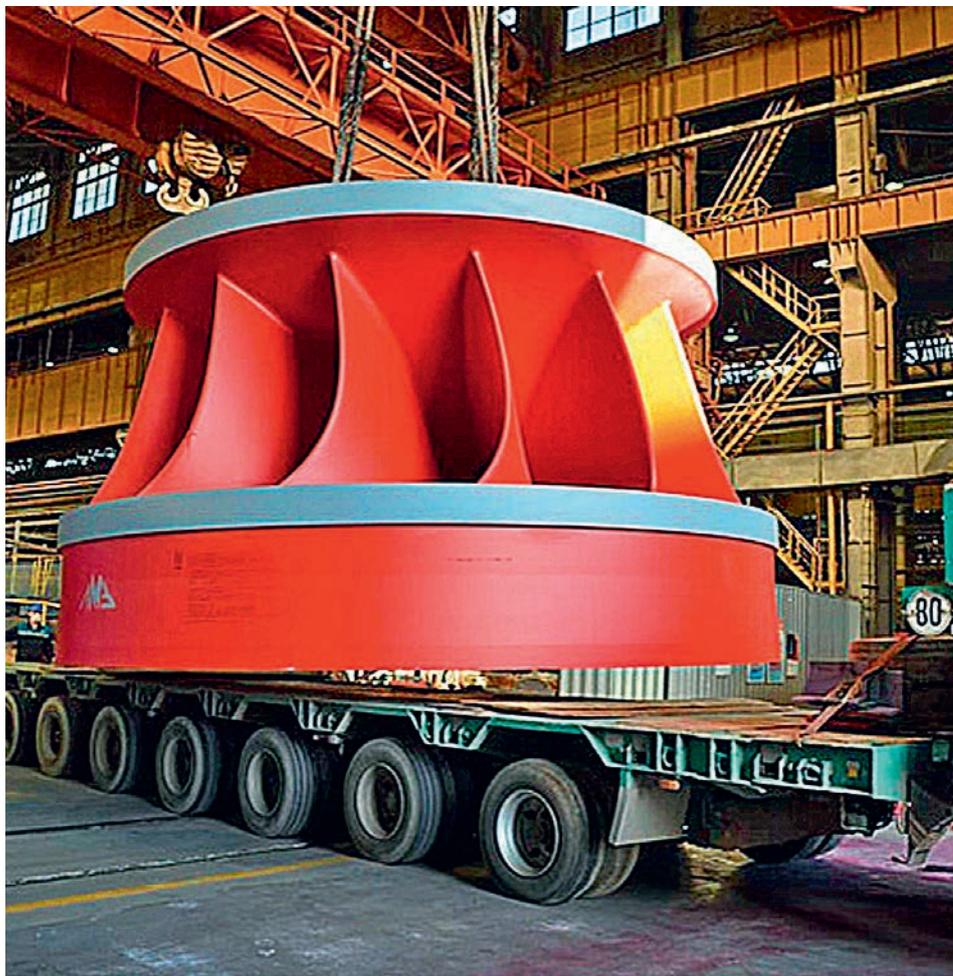
In the first part of the meeting the parties summed up the preliminary results of 2021, noting the successful results of joint activities and well-functioning interaction on all implemented projects. The second part of the negotiations was devoted to the prospects and planning of cooperation for the upcoming 2022. ■

Summarizing the work for the year

Maxim Zagrebin had an annual final meeting at Power Machines machine building company in St. Petersburg.

The guest was received by Veronika Lisnichuk, Head of the Supply Chain Department and Head of the Purchased Goods Procurement Group of the Department Kirill Karpov.

At the meeting the results of cooperation between the two companies in the outgoing year were summed up. At the same time, the parties noted the well-coordinated, effective joint work and broad prospects for further development of partnership. A plan of joint activities and improvement of interaction for 2022 has been outlined. ■



Shipment of a hydraulic turbine runner for the Ust-Srednekanskaya HPP, manufactured at the Leningrad Metal Plant of Power Machines (photo: Power Machines)

Planning online



Staff members of Izolyator Group at a video conference with Siemens Energetika Transformatory

Remote negotiations were held between representatives of the Izolyator Group and the management of the Voronezh plant Siemens Power Transformers in August. Siemens Power Transformers plant joined in via videoconference by Technical Director Andrey Mozul, Head of the Mechanical Design Group Vyacheslav Pravednikov and Leading Strategic Procurement Specialist Sophia Filonova.

Vyacheslav Pravednikov and Sophia Filonova, Leading Strategic Procurement Specialist. At Izolyator the negotiations were attended by Maxim Zagrebin, Ivan Egorov, Head of Bureau, and Ekaterina Zenina, OEM Sales Manager.

The key topic of negotiations was coordination of technical features of Izolyator HV bushings, planned for delivery and installation in power equipment made by Siemens Energetika Transformatory.

An addition to the main topic, there was a discussion of the joint participation of both enterprises in promising projects for the modernization and development of the electric power complex. The parties also outlined the next steps to further build long-term and mutually beneficial cooperation. ■



Alexander Savinov
Sales and Business Development Director (Russia)
Izolyator Group

We are expanding our presence in the global electrical market and must meet current challenges, so the time for rebranding has really come. During meetings with partners, we pay a lot of attention to promising opportunities, including giving detailed explanations of the advantages of a particular product of the Izolyator plant. So special attention is now focused on the innovative moisture-resistant internal RIN-insulation based on the use of non-woven materials impregnated with resin.

Strengthening cooperation

Introduction to production

The Rossiiskie Seti Group is a long-term partner of the Izolyator plant. Collaboration is regular and coordinated. At the end of July Grigory Gladkovsky, Deputy Chief Engineer at Rosseti Group arrived at the plant with a visit. The key goal of the meeting was to get acquainted with the production of modern high-voltage insulating equipment.

Alexander Slavinsky conducted a tour of the Izolyator Production Complex, during which Grigory Gladkovsky made acquaintance with details of the technological cycles of the manufacture of high-voltage bushings with solid internal insulation, as well as with their testing and preparation for shipment to the customer.

At the Izolyator-AKS enterprise Viktor Pshennov demonstrated to the guest its products, cable fittings up to 220 kV, and the latest technological equipment for their production. During the negotiations in the second part of the visit, the parties discussed the strategy and a long-term plan for further strengthening cooperation.



Alexander Slavinsky is making a presentation about advanced developments of Izolyator Group at a meeting of heads of technical divisions of Rosseti Group in Gorno-Altai

Priority objectives

A new stage in its development was the meeting of the heads of the technical divisions of the Rosseti Group in Gorno-Altai, which was attended by the CEO of Zavod Izolyator Alexander Slavinsky.

The meeting participants discussed the progress of preparations for the autumn-

winter season 2021/2022.

Alexander Slavinsky made a presentation "High-voltage insulating equipment: century-old traditions - advanced developments". Izolyator is a long-term reliable supplier of the Rosseti Group, including cooperating under long-term supply contracts with a number of the group's branches. ■

Unstoppable forward movement



Presentation of Izolyator Group's products at the head office of Main Power Systems Center

A presentation of the new products of Izolyator Group took place at the Main

Power Systems of Center. The event was attended by the First Deputy General Direc-

tor - Chief Engineer of MPS Center Andrey Gorbunov. Heads and specialists of all enterprises of MPS Center participated in the event via videoconference.

The parties had a dialogue regarding areas of application, advantages, technical features,

design and operation features of high-voltage bushings with moisture-resistant internal RIN-insulation. Currently, the Izolyator Production Complex makes bushings for voltage classes up to 500 kV inclusive with this innovative type of insulation. Also, a new product of Izolyator Group was presented - cable fittings for voltage classes of 110-220 kV.

The presentation raised a strong interest with specialists of MPS Center. ■

Presentation of new products



Participants of the presentation of Izolyator Group's new products at MPS Volga, L-R: Alexander Filippov, Lead Engineer of the Department for Operation and Diagnostics of Substations at MPS Volga, Yury Kurbatsky, Head of Service at MPS Volga Substations, Dmitry Doronin, Alexander Savinov and Lead Engineer at the Department for Operation and Diagnostics of Substations at MPS Volga Vladimir Yurtaev

Izolyator Group made a presentation of its new products at Main Power Systems of Volga in August. At the head office of MPS Volga in Samara, Dmitry Doronin, Head of Service Substations and Lead Engineers of the Department for Operation and Diagnostics of Substations

Yury Kurbatsky and Vladimir Yurtaev joined the meeting. Managers and specialists from all MPS Volga's enterprises also joined the meeting via videoconference.

Alexander Savinov, Sales and Business Development Director Russia at Izolyator informed

about the goals of Izolyator rebranding as resulting from a well-thought strategy to master new products and service offering.

Alexander Savinov also presented Izolyator's innovative product — high-voltage bushings with moisture-resistant internal RIN insulation. The advantages of those bushings relative to analogues with other types of insulation, design features and a range of operating conditions were considered.

Separately, Alexander Savinov dwelled on the analysis and generalization of the results of the operating track record of Izolyator high-voltage bushings in the power grid complex, which aroused particular interest among practitioners.

Alexander Filippov, Production Process Engineer at Izolyator-AKS introduced the audience to high-voltage cable fittings, which are developed and manufactured using the most modern technologies.

The entire presentation was accompanied by an interested and active dialogue aimed at further development of cooperation between MPS Volga and Izolyator. ■

About novelties in detail

Izolyator Group gave a technical seminar at the head office of the Main Power Systems of North-West in St. Petersburg. All four subordinate enterprises of Main Power systems joined in remotely.

During the seminar, a presentation of the Izolyator Group took place in the following areas:

- rebranding due to the diversification of production and expansion of its presence in the global electrical market;
- technical and operational advantages of high-voltage bushings with moisture-

resistant solid internal RIN-insulation, prospects for their application in the power grid;

- analysis of track record and features of operation of high-voltage bushings with RIP insulation;
- application scope, design and advantages of cable fittings of voltage classes 110–220 kV produced by Izolyator-AKS.

Representatives of Izolyator gave detailed answers to all questions from the audience regarding the topics of the seminar. ■



Izolyator Group's seminar at the head office of MPS North-West with remote participation of subordinate enterprises

An optimal format for discussing actual issues



Technical seminar of Izolyator Group at the head office of MPS South in Zheleznovodsk of Stavropolsky Kray, R- Head of Substation Operation and Diagnostics at MPS South Alexander Siryakov

A technical seminar at the head office of the Main Power Systems of South in the city of Zheleznovodsk, Stavropolsky Kray was conducted by specialists of Izolyator Group.

Directly at the head office of the MPS South, the Head of Substation Operation and Diagnostics Alexander Siryakov and other colleagues of division took part in the seminar. Technical specialists of MPS South's enterprises participated in the seminar via videoconference.

Izolyator was represented by Oleg Bakulin, Partner Relations Director and Viktor Kiryukhin, Lead Technical Support Specialist.

The seminar went in the form of an interested dialogue and, according to the general opinion of its participants, became an important step in the development of cooperation between MPS of the South and Izolyator. ■

Communication of professionals



Participants of Izolyator Group's seminar at the training center of Rosseti Ural in Yekaterinburg

Face-to-face remote technical seminars in the cities of Yekaterinburg and Chelyabinsk for managers and specialists of branches of the interregional distribution grid company Rosseti Ural were held by Izolyator Group in October 2021.

The seminar held on October 13 at the Scientific Center of Rosseti Ural in Yekater-

inburg, was attended by branches Permenergo, Sverdlovenergo and Yekaterinburg.

The seminar held on October 14 in the Chelyabinsk branch of the Training Center, was attended by the Chelyabenergo branch, as well as representatives of the regional distribution grid company Rosseti Tyumen.

In total more than 40 managers and specialists of the utility took part in the seminars, which representatives of Izolyator held in the same topic.

Leading Sales Manager Russia at Izolyator Dmitry Limarenko made a report about Izolyator rebranding due to diversification of production and expansion of presence in the world electrical market.

Production Process Engineer of the cable accessories plant Izolyator-AKS Alexander Philippov made a presentation about the application, design and advantages of cable fittings in 110-220 kV range made by Izolyator-AKS plant.

Aleksey Pilyugin, Head of the SVN-Service Department, devoted his first report to the technical and operational advantages of high-voltage bushings with moisture-resistant solid internal RIN insulation, the second report was devoted to the operation of high-voltage bushings with RIP insulation.

A productive and mutually beneficial professional dialogue took place on all topics of the seminar. ■

Interest of specialists

Staff members of Izolyator Group gave a technical seminar at the head office of interregional distribution grid company Rosseti Lenenergo in Saint-Petersburg. All the nine territorial branches of Rosseti Lenenergo joined it remotely.



Izolyator Group's seminar in the head office of Rosseti Lenenergo with remote participation of its branches

Acting First Deputy General Director - Chief Engineer of Rosseti Lenenergo Pavel Samylov received the guests and also acted as a moderator of the seminar.

During the dialogue with representatives of Rosseti Lenenergo, all the necessary explanations and detailed answers to questions on the material presented were given.

The audience was especially interested in the completely new RIN-insulation of Izolyator bushings and high-voltage cable fittings of Izolyator-AKS. ■

At the intersection of experience and innovation



Remote seminar in Rosseti Tyumen

Alexander Savinov, Sales and Business Development Director Russia at Izolyator Group visited the head office of the interregional distribution grid company Rosseti Tyumen in Surgut.

The parties summed up the results of joint activities over the past period, noting the successful interaction on implemented and existing agreements.

Further plans for the development of cooperation for 2022 took a central place in the negotiations: the range and scope of supplies of Izolyator high-voltage bushings, the introduction of innovative solutions in the power grid of Rosseti Tyumen, the improvement of the most effective forms of joint work, and much more.

Izolyator pays a lot of attention to communication with specialists working in

partner companies. Technical seminars are especially helpful. Thus Izolyator's remote seminar at the interregional distribution grid company Rosseti Tyumen took place in July. All nine territorial power grid branches of Rosseti Tyumen took part in it via videoconference.

Presentations were made during the seminar. During the seminar, Izolyator gave several presentations, among which the rebranding due to the diversification of production and expansion of presence in the global electrical market received most of the coverage.

Traditionally for seminars, a significant share of attention was focused on the technical and operational advantages of high-voltage bushings with moisture-resistant solid internal RIN insulation. ■

Long-term partnership

Izolyator Group held a technical seminar at the head office of the interregional distribution grid company Rosseti North Caucasus in the city of Pyatigorsk, Stavropol Territory, on September 9, 2021.

The seminar was attended by Alexander Desyuk, Head of the Department of Technological Development and Innovations of Rosseti North Caucasus, and other employees of the department. Izolyator was represented by Oleg Bakulin, Director of Partner Relations, and Viktor Kiryukhin, Lead Technical Support Specialist.

During the seminar, a presentation of the Izolyator Group took place to talk about:

- rebranding due to the diversification of production and expansion of its presence in the global electrical market;
- technical and operational advantages of high-voltage bushings with moisture-resistant solid internal RIN-insulation, prospects for their use in the power grid sector;
- analysis of experience and features of operation of high-voltage bushings with RIP insulation;



Technical seminar of Izolyator Group at the head office of Rosseti North Caucasus in Pyatigorsk, Stavropol Territory, second from right — Head of the Department of Technological Development and Innovations of Rossiiski Seti North Caucasus Alexander Desyuk

- scope, design and advantages of cable fittings of voltage classes 110–220 kV manufactured by Izolyator-AKS.
- In general, within the framework of the semi-

nar, a mutually beneficial professional dialogue was obtained, contributing to the strengthening and further development of long-term partnerships between the two companies. ■

From seminar to plans for the future



Seminar of Izolyator Group for specialists of the Operation Service of the branch of the interregional distribution grid company Rosseti Yug — Rostovenergo in Volgodonsk

In October Izolyator held a seminar for specialists of the Operation Service of Rostovenergo, a branch of the interregional distribution grid company Rosseti Yug, in Volgodonsk.

Viktor Kiryukhin, Lead Technical Support Specialist of Izolyator introduced the Rostovenergo specialists to the new areas of the company's activities.

Aleksey Pilyugin, Head of the SVN-Service Department, devoted his report to the analysis of the experience and operation features of the Izolyator high-voltage bushings with RIP insulation.

In Rostov-on-Don Izolyator representatives met with the management of Rosseti Yug and its branch Rostovenergo. The meeting discussed the further development of partnership. ■

A dialogue with professionals

Employees of Izolyator Group held a seminar at the State Unitary Enterprise of the Republic of Crimea Krymenergo. Alexander Savinov, Sales and Business Development Director Russia and Alexey Pilyugin, Head of SVN-Service, made presentations on the topics of the seminar.

Alexander Savinov presented a new direction of the company's activity - the development and production of high-voltage cable accessories, which are promoted by the specially created enterprise Izolyator-AKS.

Alexey Pilyugin devoted his speech to two important topics: the analysis of the operating experience of Izolyator high-voltage bushings and the innovative product line in the range of the Izolyator Production

complex - high-voltage bushings with moisture-resistant internal RIN-insulation.

The intense program of the seminar aroused great professional interest among Krymenergo specialists, which contributed to an open and productive dialogue throughout the event. ■



Presentation of rebranding concept of Izolyator brand at the State Unitary Enterprise of the Republic of Crimea Krymenergo

44 | Meeting in detail

The Izolyator production complex and the Izolyator-AKS enterprise received a visit of the representatives of the executive office and chief engineers of the branches of the distribution grid company Rosseti Moscow Region. The visit took place as part of an offsite meeting of technical managers of the Rosseti Moscow Region company.

The main purpose of the visit was to get acquainted with the modern production of high-voltage bushings and high-voltage cable accessories.

Dmitry Gvozdev, First Deputy CEO and Chief Engineer of Rosseti Moscow Region, led the group of visitors.



▲ Participants of the meeting of technical managers of Rosseti Moscow Region during a visit to the Izolyator Group

► Seeing the exposition of the Izolyator Group corporate museum



▼ Technical management of Rosseti Moscow Region are getting familiar with the organizational structure of the Izolyator Group



▲ First Deputy CEO - Chief Engineer at Rosseti Moscow Region Dmitry Gvozdev (L) and Alexander Slavinsky at the presidium





◀ A tour of the high-voltage bushings assembly shop

▶ Technical managers of Rosseti Moscow Region at the test center of the Izolyator Production Complex



▲ Visit to Izolyator-AKS - developer and manufacturer of high-voltage cable accessories

▼ Demonstrating serial samples of Izolyator-AKS cable fittings



GEOGRAPHY OF SALES IN 2021

19 COUNTRIES



-  Armenia
-  Mexico
-  Belarus
-  Moldova
-  Belgium
-  Poland
-  Vietnam
-  Portugal
-  Germany
-  Russia
-  Georgia
-  Turkey
-  India
-  Uzbekistan
-  Italy
-  Ukraine
-  Kazakhstan
-  Finland
-  Kyrgyzstan

-  Kentau Transformer Plant
-  EEMC
-  PowerGrid
-  Togliatti Transformer
-  PMTT. High-voltage Solutions
-  Siemens AG
-  Vitebskenergo
-  SVEL-Power transformers plant
-  Fortum
-  Dniestrenergo
-  Elia
-  Uralelectrotyazhmash
-  VNIIR Hydroelectroavtomatika
-  EVN
-  SuperOx CJSC



-  Electrogeneratsiya INTER RAO
-  Gomelenergo
-  Chirchiq Transformer Plant
-  Rosseti Moscow Region
-  Hydroremont-VKK

-  ATEF Group
-  Unipro PJSC
-  Electrozavod - ERSA
-  Rosseti FGC UES

-  Energy Standard
-  Rosseti
-  Electroshield Samara



Oleg Bakulin
Partner Relations Director
Izolyator Group

The year turned out to be very fruitful for us and there are a number of projects and events that I would like to mention, especially since some of them took place in the second half of 2021. Yes, we have successfully completed supply of 110 to 500 kV high-voltage bushings as part of a targeted program to replace obsolete bushings in the second generating company of the wholesale electricity market (WGK). The world is learning to live in new realities and we are improving along with it. Despite the logistical difficulties that affected virtually all businesses, in 2021 we successfully met the supply objectives. The principle remains unchanged for us to strictly comply with the agreements and deliver on time and in the declared volume. For us, this is an important advantage.

Rostov NPP arrived with inspection

Rostov NPP together with the specialized organization VO Safety inspected the testing of Izolyator high-voltage bushings in October. In the test center of Izolyator, acceptance-delivery and periodic tests of 500 kV transformer bushings, intended for

the needs of the Rostov NPP, were carried out.

The inspection team included the Lead Engineer of the Electrical Shop of the Rostov NPP Sergey Padun and the Chief Expert of the central branch of VO Safety Sergey Semochkin. The tests

were supervised by the Director for Testing and Metrological Assurance Dmitry Ivanov.

All tests were carried out in full and completed successfully. Based on the results of periodic tests, a tripartite act of periodic tests was drawn up and approved. ■



Lead Engineer of Electric Shop of Rostov NPP Sergey Padun (L) and Chief Expert of the Central Branch of VO Safety Sergey Semochkin (C) are inspecting test of Izolyator high-voltage bushings

A close introduction to details

Representatives of the Dagestan branch of the RusHydro Group and the engineering group of companies Electro Pool visited the Izolyator Production Complex in December.

The Dagestan branch of the RusHydro Group was represented by Ruslan Abdurazakov, Head of the Electrical Equipment Group, and the Electro Pool Group of Companies - by Evgeniy Bezuglov, Commercial Director. The guests were received by Oleg Bakulin, Director for Partner Relations at Izolyator.

A tour of the Izolyator Production Complex took place, where the guests got acquainted with the most modern technological equipment and all the stages of manufacturing and testing high-voltage bushings with solid RIP- and RIN-insulation.

During the meeting the guests were presented with the technical and operational advantages of high-voltage bushings with moisture-resistant solid internal RIN insulation, as well as the scope, design and advantages of cable fittings of voltage classes 110-220 kV produced by the Izolyator-AKS plant. In addition, detailed answers were given to all the guests' questions regarding the operation of Izolyator high-voltage bushings with RIP insulation. ■



Head of the Electrical Equipment Group of the Dagestan branch of the RusHydro Group Ruslan Abdurazakov (C) and the Commercial Director of Electro Pool Group of Companies Evgeniy Bezuglov (L) at Izolyator plant

Strengthening of cooperation

Technical specialists of the Unipro generating company visited the Izolyator Production Complex in August. The purpose of the visit was a visual acquaintance with modern technologies for the production and testing of high-voltage insulating equipment.

The delegation of specialists included: Dmitry Pavlov, Chief Specialist of the Executive Office, Maintenance and Technical Re-equipment Department; Chief Specialist of the Executive Office, Production and Technical Department Vladimir Lebedev; Alexey Konovalov, Chief Specialist of the Executive Office, Resource Supply

Group; Deputy Chief Engineer of Surgutskaya SDPP-2, a branch of Unipro, Sergey Ustimenko.

A detailed acquaintance with the technological stages of manufacturing high-voltage bushings with solid internal RIN- and RIP-insulation took place during a tour of the Izolyator Production Complex. At the same time, exhaustive explanations were given for all technological operations.

Unipro specialists highly appreciated the results of the visit to the production facility.

This event further strengthened the fruitful cooperation between the two companies. ■



Unipro specialists are getting familiar with the process equipment for production of high-voltage cable accessories

With practical benefit



Izolyator Group's seminar at the energy company Sakhalinenergo in Yuzhno-Sakhalinsk

Izolyator Group held a seminar for technical specialists of the Far Eastern energy company Sakhalinenergo in Yuzhno-Sakhalinsk.

Izolyator Group was represented by Konstantin Murzin, General Director of Izolyator-AKS, and Director of Partner Relations of Izolyator Group Oleg Bakulin. At the head office of Sakhalinenergo, the guests were received by Nikolay Burkhovetsky, Head of the Electrical Service Sector, after which a seminar was held with the participation of technical specialists of divisions and branches of the company.

During the seminar, the topics reflecting the key activities of the Izolyator Group were covered in detail. ■

Answers to all questions



Joint technical seminar of Izolyator for specialists of Rosseti Tomsk and Tomsk generation

Specialists of Izolyator Group held a joint technical seminar in Tomsk for specialists of Rosseti Tomsk and Tomsk Generation in September.

Oleg Safonov, Head of the Technological Development and Innovation Department

at Rosseti Tomsk, Alexey Perovsky, Chief Expert in Relay Protection and Automation at Tomsk Generation, as well as technical specialists from both companies, took part in it. Izolyator was represented by Oleg Bakulin, Director of Partner Relations

at Izolyator, and Viktor Kiryukhin, Lead Technical Support Specialist of Izolyator's commercial division.

During the seminar, a presentation of the Izolyator Group took place in the following areas:

- rebranding due to the diversification of production and expansion of its presence in the global electrical market;
- technical and operational advantages of high-voltage bushings with moisture-resistant solid internal RIN-insulation, prospects for their application in the power grid;
- analysis of experience and features of operation of high-voltage bushings with RIP insulation;
- scope, design and advantages of cable fittings of 110–220 kV voltage classes manufactured by Izolyator-AKS.

For each topic the report was accompanied by detailed answers to all questions of professionals, who highly appreciated the event. ■

Bushings for Russian federal nuclear center



The building of the Russian Federal Nuclear Center - All-Russian Research Institute of experimental physics in Sarov (photo: Scientific portal "Atomic Energy 2.0")

In 2021 Izolyator won a tender for the supply of high-voltage bushings for the needs of the Russian Federal Nuclear Center - the All-Russian Research Institute of Experimental Physics of the State Atomic Energy Corporation Rosatom.

The 110 and 220 kV bushings were designed for installation on oil circuit breakers of the Nuclear Center's own electrical substation.

The result of the tender confirms the highest reliability and safety of Izolyator products, its ability to serve flawlessly at the most important federal facilities. ■

Space Center Vostochny thanks for the fruitful cooperation



Launch vehicle Soyuz-2.1a at the launch complex of the Vostochny cosmodrome (photo: TsENKI)

In December 2021 the Vostochny Space Center expressed its gratitude to the Izolyator Production Complex for fruitful cooperation. Izolyator supplied high-voltage bushings with innovative RIN insulation to Vostochny facilities.



Director of the Vostochny Space Center Valinur Agishev thanked Izolyator for fruitful cooperation.

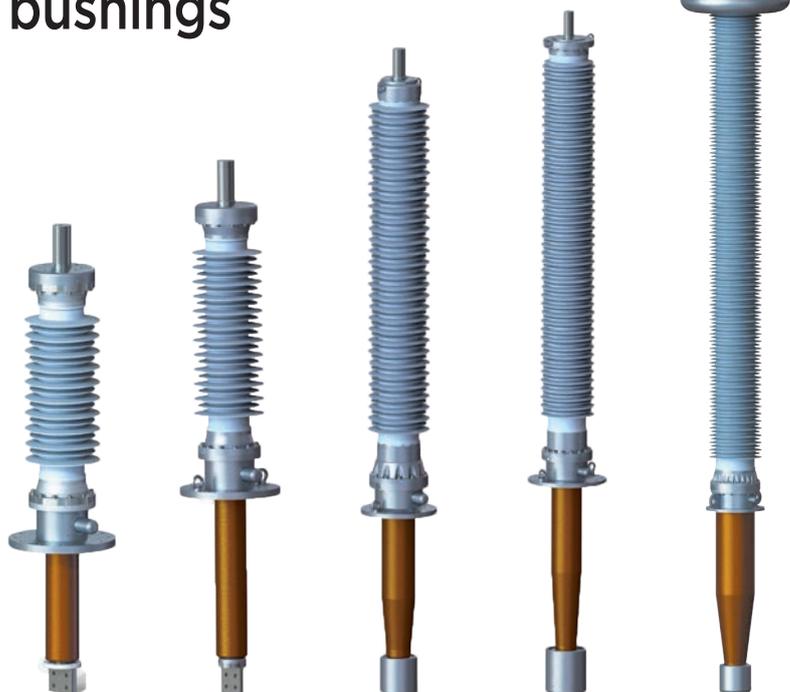
The Izolyator production complex has established itself as a reliable and responsible business partner with a high level of professionalism, always fulfilling its obligations efficiently and promptly.

The Vostochny Space Center is a branch of the Center for the Operation of Ground-Based Space Infrastructure Objects (TsENKI).

The Center is the leading enterprise of the rocket and space industry in Russia. ■

POWER INDUSTRY OF RUSSIA 2021

High-voltage bushings



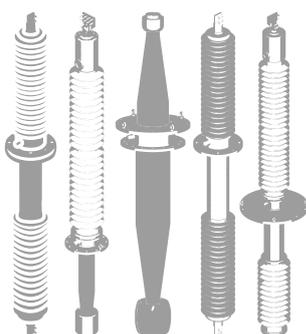
Over
4000 bushings
10-750 kV

supplied in 2021 to the
Unified Energy System
of Russia

Including
90 bushings
500-750 kV

Over
440

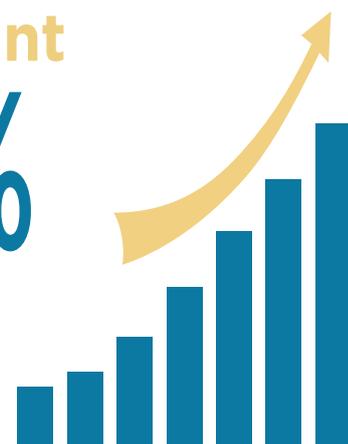
high-voltage
bushings
delivered to
transformer
plants of Russia



Izolyator plant

75-80%

of high-voltage bushings
market in Russia and
neighboring countries



Cable accessories

The production of the innovative and high-tech Russian cable accessories: cable joints and outdoor terminations, dry pluggable connectors for high-voltage classes from 110 to 220 kV for power facilities in Russia, neighboring countries and overseas

 IZOLYATOR-AKS



Overview of the technological development of production of high-voltage bushings



Dmitri Lopatin
Director Production and Technical Service
Izolyator Group

In 2021 by joining our efforts, we have achieved a 42% increase in the production of high-voltage bushings in labor-intensive voltage classes of 220-750 kV compared to the last year. And in respect to the 500 kV class, we have approached the output of bushings made over the previous 3 years.



LTC-35 CNC lathe

industry of our country. The above said is particularly visible in the mechanical workshop, which is used for most of the technological procedures associated with the processing of metal products. Still in the insulation workshop shop, a large-scale project is currently being implemented to improve the technology of direct casting of external insulation made of organosilicon material on the bushing core, this project will allow our company in the very near future to qualitatively and quantitatively reach a new level of production of high-voltage bushings with insulation made of silicon-organic compounds.

As for results of the outgoing 2021, there was a large infrastructure development project resulting in the opening of

The anniversary year 2021 can rightly be called a year of transformation for our production. As part of the approved technical re-equipment plan, as well as production development projects, our equipment fleet has been renewed.

We pay a special attention to the safety of the employees of the enterprise and strive to increase productivity. During the year we carried out the replacement of worn-out and unmaintainable machines for modern and efficient equipment that meets the highest standards and requirements necessary for the production of quality products and the sustainable development of the energy



The new fleet of CNC machines



CNC Vertical Milling Center GSM-1500LF

a new production site in the Shakhovskaya city district to enable us to more rationally utilize floor space of the Izolyator Production Complex with a view of coming internal reorganization and prepare for construction and launch of the Blanking shop, the creation of which by now has already ensured the timely preparation of initial metal products (blanks) for subsequent machining and allows us to transparently and efficiently organize in-shop work processes in order to evenly distribute the load between the structures of the production and technical service and optimize the movement of materials on the territory of the enterprise. Within this workshop, at present a new technology for our company, waterjet cutting of metals, has been mastered and applied, which makes it possible to significantly reduce the number of technological operations in the preparation of metal blanks for their further processing, as well as to



Repair station



Revamped equipment of the energy-mechanical department

maximize effective use of the metal coming from suppliers by optimizing material cutting charts.

The areas of the intermediate warehouse of the production and dispatching service of the enterprise, as well as the premises of the energy and mechanical department, were almost completely reorganized. As part of this reorganization, a significant amount of industrial furniture (workbenches, cabinets), as well as lifting equipment (cranes, stackers, racks) was either revamped or purchased.

We managed to partially optimize the warehouse space of the purchasing department, where the primary storage of almost all materials used in production is carried out due to significant compaction, as well as the renewal of warehouse equipment and the organization of an updated area for the incoming control of materials and components. These measures allowed to increase storage stations by 20% with a significant

actual reduction in the total area of the warehouse.

The main result achieved by all those changes is a significant increase in the productivity of our enterprise. In 2021 by joining our efforts, we have achieved a 42% increase in the production of high-voltage bushings in labor-intensive voltage classes of 220-750 kV compared to the last year. And in respect to the 500 kV class, we have approached the output of bushings made over the previous 3 years.

These transitive improvements are but the next step on the path of sustainable development of the entire Izolyator group for us. In the new 2022 we have planned even more grandiose changes, which in the very near future will make it possible to qualitatively and quantitatively meet all the wishes our current customers, as well as help attract new partners.



Yury Nikitin
Chief Designer
Izolyator Group

Summing up the results of the past year, it is especially important to compare them with the basis they formed for further development in the future. In 2021 a significant event for our plant took place - the release of the anniversary bushing number 600 000. It turned out to be one of 220 kV serial bushings with RIN insulation, intended for shipment to one of the Russian power networks.

Making the unique familiar

Yury Nikitin, Chief Designer of the Research and Development Center of the Izolyator Group, spoke about what successes were achieved, what are their features and what path preceded those victories.

However, it is not so important which bushing and for which network is intended: what is important is that the bushings with the most modern in the world RIN-insulation today are serial with us, and their production is an ordinary routine.

To make the production of RIN bushings a habit, we first had to develop the design, technology and organize the production of bushings with RIP insulation from scratch. Yes indeed, exactly with RIP insulation, since the production technology of RIN insulation is based on RIP technology.

It is no secret that the first bushings with RIP insulation appeared abroad back in the 60s of the last century, and the first Russian-made bushings (meaning - of the Izolyator plant's production) were released only at the end of the 90s of the last century, i. e. at least 30 years behind. Gradually, we developed the designs of bushings and the technology of their production.

We mastered mass production of bushings of all voltage classes up to 1200 kV. And along the way, numerous technical and technological issues were also resolved. In particular, hygroscopicity of insulation material

was one of the problems, i.e. its ability to catch moisture during storage and transportation. There are many ways to protect against moisture, but there is only one radical one - you need not protect the bushing during storage time, but to exclude paper (cellulose) from the insulation material. As long as there is no paper - there will be nothing getting wet. And instead of paper, you need to use some material that does not contain cellulose, i.e. nonwoven canvas. This is how a new type of insulation was born, which we named RIN in 2009 and registered the corresponding trademark.

By the way at the time of registration of the RIN trademark, there existed no foreign analogue of bushings with solid paperless insulation in the world. Thus our plant not only caught up with, but also overtook the world's leading manufacturers of high-voltage bushings, and, in my opinion, primarily thanks to non-standard approaches in design and production.

With the application of new technology, after many experiments and tests, we have been able to develop design and put into mass production unique bushings that are unrivalled in the world. And in 2016 we devel-

oped a capacitive insulation device that is capable of operating in liquid nitrogen at a temperature of minus 196 °C. As of today, i.e. more than 5 years since the creation, no one else in the world has been able to create anything similar. And the 220 kV bushings continue to successfully operate at the Nizhniye Mnevniky substation, staying unaware that they are unique, the first and to this day the only such bushings in the world.

We are effectively retaining leadership in the production of RIN bushings, and with this fact I first of all want to congratulate the plant's team. We are capable to stand to any tasks and challenges of the modern world. Next in line is the development and mass production of a new type of high-voltage bushings of the filled compound. The new technology will allow to reduce the terms by several times, labor intensity and, accordingly, the cost of production of bushings. Yet, this is another, new story.

The Research and Development Center (RDC) was established on the basis of the Special Design and Technology Bureau (SDTB) of the Izolyator plant in June 2020. The RDC received a newly created pilot production, which is currently equipped with modern equipment, including the latest models of CNC machines.

Improving the standard

The Izolyator Group took part in the state tests of the improved State primary special standard of the DC electrical voltage unit. The tests were carried out at the Main Scientific Center of the State Metrological Service of Russia - the All-Russian Research Institute of the Metrological Service.

The state primary special standard of the unit of direct current electrical voltage - volt in the range of $\pm (1 \dots 500)$ kV (GET 181-2010) is intended for storage, reproduction and transmission.

The standard is used in the electrical and cable industries, instrument making, electric power industry, and railway transport. Perfection of the

standard was carried out in order to improve the accuracy of determining its metrological characteristics in the range of $\pm (1 \dots 100)$ kV.

The Federal Agency for Technical Regulation and Metrology formed a commission of experts for conducting state tests, which, along with experts from leading Russian scientific centers and enterprises, included the Director of the Moscow branch of the Izolyator plant Vladimir Ustinov and the Director for Testing and Metrological Assurance of the Izolyator Production Complex Dmitry Ivanov.



The state primary special standard of the unit of direct current electrical voltage, which has passed improvement - volt in the range of $\pm (1 \dots 500)$ kV (photo: VNIIMS)

Based on the test results, the commission signed an act recommending the adoption of the improved GET-181 as a state standard,

which will be submitted to the Federal Agency for Technical Regulation and Metrology for approval and entry into the state register. ■

Proven in practice



Participants in high-voltage tests of Chelenergopribor scaling voltage converters in the test center of the Izolyator Production Complex, second from left - Deputy Director of Chelenergopribor Alexander Volovich

In the test center of the Izolyator Production Complex, high-voltage tests of 35 and 110 kV scaling voltage converters developed by Chelenergopribor from Chelyabinsk were carried out.

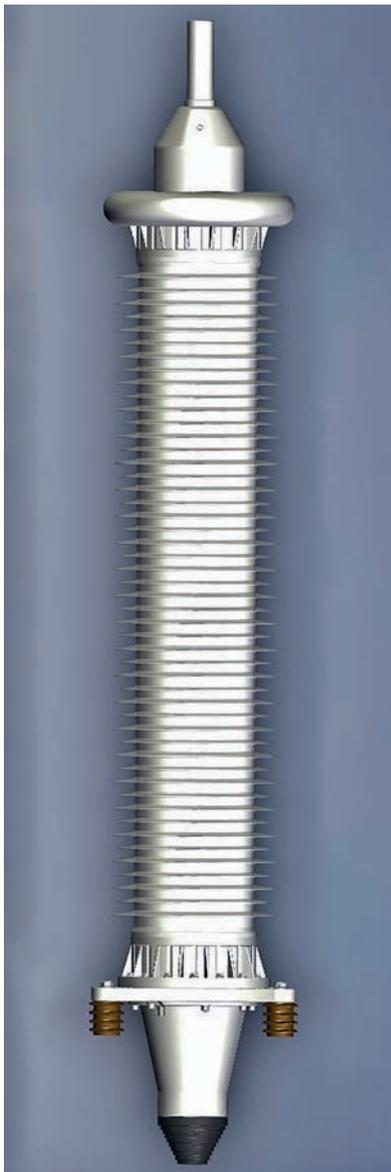
Tests with alternating high voltage of industrial frequency of 50 Hz and full standard lightning impulses of $1.2/50 \mu$ s were carried out as part of standard (experimental) work under an agreement with Chelenergopribor.

The tests were attended by Chelenergopribor specialists, headed by Deputy Director of the company Alexander Volovich. The work was supervised by the head of the Izolyator test center Pavel Romanenko.

The tests were carried out in the proper scope and in full compliance with the requirements of the customer - Chelenergopribor. ■

110 kV fully dry outdoor termination - a unique development of Izolyator-AKS plant

At the beginning of December 2021 the Izolyator-AKS plant mastered the production of new products - dry self-supporting outdoor termination for 110 kV voltage class.



ISKM-126 dry outdoor termination with composite insulator designed by Izolyator-AKS enterprise



Employees of the Izolyator-AKS enterprise demonstrate the stress cone of a 110 kV dry termination to a representative of RusCable.Ru portal Alexandra Lukina

This is a completely domestic development with unique design solutions and great potential for power facilities applications at the Rossiiskie Seti branches, capable of replacing oil- and gas-filled terminations which are currently operated in 110 kV and higher electrical networks, in the next few years.

The fundamental difference lies in the shape of the stress cone, which is designed to work in the absence of liquid or gaseous dielectric. This design, from the point of view of economy, not only does not lose to oil- and gas-filled counterparts, but in the long term even surpasses them in terms of efficiency of use in the electric power complex.

Viktor Pshennov, Technical Director of

Izolyator-AKS, identified eight key advantages of the ISKM type dry termination:

- significantly increases the reliability of the coupling due to the absence of a liquid or gaseous phase in the design and, accordingly, eliminating of the possibility of its leakage;
- simplifies the supporting structures and the installation process due to the lower weight of the coupling compared to existing analogues;
- the coupling can be installed at any angle as there is no liquid in the design;
- installation of the termination is simplified and accelerated by eliminating the operation of filling with a liquid or gaseous dielectric;

Technical Features of ISTK-126 dry outdoor termination of Izolyator-AKS

Maximum operating voltage 50 Hz	126 kV
Operating voltage phase/mesh	64/110 kV
Test voltage for partial discharges (PD)	96 kV
PD level	≤5 pC
Test voltage 50 Hz, 30 min.	160 kV
Full wave lightning impulse test voltage 1.2/50 μs.	550 kV
Test switching impulse voltage 250/2500 μs.	—
Cable cross section (core)	185 ÷ 2000 mm ²
Insulation diameter of prepared cable	50.5 ÷ 95.0 mm
Maximum diameter over cable sheath	140 mm
Contact part diameter: - for cable with conductor cross section up to 400 mm ² - for cable with conductor cross section up to 2000 mm ²	50 mm 60 mm
Insulator length	1820 mm
Discharge distance	1670mm
Creepage distance, min	6417 mm
Pollution level according to GOST 9920-89	IV
Maximum bending strength of the insulator	3 kN
Climatic version	UHL1
Ambient temperature	-60 ÷ +50°C
Estimated weight	97 kg

- no additional supporting structures are required — the coupling design is self-supporting;
- the control element (stress cone) does not require additional assembly, since it is completely manufactured at Izolyator-AKS;
- the coupling does not require filling with SF₆ gas and can be operated at low

temperatures without the need for additional heating and gas pressure control;

- The termination does not include cable gland parts as it is a one-piece construction.

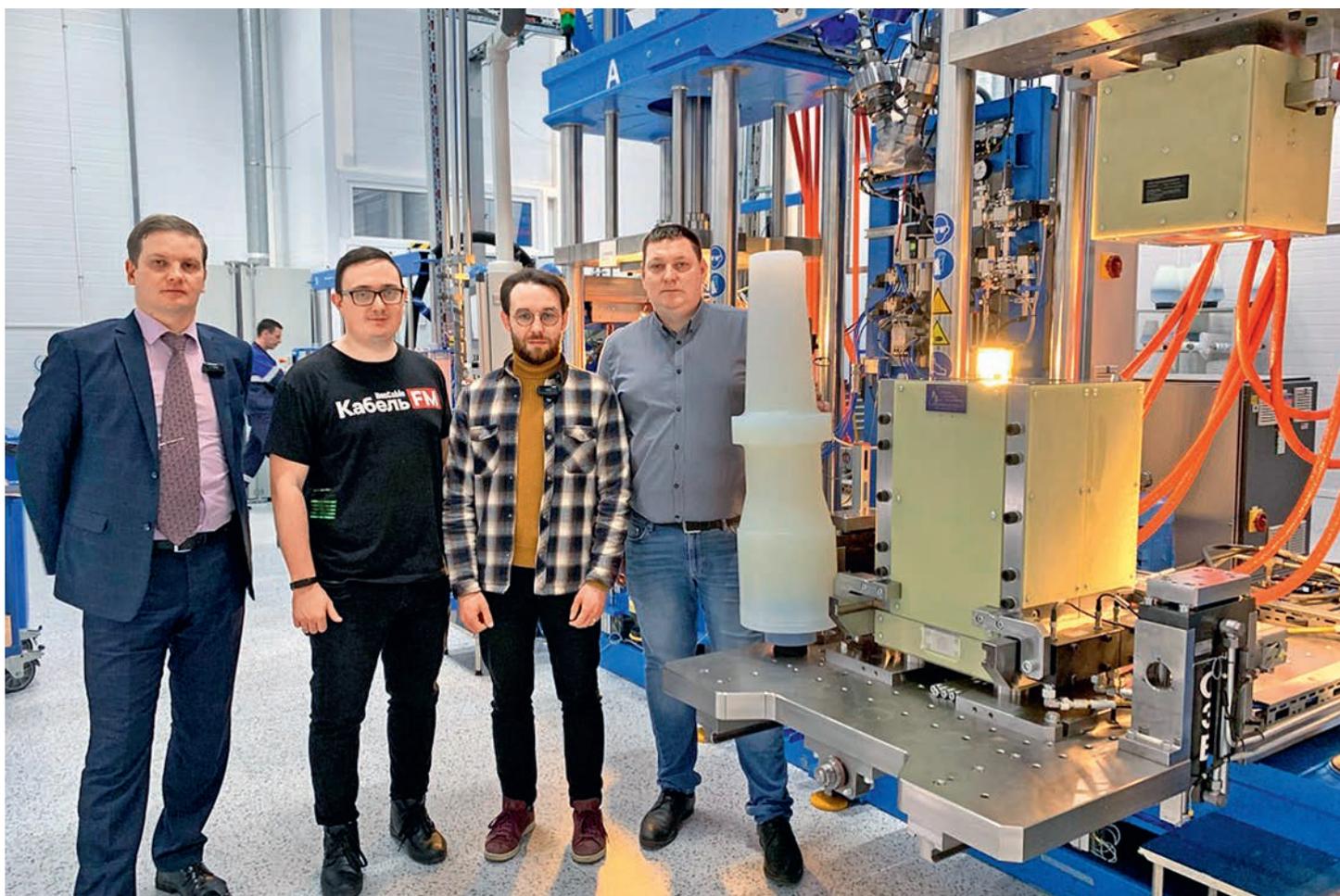
The creation of a completely domestic high-voltage and ultra-high-voltage cable system is a strategically important task that must be solved within the framework of the concept of import substitution.

The implementation of this large-scale project is an unconditional priority for the Izolyator-AKS enterprise, which is a unique engineering and production center for the development and production of high-voltage cable accessories.

Since September 2021 the company has been an authorized member of the non-profit partnership of cable manufacturers "International Association" Electrocable".

The new development of Izolyator-AKS - dry termination ISKM-126 - is the result of an evolutionary approach to the development of power transmission and distribution technologies, which allows to consistently improve the safety and efficiency of the power system.

Based on RusCable.Ru materials



The RusCable.Ru portal is visiting Izolyator-AKS. Pictured from left to right: Technical Director of Izolyator-AKS Viktor Pshennov, Director of Marketing and Special Projects of RusCable Media Holding Sergey Kuzminov, Process Engineer of Izolyator-AKS Alexander Filippov and Deputy Technical Director of Izolyator-AKS Alexander Danilov



Dmitry Karasev
Head of Purchasing Department
Izolyator Group

We appreciate in partners their support and understanding, their readiness to adapt to the most unpredictable challenges. It is important for us to expand the pool of just such suppliers with whom we can work on mutually beneficial terms. In 2021 we have been actively moving towards this goal. Having analyzed the most vulnerable and the most costly positions, we entered into new contracts with suppliers on terms that allow us to optimize our costs. Long-term planning in our work truly allows us to analyze and find exactly those options that will be most suitable.

A direct contact

The Metal-Expo international industrial exhibition was held at the Expocenter Exhibition Complex in Moscow for the 27th time. Representatives of Izolyator also took part in the event: employees of the procurement department Head of the department Dmitry Karasev and Valeria Prudnikovich, Specialist.

Leading metallurgical and engineering companies, as well as manufacturers of metal structures and metal products deployed large-scale expositions at the exhibition. At the booths of the companies, representatives of Izolyator Group got acquainted in detail with new materials, developments and services.

Meetings were also held with the main and potential suppliers of rolled metal, at which topical issues of developing cooperation and prospects for building partnerships were discussed.

Among them there was a visit to the booth and a meeting with the management of the long-standing and reliable supplier of the Izolyator plant, Alfa-Metal Industrial Supply, which supplies aluminum blanks for the production of high-voltage bushings.

Alfa-Metal Industrial Supply was represented by Dmitry Trishchenko, General Director, Irina Borunova, Commercial Direc-

tor, and Valentin Borunov, Deputy General Director.

The Metal-Expo exhibition brought together more than 450 leading metallurgical companies. 3 thousand specialists worked at the stands, and over 17 thousand people visited the exhibition.

Direct contact between producers and consumers of products, demonstration of industry know-how, exchange of experience, long-term forecasting, discussion of promising strategies, no doubt, will be an important factor in the further successful development of the metallurgical complex and related industries. ■



Meeting with Alfa-Metal Industrial Supply management at the 27th Metal-Expo International Industrial Exhibition in Moscow, R- Dmitry Trishchenko, General Director, L- Valentin Borunov, Deputy General Director and Irina Borunova, Commercial Director

Common goals and objectives

Representatives of the management of Reinhausen Power Composites GmbH visited the Izolyator Production Complex on November 30, 2021. Reinhausen Power Composites GmbH was represented by Executive Director Business Development Marcus Hartmann and Head of Sales - Russia and CIS Kinga Kastenberger.

At Izolyator the guests were received by: CEO of Zavod Izolyator Alexander Slavinsky, Deputy Commercial Director Andrey Shornikov, Chief Engineer of the Research and Development Center Pavel Kiryukhin, Head of Purchasing Dmitry Karasev, Head of the Technical Control Department Dmitry Mashinistov, Senior Sales Manager Overseas Dmitriy Orekhov, Lead Specialist Purchasing Yuri Kukhtin.



Representatives of Reinhausen Power Composites GmbH at Izolyator: Markus Hartmann, Executive Director for Business Development, and Kinga Kastenberger, Head of Sales in Russia and the CIS



Negotiations at Izolyator with representatives of the management of Reinhausen Power Composites GmbH

Representatives of Reinhausen Power Composites GmbH informed the partners about the latest achievements of the company, including the regional expansion of activities. The parties discussed common goals and objectives in the new area of cooperation and agreed about the nearest approval of technical data.

Maschinenfabrik Reinhausen GmbH (MR) is the leading company of the Reinhausen group

of companies. For over 30 years MR has been producing insulating cylinders from glass fiber reinforced epoxy resin. Based on this experience and extensive knowledge, MR expanded the company's activity in the field of insulating materials and began to produce composite hollow insulators, the quality of which meets the high standards of MR. From August 2009, these insulators are manufactured by the spe-

cially established company Reinhausen Power Composites GmbH, which is a 100% subsidiary of MR. Products are made under the new trade mark ReCoTec® (Reinhausen Composite Technology), the range of which is constantly expanding. There is a variety of composite hollow insulators with elastomer coating for outdoor installation or uncoated for indoor installation available. ■

Getting to know the opportunities

Representatives of the Izolyator Group visited the Kamyshlov plant Uralizolyator and had negotiations with the management of the enterprise. Employees of the purchasing department arrived on a visit: Head of the department Dmitry Karasev and Specialist Maria Goncharova.

At the Uralizolyator plant the guests were received by Plant Director Nikolay Frolov, Commercial Director Alexander Frantsuzov, Head of the Quality Department Svetlana Milina, Head of the Sales Department Anna Minilisheva.

At the negotiations the parties summed up the results of cooperation over the past period, discussed the implementation of existing agreements, outlined measures to increase effectiveness of interaction in the implementation of joint projects.

The main practical result of the meeting was the agreement on the volume of supplies of porcelain sheds for high-voltage bushings in the fourth quarter of the year. In the final part of the negotiations parties



negotiations at the Kamyshlov plant Uralizolyator were successful. In the photo, the second from the left is the Head of the Sales Department of the Uralizolyator plant Anna Minilisheva

discussed the immediate and long-term prospects for the development of cooperation between the two enterprises, taking into account the latest trends in the electrical equipment market and in the power industry. Also at the invitation of the management of

Uralizolyator, a visit was made to the production site of electrical products.

During the tour the guests made a visual acquaintance with detailed explanations with all the stages of the technological cycle of manufacturing porcelain sheds. ■

Work for the future



Working meeting at Sintez-Oka Trading House in Dzerzhinsk, Nizhny Novgorod Region, on the right — Roman Koltun, Technical Director of Sintez-Oka

Representatives of Izolyator Group held a working meeting with the Technical Director of the chemical enterprise Sintez Oka, in the Trade House Sintez-Oka in Dzerzhinsk, Nizhny Novgorod region on August 11, 2021.

Izolyator was represented by Head of Purchasing Dmitry Karasev and Chief Process Engineer Svetlana Kryuchkova. The guests were received by the Technical Director of Sintez Oka Roman Koltun.

The parties discussed further steps to strengthen and develop mutually beneficial partnership. In addition, the most effective directions for the development of cooperation between the two companies in the long term were analyzed. ■

Supporting a long-standing cooperation



Rolled aluminum at the warehouse of the Most-1 Metal Processing Center in Mytishchi (photo: Most-1)

Employees of the Izolyator Group visited the Most-1 Metal Processing Center in the city of Mytishchi, Moscow Region.

Izolyator was represented by Roman Romanov, Deputy Head of the Procurement Department, Alexey Kiryan, Head of the Bureau of the Chief Designer Department, Valeriya Prudnikovich, Procurement Department Specialist, Dmitry Shpilko, Controller of the Technical Control Department.

The negotiations covered topical issues of interaction under existing agreements, as well as prospects for further development of cooperation.

In particular the range, volume and terms of deliveries, as well as the technical characteristics of billets of aluminum parts were agreed upon, taking into account the plans to launch new types of high-voltage bushings into mass production and the requirements of the incoming control of the Izolyator plant.

The representatives of Izolyator Group also visited the production and storage complex of Most-1 MPC in Mytishchi, where they got acquainted with the storage conditions for rolled aluminum. Many years of well-established and successful cooperation between Most-1 MPC and the Izolyator Group will develop systematically in the future. ■

From results to new goals

Izolyator Group representatives met with the top management of the supplier of chemical products - the Management Company TAU Neftekhim in Sterlitamak.

Izolyator was represented by the Procurement Department staff: Head of Department Dmitry Karasev and Leading Manager Yuri Kukhtin. The guests were received by Tatyana Shilina, CEO of TAU Neftekhim Management Company, Production Director at TAU NefteKhim Management

Company Oleg Shurupov, Deputy Director for Development of the Sterlitamak Petrochemical Plant, Nikolay Niyazov.

The first part of the meeting was devoted to the results of cooperation in 2021, which were unanimously recognized as successful and productive. In the second part of the negotiations, plans for the supply of TAU Neftekhim products and further development of cooperation between the two companies for 2022 were discussed. ■



Representatives of the Izolyator Group of Companies in the TAU Neftekhim Management Company in Sterlitamak, in the center is Tatyana Shilina, General Director of TAU Neftekhim Management Company, Oleg Shurupov, Production Director of TAU NefteChem Management Company, on the right in the center, Deputy Director, on the left in the center for the Development of the Sterlitamak Petrochemical Plant Nikolai Niyazov

Productive meeting



Acquaintance with the production at the Slantsy Springs Plant in the city of Slantsy near St. Petersburg, on the left - General Director of the Slantsy Springs Plant Andrey Efimov

Representatives of Izolyator Group visited the Slantsy spring plant in Slantsy near St. Petersburg at the end of November 2021.

Izolyator was represented by Procurement department staff: Department Head Dmitry Karasev and Lead Manager Yuri Kukhtin. The guests were received by Andrey Efimov, General Director of the Slantsy Spring Plant, who introduced them to the production technology using the latest automated equipment.

During the visit the parties summed up the results of joint work in 2021, recognizing its results as successful. Also at the meeting, plans for the supply of products from the Slantsy Spring Plant for 2022 were discussed and agreed upon, the potential for further development of cooperation was considered. ■

Mutual interest

Active interaction in the second half of the year was carried out with the metal trading company Metallservice. Thus, representatives of Izolyator visited the Kapotnenskaya metal depot of the Metallservice complex for storage and processing of metal products.

The Izolyator group was represented by employees of the procurement department: Deputy Head of the Department Roman Romanov and Specialist Valeria Prudnikovich. The guests were received by Dmitry Mayakov, Deputy Head of the Non-Ferrous Metals Project, and Evgeny Prokofiev, Leading Manager of the Non-Ferrous Metals Project.

Representatives of Izolyator got acquainted with warehousing, including the conditions for storing purchased rolled metal products. During the visit to the metal depot, the parties discussed the product range and schedule of forthcoming deliveries of rolled non-ferrous metal products.

Representatives of the metal trading company Metallservice paid a return visit. The leading manager of the non-ferrous metals project Evgeny Prokofiev represented the company.



Representatives of Izolyator Group at the Kapotnenskaya metal depot of the Metallservice trade and warehouse complex, Center-R - Dmitry Mayakov, Deputy Project Manager Non-Ferrous Metals, center L - Evgeny Prokofiev, Leading Project Manager Non-Ferrous Metals

The guest was received by Izolyator Procurement Department staff, Head of Department Dmitry Karasev and Specialist Valeria Prudnikovich.

A tour of the Izolyator Production Complex took place, during which the guest got ac-

quainted with the process equipment and the use of Metallservice products in the process of manufacturing high-voltage bushings. During the visit, the parties summed up the results of joint activities in 2021 and outlined plans for the further development of cooperation. ■



Andrey Pavlov
Head of Logistics
Izolyator Group

In the context of the growing volume of logistics operations in the directions of the CIS and Central Asia (to such countries as Kazakhstan, Uzbekistan, Kyrgyzstan), we needed a reliable partner. Thus, we signed an agreement for the provision of logistics services with Asstra RUS LLC.

The supply chain is key for an efficient cooperation

Together with Asstra RUS LLC, we have already carried out a number of important deliveries of finished products from the Izolyator plant, for example, for the needs of the NESK JSC utility and Chirchiq Transformer Plant JSC.

To ensure the growing volume of logistics operations for regional transportation, especially in terms of project logistics, deliveries of finished products to remote and hard-to-reach regions of the Russian Federation, with the possibility of attracting special equipment, unloading arriving rolling stock at power facilities, an agreement was signed for the provision of logistics

services with Severnaya Transportnaya Kompaniya.

As a result more than 20 project shipments of the plant's products were jointly carried out in such destinations as the city of Kodinsk (Boguchanskaya HPP JSC); along the route Magdagachi - Svobodny - Orekhovo - Smidovichy (FGC UES MPS East); village Urdoma (FGC UES MPS North-West) and the city of Nyagan (Nyagan SDPP, Fortum).

In 2021, more than 30 containers with finished products were sent to Indian recipients BHEL, Toshiba, MIM, Prime Maiden, Techno Electric. All deliveries were carried out jointly with TEK Asia Trans LLC.

In November we visited a bright event held on the territory of the transport company dedicated to the topic "Uzbekistan - a country of new business opportunities." Such meetings are excellent for better understanding current opportunities.

I would especially like to note such projects as the delivery of finished products to the Vostochny Space Center - JSC TsENKI and delivery of finished products to Sakhalinskaya SDPP-2, and then return of warranty products to the territory of the Izolyator plant. The projects were implemented jointly with RustaLogistic LLC and First Orange Company LLC. ■

Shaping new opportunities

Logistics tasks are one of the most important in ensuring smooth operation. Communication with partners helps to optimally build all processes. Thus, in September, the Izolyator Production Complex was visited by representatives of the logistics company Transasia Logistics — Regional Executive Director Irina Kim and Manager of Multimodal Transportation Karina Sarkisyan.

The guests were received by employees of the logistics department: the Head of the department Andrey Pavlov and the Head of the department of international transportation and customs support Vladislav Shekurov.

At the negotiations the parties discussed the interim results of the joint activities and progress under existing agreements. As an example of well-coordinated and successful work, it was noted that 18 deliveries have already been organized to India since the beginning of the year. The directions and plans for further strengthening and development of cooperation between the two companies were also discussed.



Representatives of the logistics company Transasia Logistics at Izolyator, on the right in the center – Regional Executive Director Irina Kim, on the left – Multimodal Transportation Manager Karina Sarkisyan

The guests viewed the exposition of the museum of the Izolyator plant, where both historical materials and modern achievements of the company are widely presented. A tour of the Izolyator Production Complex took place, during which

the guests were shown the latest technological equipment and the sequence of manufacturing and testing of modern high-voltage bushings.

A new meeting took place on November 25, 2021 when Izolyator attended the business



Participants of the business breakfast "Uzbekistan - a country of new business opportunities", on the right - the founder and owner of Transasia Logistics Vyacheslav Kim

breakfast "Uzbekistan - a country of new business opportunities", organized by Transasia Logistics in its Moscow office. The speakers of the event were the founder and owner of Transasia Logistics Vyacheslav Kim and Arkady Ivanov, an expert practitioner with more than 30 years of experience in logistics.

Izolyator was represented by Andrey Pavlov, Head of the logistics department.

The participants of the event discussed the following topics:

- new business opportunities in Uzbekistan, taking into account the peculiarities of the liberal economic policy in the country;
 - production in the country and what may be of interest to buyers from Russia;
 - Uzbekistan's needs in imported goods and what Russia can export to Uzbekistan;
 - features of the customs, currency and tax legislation of Uzbekistan, which should be taken into account when importing and exporting;
 - preferences for import customs clearance in Uzbekistan.
- The following local topics were discussed at a separate meeting:
- optimization of cargo deliveries from Russia to Uzbekistan in connection with the upcoming opening of the Representative Office of the Izolyator Group in Tashkent in Uzbekistan,
 - routes and specifics of cargo delivery from Russia to India and back. ■

Logistics tasks

Representatives of the management of Severnaya Transportnaya Kompaniya — Executive Director Alexey Khodakovsky and Sales Director Alexander Limansky — visited the Izolyator Production Complex. The guests were received by Andrey Pavlov, Head of the logistics department.

At the meeting a number of issues were discussed related to the organization of transportation across Russia, and, above all, the delivery of finished products to facilities of FGC UES.

The most important topics of discussion were:

- organization of complex delivery of transport for loading;
- organization of multimodal transportation across the territory of Russia;
- technological possibilities of cargo delivery to hard-to-reach regions;
- organization of loading and unloading operations on the territory of electrical substations, especially at remote power facilities. ■



Representatives of the management of the Severnaya Transportnaya Kompaniya at the negotiations with Izolyator Group, on the left - Sales Director Alexander Limansky, next to him - Executive Director Alexey Khodakovsky

Building a better enterprise



Sergey Moiseev
CEO Massa LLC

What is the secret of the work of the enterprise which, having gone through all the hardships of the 20th century, continues to develop and improve in the 21st century? Why is it so important to pay attention not only to physical working conditions, but also to emotional ones? Summing up the results of 2021, Sergey Moiseev, CEO of Massa LLC, spoke about this and much more.

— **Sergey Borisovich, you have repeatedly emphasized in your interviews that the key value of a company is its team. Today, much attention is paid to the organization of leisure, and the prospects for personal growth. Yet the first question I would like to ask is about monitoring of employee engagement — why is it needed?**

— We do conduct monthly surveys on the involvement of the company personnel. For us, understanding how the physical, emotional and intellectual condition of colleagues affects work processes and how much this is related to the mechanism for obtaining efficiency in work. It is obvious that the motivation of employees is influenced by a combination of various factors, and we would always like to be “on the same wavelength” with colleagues, and monitoring the involvement of employ-

ees helps in that by receiving feedback from them on issues of concern to them and measuring

internal employee loyalty index (eNPS), developed by Bain & Company researcher Fred Reichheld. From the moment the electronic kiosk was set up to measure the eNPS index, i.e. from June to December 2021, his average showed 64 points. For comparison, the study of the employer loyalty index on average in Russia for 2020, conducted by the NAFI analytical center, amounted to 32 points.

We also try to provide opportunities for professional growth in a variety of areas. Thus, the company organized an English conversation club, monthly group sessions, where certain lexical topics agreed in advance are discussed. Any employee of the enterprise who wants to acquire and improve the skill of speaking in English can join this club, and the club itself complements a long-term multi-level educational program to improve the English language by employees of the enterprise.

In 2021 under the leadership of HR Director Julia Turina, the company's corporate portal was created, which not only promotes greater involvement of colleagues in the life of the company, but also aims to develop corporate culture and provide the most convenient format for internal communications. In the future, we plan to enhance the capabilities of the portal, including an introduction of mobile application.

Speaking about the criteria for evaluating the work of employees of the enterprise, it is important to mention the completion of the implementation of such a project as “Introduction of professional standards”.

In fact this is a definition of the characteristics of the qualifications necessary for the fulfilment of a certain type of professional activity, including the performance of a certain labor function, in all areas of activity at the enterprise, as a result of which uniform requirements were established for the professional activity of employees of the enterprise and for the com-



Training of employees of the Izolyator Production Complex under the advanced training program “Internal Auditor of the Integrated Management System for Quality, Ecology, Occupational Safety and Health Protection”

petent performance of the labor functions of employees.

In 2021 the enterprise, in addition, developed and introduced qualification categories in 16 professions, and assigned qualification categories to 39 employees of the CII and EMO. In the future this work will be continued in other departments.

— **The opportunity to grow all the time, improve your skills is a much needed reality, especially in an ever-changing world. What other issues in this respect are addressed in the company? Do you follow the trends in education?**

— Yes, of course, we follow modern trends in this direction. So, for example, according to the information received from key customers of our products, we realized that for their personnel involved in the installation and operation of high-voltage bushings, it would be convenient to work with a mobile application not only as a catalog for selecting new bushings to replace obsolete ones, but also to use it as a visual instruction for their installation and maintenance. As a pilot project, a mobile application "Installation of high-voltage bushings on power equipment" was developed. In the near future it will be available for use to our partners. We not only continue, but also actively expand cooperation with various educational institutions.



Plant tour for freshmen of Istra branch of Krasnogorsk college

Currently, we have social partnership agreements with a number of institutions such as NRU MPEI, the Istra branch of the Krasnogorsk College, GBP OU MO Krasnogorsk College. We regularly organize and conduct excursions and quests for students at the enterprise. By the way, it can be noted that in 2021 we had more than 100 students participating!

Special attention of the human resources division and heads of production units is drawn at interacting with educational institutions to organize internships for college students. Such attention is connected with our desire, already at the training stage, to interest young professionals to work in our company after their studies. So, in 2021, 26 students completed internships at our enterprise. The result of such purposeful work is that in 2021 after graduating from their educational institutions, three former students came to work with us to the plant, and one of them even managed to complete service in the Russian Armed Forces prior to job start!

In order for both young specialists and all new employees to the enterprises from the first days to most quickly and comfortably engage in the work of the team and to be able to use their theoretical knowledge in practice as efficiently as possible, the company has introduced a mentoring system. Within the framework of this system, the main tasks of a mentor who shares corporate values are to provide professional, organizational and emotional support to new employees, bring them to the standards of the enterprise, transfer the knowledge and skills accumulated in the unit and assist in the development of new experience, develop motivation, as well as speedy adaptation of the new employee in the workplace. This practice has already shown its first successful results, and I am sure that in the future we will improve this tool as part of the corporate culture and make it as useful as possible, especially for young professionals.

— **As the expertise of the company's employees grows, its production indicators improve, there are more new projects, and the need for modernization is brewing up. What has been done in this direction?**

— 2021 showed that the team is not only growing in number, but also improving its professional skills, which means that working conditions should be at the appropriate level. As an example, we can mention a large-scale reconstruction of the electrochemical laboratory carried out by us with an almost complete renewal of laboratory equipment, as well as the expansion of the area and the repair of the premises of the test center, which affected office areas, the addition of a meeting room and a recreation area. As a result of the work done, not only the functionality of those premises has expanded, but also the working conditions of the employees of these departments have significantly improved.

We hope that all this will continue to allow us to receive high marks from external experts. By the way, during the year the testing center conducted a number of successful tests organized by the Testing Director Dmitry Ivanov in the presence of Russian and foreign customers.

It is worth mentioning the participation in such a project as the state commission for the acceptance of standards in the Federal State Unitary Enterprise VNIIMS. It's an interesting experience.

— **Speaking about standards yet in a slightly different meaning — the safety standards: how is the protection of the interests of employees ensured?**

— In this direction a large work has been done by Boris Sobelman, Assistant Director for Safety and Security. During 2021, new regulations and instructions in the field of fire safety (FS), personal data protection were developed and updated in accordance with the schedule and legislation, and 255 briefings on fire safety and civil defense and emergency situations were conducted. We conducted two trainings on the evacuation of the company's personnel in case of emergencies. In general, the work to ensure the security of the enterprise is a daily, usually inconspicuous



Sergey Moiseev thanks the Izolyator Group's team for well-coordinated actions during the evacuation drill

work carried out in advance, but its importance is difficult to underestimate: fire extinguishing equipment is regularly checked and replaced, video surveillance cameras are supplemented and redirected to the most necessary places for control. To date all new and reconstructed premises of not only the production complex and the administrative building, but also the developing site for the packaging production in Shakhovskaya are equipped with fire alarms.

— **Working at the international level, the company strives to meet the most stringent international standards. How does this manifest itself in practice?**

— In order to confirm the compliance of the enterprise with world standards, in February 2021, we took the next recertification audit of the Integrated Management System (IMS) of the enterprise and successfully passed it. The audit was carried out by a new certification body for us, the Swiss company SGS. By the way, the change of the certification body from TÜV HESSEN to SGS made it possible to reduce the costs of certification and save the company's budget by almost 1,500,000 rubles during the three-year certification period. Based on the findings of the audit, the enterprise has developed and now is implementing a corrective action plan.

A lot of work has been done to develop new and update existing standards and other internal regulatory documentation of the IMS of the enterprise (37 documents), including the ISO 45001 (GOST R ISO 45001) standard "Occupational safety and health management systems. Requirements and guidelines for use."

During the year we regularly conducted training for the heads of structural divisions of the enterprise as part of the implemented IMS changes. So training sessions were held after the introduction of the organization's regulation "Management of changes affecting the integrated management system." In addition, two training courses for the Izolyator Corporate University developed by the Head of the bureau Tatyana Simakova "Internal Auditor of the IMS" and "Development and Implementa-

tion of the IMS" allowed us to train 11 employees of the enterprise in the course "Internal Auditor of the IMS", as a result of which they were issued state certificates, and already in 2022 they are expected to participate as trainees in internal audits.

— **Sergey Borisovich, please tell us about how the labor protection activities are organized at the enterprise?**

— First of all, it is worth saying that we have constantly carried out and will continue to carry out activities in the special assessment of working conditions (SOUT) of workplaces at the enterprise. So in 2021 a special assessment of the working conditions of 218 jobs was completed, and the SOUT of newly introduced 50 jobs was organized. By the way, all employees can always access up-to-date information at the informative stands in the production areas of the divisions.

The company constantly conducts introductory briefings on labor protection both with newly adopted

employees of the enterprise (94 people), and with employees of third-party organizations, visitors and students arriving at the enterprise (270 people).

A lot of work on organizing and conducting full-time training and testing knowledge of labor protection of employees of the enterprise (166 workers of working occupations passed it in 2021) is carried out by the Head of the bureau Panfil Fostikov.

In 2021 in accordance with the requirements of the newly introduced SP 2.2.3670-20 and SanPiN 1.2.3685-21, we developed an enterprise production control program, updated and approved the "List of risks by structural divisions". Based on the results of the third stage of control over compliance with labor protection requirements, organized and carried out during 2021, 12 Acts were prepared and approved, in which 157 comments were identified and, as a result of the work carried out, 150 of them were eliminated.



First aid training for Izolyator Group employees

And of course, all employees were promptly provided with personal protective equipment and other means that meet the requirements of the regulatory documents of the Russian Federation, in accordance with the standards for providing protective equipment developed by us, based on the Russian legislation. I would especially like to note that in 2021 the company developed and introduced a new uniform jacket for all heads of departments indicating the position and name of the manager.

In 2021 we continued to pay due attention to environmental safety. The work carried out by environmental safety specialist Alexander Golikov was aimed at reducing the impact of the enterprise on nature and creating comfortable working conditions for employees. For example, models of tipping containers for waste accumulation were selected and purchased, which improved the re-loading process at the waste accumulation site, including for the mechanical and procurement shops — containers with the possibility of draining coolant; containers for placement in the corridor and in the CII (the operation of unloading these containers can now be carried out without the involvement of a loader and / or an auxiliary worker of the SOD, only by the driver of the loader, which eliminates the risk of injury to workers of the SOD). He developed the enterprise standard STO-1317133.025-2021 "Ensuring environmental safety in the production activities of Massa LLC", which regulates activities in the field of environmental protection in operation. Thus, realizing our responsibility to future generations, we strive to minimize the impact of our company's activities on the environment.

I can't help but mention about our company's healthy lifestyle. In 2021, the employees of the enterprise continued to live an active sports life. Along with already traditional sports such as volleyball and futsal, in the sports festival dedicated to the 125th anniversary of the Izolyator plant, employees also competed in such competitions as table tennis and chess. All competitions were held at a high emotional level, with the active support of fans from all divisions!

I would especially like to note the arrival of the Chief Commissioning Engineer Mikhail Rybakov to our volleyball team, who reformatted the training of our team into a new, conscious and professional format. I don't just hope, I'm sure that his leadership of the team will lead

the Izolyator volleyball team to a higher level of play!

Based on the results of 2021, I would like to emphasize the conscious attitude of all employees of the enterprise to the ongoing situation associated with the pandemic, their understanding of the need to follow the rules of personal hygiene, use PPE and follow the procedures for employees in case of symptoms of the disease. When implementing anti-pandemic measures, all the specialists who were entrusted with the organization or implementation of individual events, as well as the heads of structural divisions, especially divisions of the production and technical service, showed an understanding of the interests of the enterprise and high organizational qualities. Thus, in my deep conviction, it is the joint conscious and coordinated work of all managers and employees of the enterprise, our partners and tenants that allowed us in 2021 not only to keep the COVID-19 incidence rate of employees of our organizations at a fairly low level, but also to ensure uninterrupted production activities, which ultimately made possible the high results of production and economic activities that we achieved.

In conclusion, I want to once again say and repeat it again that all the results achieved in 2021 were possible to the greatest extent thanks to the purposeful coordinated work of the entire team of the enterprise to achieve common goals. At the same time, teams of like-minded people created by directors and heads of structural divisions in their areas of activity have shown their effectiveness based on the synergy of professionalism and a high level of competence of each team member.

In 2022 we have many diverse challenges to overcome in order to achieve our ambitious yet realistic goals!

I express my deep sincere gratitude to all employees of the enterprise for their work and attitude towards achieving common goals! I wish all of us further prosperity, health and prosperity to our families!!!



Training of employees of the Izolyator Production Complex on the organization of compliance by contractors with safety requirements when working on the territory of the complex

Among the best



Badge for the honorary title "Honored Worker of Industry of the Moscow Region"



Andrey Vorobyov, Governor of the Moscow Region, presents Vladimir Nikolaev with a badge for the honorary title "Honored Worker of Industry of the Moscow Region"



Presentation to Elena Posokh and Konstantin Sipilkin of the badge for the honorary title "Honored Worker of Industry of the Moscow Region"

Three Izolyator employees were awarded the honorary title of Honored Worker of Industry of the Moscow Region. Thus, the badge for the rank was awarded to the Director of the Research and Development Center - the 1st Deputy CEO Konstantin Sipilkin, Chief Accountant Elena Posokh and Mechanical Assembly Line Operator Vladimir Nikolaev.

On behalf of the Governor of the Moscow Region Andrey Vorobyov, in a solemn ceremony, the badge was presented to Konstantin Sipilkin and Elena Posokh by the CEO of Zavod Izolyator Alexander Slavinsky. The honorary title of Honored Worker of Industry of the Moscow Region was awarded directly to Izolyator employees at a general meeting of the staff in connection with the 125th anniversary of the plant.

Vladimir Nikolaev was honored to receive the award in person: the badge was presented by the Governor of the Moscow Region Andrey Vorobyov at the award ceremony for state awards of the Russian Federation and awards of the Moscow Region and insignia of the Governor.

The award ceremony became part of the solemn event timed to coincide with

the 92nd Anniversary of the founding of the Moscow Region. "Congratulations to

everyone who received high awards for serving our Moscow region, - Vorobyov said in his closing speech. - Everyone in his place can do something important for a huge number of people. Thank you for being among us."

The honorary title "Honored Worker of Industry of the Moscow Region" is awarded to highly qualified employees, executives of industrial organizations, production associations, research and design organizations, employees of industry management bodies with special merit in the development of industry, in achieving high levels of production efficiency, in introducing the achievements of science and technology, ensuring safe working conditions, working in the Moscow region in this area for at least 10 years. ■



Celebration in the Government House of the Moscow Region, timed to coincide with the 92nd anniversary of the formation of the region

Taking into account the risk-based approach

The meeting on the functioning of the integrated quality management system, environment, health and safety (IMS) at Izolyator in the 2nd and 3rd quarters of 2021 was held in November 2021. At the meeting the top management and employees of the enterprise were informed about the change in the criteria for evaluating the effectiveness of the IMS processes "Management of planning and stocks", "Management of procurement and production services".

Also the Head of the Operations Support Service, Marina Vladimirova, presented a summary of the reports of the owners of the IMS processes for the 2nd and 3rd quarters of 2021, assessed the effectiveness of the functioning of the IMS processes, noted strengths, and identified problem areas. As a result of the meeting it was decided to accept for implementation all proposals from the owners of IMS processes for improvements.

Proposals were made to change the key performance indicators of the strategic goals of the Izolyator Production Complex for 2022 using a risk-based approach.

The company's employees actively participate in updating the company's strategic goals and objectives for 2022, demonstrating motivation and involvement.

The meeting also discussed the issue of preparing the company for the first IMS super-



Meeting on the functioning of the integrated quality management system

visory audit, which is scheduled for February 2022.

Tatyana Simakova, Head of the Bureau of the Integrated Management System - Head of the Development and Quality Control of Management Systems, presented information on the actions of structural subdivisions of the enterprise

necessary for the implementation of the action plan for the preparation of the company's IMS for inspections.

The company management noted the practical necessity of activities related to the functioning of the IMS at the enterprise and the relevance of work to improve the IMS. ■



Discussion of the preparation of the company for the IMS supervisory audit

Summarizing successes

For the first time in the Izolyator Group, the year end meeting of the company's management was held in an expanded format.

The key topic was summing up the results of the activities of the Izolyator Group over the past year. Both the positive dynamics of development and the main achievements on the way to the planned strategic goals were noted. The key directions of development in the coming year and the distribution of resources according to priority tasks were also discussed.

In the final part of the meeting, Alexander Slavinsky, CEO of Zavod Izolyator thanked the entire team for the great fruitful work, congratulated everyone on the coming New Year and wished everyone personal well-being and further, even more impressive production achievements. ■



The year end management meeting of Izolyator group is taking place in expanded format

Family excursion for the labor dynasty



Family excursion over Izolyator Production Complex for the Kruchinins

A family tour of the Izolyator Production Complex was held for one of the labor dynasties of the enterprise.

The production was visited by a large Kruchinin family, of whom four - brothers Alexander, Vitaly, Vladimir and Igor - successfully work in various divisions of Izolyator, continuing the work of their father with dignity.

Nikolay Nikolaevich Kruchinin worked at the enterprise for 16 years, and his memories

of working at the plant inspired his sons to become part of the workforce.

So today representatives of the younger generation of the Kruchinins with undisguised interest inhaled the businesslike atmosphere of production and examined a variety of factory equipment. Victor Kiryukhin, Lead Technical Support Specialist of the commercial division helped them in the visit as a guide.

And, of course, the test center with its huge hall and "spaceship" interior left the brightest and unforgettable impression on the kids.

Many of the children who visited the enterprise today already dream of working where their older relatives work and where their grandfather once worked, laying the foundation for one of the numerous labor dynasties of the Izolyator plant. ■

The new generation

Our team has replenished with two young specialists from among the students and graduates of the Krasnogorsk College. Nikita Batyuk came to the mechanical treatment section of the Pilot Production of the Research and Development Center to work on a lathe, and Yaroslav Dzyuba works on a CNC machine in the mechanical shop. We asked the guys to answer a few questions.



Nikita Batyuk

HONING ONE'S SKILL

Turner Nikita Batyuk is telling about what he especially likes at the enterprise, why sometimes watching movies is really very useful and much more.

— **Nikita, have you got used to the company?**

Nikita: I have been working for more than a year - so I got used to it, everything is fine. I don't really like getting up early, but it's convenient to get there: from Nakhabino I take the first corporate minibus to the plant and also return in the evening. I work in the usual schedule 5/2.

- **Are you satisfied with the working conditions? What do you think can be improved in the company?**

Nikita: Everything suits me: both the workplace and conveniences. During work timeouts, I just go outside, breathe in the air. I have lunch in our factory canteen. For 50 rubles (with compensation from the employer!) - there is a delicious full meal.

— **At the plant we have a volleyball team, there are colleagues who like to play badminton. And how do you spend your free time?**

Nikita: Most often I just watch videos or films, I am interested in history and I love old Soviet films. I like

educational channels, documentaries. Sometimes I watch something for using at work.

- **For work? For instance?**

Nikita: Yes, there are videos in which experienced craftsmen show what can be done on a lathe, what complex details can be carved. It is very interesting for me so far, you can always learn some life hacks, nuances of the profession.

- **By the way, do you think about continuing your studies?**

Nikita: First of all, I'm studying by correspondence: I still have a year of college ahead of me. Secondly, I constantly think that it would be nice to go to a university. There is still time to think! For now, I like to work on the machine, everything suits me.

- **Have you been lucky with your work colleagues?**

Nikita: Everyone around is "adult", but we communicate normally. I like that the workshop is small and everyone knows each other. Therefore, it creates as if a homely atmosphere.

FROM SIMPLE TO COMPLEX

What are the advantages of working with a non-standard schedule? What language is spoken in the machine shop? Yaroslav Dzyuba, CNC machine tool operator is answering.

— **Yaroslav, how long have you been working in production?**

Yaroslav: Yes, for more than a year now. At first it was very hard. Now I'm already used to it, I got used to such a schedule: three days of work for 11 hours, three days to rest. I think it's very convenient too. You can do a lot in three days-off: household chores to do, meet friends, walk the dog, go to the store, go somewhere, to the cinema for example - and do everything.

- **What else do you do in your free time?**

Yaroslav: I play on the computer, read articles on work, study terminology. For example, do you know what roughness is? (laughs)



Yaroslav Dzyuba

- **Uneven surface, bumps and cavities ...**

Yaroslav: Surface roughness is the height of surface irregularities, determined by 10 points relative to the base length.

I used to do "baby work" (laughs) before, as my foreman says. I took a blank - put it in the machine - removed the item. Now I'm already doing all the operations. I can regulate the treatment process according to the given parameters, perform more complex operations.

I passed the category, and my salary increased accordingly. I am very satisfied. Already figured out what I'm going to save for. (smiles)

- **How do you like working conditions at work?**

Yaroslav: Gorgeous! Good dining room. Very good quality work gloves. (points to his gloves). I'm not talking about uniforms! I am very glad that I was hired to work here.

— **Do you think about continuing your studies?**

Yaroslav: Yes, of course. I understand that it is necessary to get a higher education. This year I haven't decided on a profile yet. But I firmly decided that next year I would definitely choose a university and a profession.

We appreciate the young professionals for openness at interview and wish them career development and every success at work!



Julia Turina
HR Director, Deputy Chairman of the Izolyator Corporate university

If an enterprise can be compared to a living organism, then the human resources management service is its heart. Not only the creation of conditions for the comfortable work of the employees of the enterprise, but also the improvement of the qualifications of employees, the support of innovative project activities in the organization depend on the professional HR service delivery.

Projects for change

To the innovative direction of the service personnel management we can attribute the creation from scratch and the successful implementation of two Internet products - a corporate portal and a mobile application.

Our enterprise portal is an essential element of corporate culture, enhancing the effectiveness of internal communications within the enterprise and enabling employees to store, share, and collaborate remotely on internal information.

HR specialists developed a project to create and develop a corporate portal to provide structured storage and quick access to internal information. In 2021 the first stage of launching the portal was implemented. On the main page of the portal, the company's employees got the opportunity to quickly get acquainted with corporate news, see the faces of their birthday colleagues, newly hired employees and specialists. Interactive personal pages posted on the portal contain information about the structural unit in which the employee works, his or her immediate supervisor.

The main page of the portal contains interactive elements for quick access to frequently used templates and

documents, as well as a button for switching to the distance learning system. Thus, at the first stage of the project, a user-friendly interface was created and a universal scheme for the interaction of company employees was successfully implemented.

For the next year we have planned to create an interactive section "Structure of the enterprise", to develop a section "Calendar" with the announcement of events and the possibility of booking meeting rooms, and conference hall.

In addition, a "Sports section" will appear, in which the training schedule and tournament tables will be published. It is planned to adapt the corporate portal for mobile devices, which will allow all employees to use the portal resources to perform production tasks.

The project to create a mobile application for Izolyator arose from a student task for a hackathon, which was held on the basis of MIET.

From the idea of demonstrating the installation of high-voltage bushings on power equipment, the task was transformed into a full-fledged application that





Meeting with CEO activity for the new hires of Izolyator Group

presents the entire range of products manufactured at the enterprise.

The first stage of creating the shell of the mobile application has been implemented and one of the most popular sections "Transformer bushings" has been filled. The application shows installation of high-voltage bottom connection bushings and draw-type transformer bushings in detail, a catalog of all types of bushings is compiled. Specialists of the SVN-service division of the enterprise were able to show and comment on the process of bushing installation using phones and tablets. The catalog of bushings at the next stage of the project will turn into an electronic database for consumers of products interested in selecting a new high-voltage bushing to replace the outdated model.

The launch of the mobile application allows one to build a new type of relationship with partners with high quality and maximum efficiency.

To make it easier to adapt

Specialists of the human resources department pay great attention to the adaptation of new employees, and mentoring as part of this systematic work. The purpose of adaptation is to ensure, in the shortest possible time, the high-quality and effective performance of their professional duties by new employees. During the adaptation period, the mentor performs the role of a "playing coach", that is, he tells and shows the techniques of mastery of his job, asks questions, encouraging the beginner to comprehend the technological processes, evaluates the professional qualities of newcomers.

In the first month of work, new employees meet with the CEO of Zavod Izolyator Alexander Slavinsky in an informal setting over a cup of tea. The purpose of such events is to introduce new employees to the long-term traditions of the enterprise, to introduce them from the first days of work to corporate values

and personal acquaintance of the manager with new specialists.

After the adaptation period, the HR specialist organizes a meeting during which the results are summed up and the trajectory of further professional development is outlined. Thus, a comfortable working atmosphere is created for newly arrived employees and a favorable psychological climate is maintained in the team.

Professionals in business

The formation of a succession talent pool is a strategic task aimed at the future. Specialists included in the succession development program, a priori, become the driving force of innovative changes, provided that a competently built personnel policy is in place.



Checking the performance of qualifying work in the profession Winder of insulating core of the bushings



Checking the knowledge in worker occupations at Izolyator Production Complex

In 2021 a team of professionals was created in the company who, in the rapidly changing realities of today, can ensure the continuity and succession of management in key positions. 51 persons were included in the succession talent pool. These are specialists with sufficient experience in the company, which means they know and support the corporate values of the enterprise.

In 2021 the company began to implement a project to introduce professional standards. Professional standards are the basis for the formation of a system of remuneration, billing of work and assignment of categories to employees.

Specialists of the corporate university developed the STO "Checking the professional and qualification level. Attestation of employees of the Izolyator Production Complex", as well as 16 educational programs to improve the skills of employees in working positions. On the basis of the corporate university, training was provided in certain working occupations. In order to confirm the qualification level, a commission was created, which confirmed to 62 employees their qualifications, while twenty one person raised their category.

The project will continue next year. It is planned to conduct certification for specialists and managers. Next year, workers will be able to remotely take advanced training courses and pass exams for the next wage category.

Recognized Level

A special event for us was the Izolyator Corporate University's participation in the All-Russian competition of best practices for training workers and mid-level specialists, organized by the National Agency for the Development of Qualifications under auspices of the Ministry of Labor and Social Protection of Russian Federation, in the nomination "Competences of the XXI century: definition, development and assessment of general competencies". The corporate university specialists developed and implemented the practice "The future leader — conscious choice", which is based on the project on the formation and description of the universal constructor of managerial competencies.

The unique toolkit that allows you to reliably determine the level of development of managerial competencies, as well as the "growth zone" of an employee was developed on the basis of the corporate university. The main advantage of the practice is that the employee independently decides on the further development of competencies and chooses the optimal schedule for passing educational blocks. It is no secret that the key to success is the desire and conscious decision of the employee to develop in the face of rapid technological progress.

It should be noted that 123 applications from 51 regions of Russia were submitted for the competition. Izolyator Corporate University took a worthy second place in the competition.

Next year most of the initiated projects of the HR department will receive development, and new projects aimed not only at the successful performance of today's functions by employees, but also at identifying their abilities to develop and master new professional skills will appear.



Broadcast via videoconference of the open final of the All-Russian competition of best practices for training workers and mid-level specialists



**CORPORATE UNIVERSITY
IZOLYATOR**

BUILD YOUR CAREER WITH US

An optimal and efficient staff training program can be developed specially for you. We offer further personnel development recommendations as you completed the course.

Compulsory programs

- Labor protection
- Basics of fire safety
- General industrial safety (A1, B.9.31)
- Electrical safety (III electrical safety group)
- First aid regulations

Retraining

- Professional teaching staff
- Human resource management

Advanced training

- Installation of high-voltage bushings on power equipment
- Power transformers and high-voltage bushings
- MS Excel. Quick start
- MS Word. Working with templates
- MS Power Point. Not only presentations
- Cloud technologies. Working in a team

- ! License to carry our educational activities



7 REASONS TO STUDY WITH US



ON-THE-JOB TRAINING



TRAINING FROM HIGHLY QUALIFIED PRACTITIONERS



BALANCE OF FULL-TIME AND DISTANCE EDUCATION



AN OFFICIAL CERTIFICATE OF PROFESSIONAL TRAINING



QUALITY TRAINING IN A SHORT TIME



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New school year with new resources



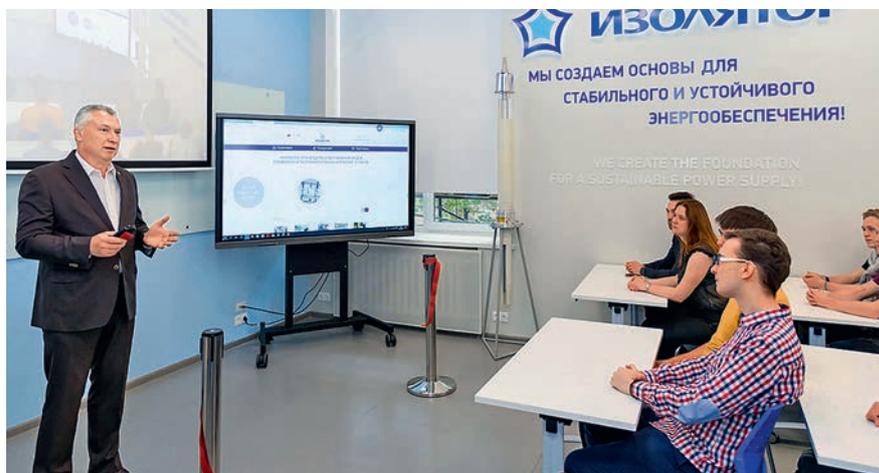
On the Day of Knowledge the auditorium of the Izolyator plant at the National Research University Moscow Power Engineering Institute received the first students of the new academic year.

The classroom is equipped with a multimedia complex, full-scale replicas of modern high-voltage insulating equipment and everything necessary for organizing a high-quality educational process.

Izolyator products, historical and modern facts about the enterprise are widely presented at various information stands.

The classroom creates all the conditions for students to acquire fundamental knowledge and skills for further work, including at Izolyator.

Izolyator has a long-term project of social partnership with educational institutions, including MPEI. As part of the work of the Izolyator corporate university, excursions around the production facilities and educational quests are organized for university students on a systematic basis, for which the best specialists of the enterprise are involved. Employees of the research and development center acquaint future engineers with the most modern methods of calculation and design of high-voltage devices.



Doctor of Technical Sciences Alexander Slavinsky, Head of the Department of Physics and Technology of Electrical Materials and Components of the Institute of Electrical Engineering and Electrification of the NRU MPEI with students in the auditorium of the Izolyator plant

In turn, Izolyator periodically invites MPEI faculty professors to give lectures on the latest trends in the development of domestic and world electrical engineering and energy.

On this day of knowledge another remarkable event took place: Doctor of Technical Sciences Alexander Slavinsky started to the duties of the Head of the Department

of Physics and Technology of Electrical Materials and Components of the Institute of Electrical Engineering and Electrification National Research University MPEI.

Traditionally the department trains specialists and researchers in the field of electrical materials science, electronic materials, electrical insulation and cable technology.

We wish Alexander Zinovievich success! ■

On the same wavelength with youth



3rd year undergraduate students of the Department of High Voltage Engineering and Electrophysics of the Institute of Electric Power Industry of the Moscow Power Engineering Institute on a study tour at Izolyator

Excursions and quests for students of the Institute of Electric Power Industry of the National Research University MPEI have become a regular practice at the plant. In an exciting way, the students get acquainted not only with the history of the plant, but also with its current life and work specifics.

From graduates to students

In autumn the plant was visited by 3rd year undergraduate students of the Department

of High Voltage Engineering and Electrophysics.

After the mandatory safety orientation, the Director of the Moscow branch of the Izolyator plant, Vladimir Ustinov, and the Lead technical support specialist Viktor Kiryukhin, both MPEI graduates, introduced the students to the century-old history of the enterprise.

Artem Semenov, Design Engineer of the Research and Development Center,

postgraduate student of the Department of Physics and Technology of Electrical Materials and Components of the Institute of Electrical Engineering and Electrification of the National Research University MPEI (Department of FTEMK IETE MPEI), spoke in detail about the design features of high-voltage bushings, demonstrated design simulation programs.

Then the Production Process Engineer of the plant of high-voltage cable accessories Izolyator-AKS, also a post-graduate student of the Department of FTEMK IETE MPEI, Alexander Filippov presented the products of the enterprise and the most modern technological equipment for their production and testing to the students.

During the plant tour, the head of the company, CEO of Zavod Izolyator LLC Alexander Slavinsky met with the students.

The closing event was the quest "Let there be light!", which was organized by employees of the Izolyator Corporate University. At the end, HR Director Julia Turina, on behalf of Izolyator, presented certificates to the winners of the quest. ■

Starting career growth



In October, Izolyator took part in the Career Day event organized by the Center for Career and Entrepreneurship Development of the National Research University Moscow Institute of Electronic Technology.

At the event Izolyator was represented by Human Resources Director, Deputy Chairman of the Board of Izolyator Corporate University Julia Turina.

At a meeting with students and graduates, she spoke about the company and its products, introduced the audience to the main activities of the company in working with universities and students, answered questions about open vacancies and the whole range of working conditions in the company.

Further the dialogue continued in the form of a poster session, where everyone could make the necessary clarifications and receive a set of representative printing, including the latest issue of the Izolyator corporate periodical.

For active participation in the Career Day, Izolyator was awarded a letter of thanks from



Presentation of Izolyator Group at the auditorium of MIET

MIET. In total over 30 employers from various sectors of the economy took part in the event.

A job fair was held, at master classes invited experts shared the secrets of building a successful career. ■

Meetings with future specialists



Tour of the assembly shop for third-year students of the Krasnogorsk College

Plant tours and quests have become a favorite format of interaction between Izolyator and the Istra branch of the Krasnogorsk College. The events are held as part of the social partnership between Krasnogorsk College and Izolyator.

From theory to practice

This in September Viktor Kiryukhin, Lead Technical Support Specialist led a group of students through the entire technological cycle of production and testing of high-voltage bushings, pausing in the mechanical shop near machines with numerical control, as students are trained in this particular profession.

The excursionists are freshmen studying in the specialty "Operator of machine tools with

program control" (machine tool operator). The students visited the test center of the Izolyator Production Complex and were excited with the modern equipment and the level of performed tests.

In November and December 2021 students viewed the exposition deployed in a specially organized exhibition space. The exposition is dedicated to the 125th anniversary of the Izolyator plant.

The first of colleagues

In December the plant also received third-year students from the Krasnogorsk College. This is the first educational tour for students of the Krasnogorsk College: all previous classes were organized for its Istra branch. ■

Inviting the best!



Vasilisa Chvanova is among the best of the best students of Krasnogorsk College

Izolyator continues to implement the social partnership project.

Students of the Istra branch of the Krasnogorsk College regularly undergo internships at the Izolyator Production Complex.

The management of the enterprise offers to get a permanent job after graduation to those students who observed labor discipline, conscientiously fulfilled production tasks, showed initiative in work during the practice.

During the summer holidays the best of the best are given the opportunity for temporary employment. This year, Vasilisa Chvanova became the best.

Vasilisa not only does love her job, but also constantly hones her professional skills. She is interested in what she does. The profession of a turner attracts her, and she is ready to work at the enterprise even in the hot summer season. ■

78 | On a friendly note

A series of friendly volleyball and futsal matches between Izolyator and Meat Processing Plant Pavlovskaya Sloboda lasted a little less than a month, but left impressions for a year ahead!

In total there were three volleyball matches and the same number of futsal matches played. All games went in a special, friendly atmosphere, where it is not so much the result on the scoreboard that matters, but the pleasure of communication, the exchange of positive emotions and the excellent mood of the players and fans of both teams.

This series of matches further strengthened the good neighborly relations between the two enterprises, served to further develop corporate sports and grow social activity in the city district of Istra. The Izolyator sports hall continues its work and will be glad to see new sports achievements.

 **IZOLYATOR**
group



► Fans, as always, are full of energy and optimism

▼ Friendly game of futsal teams of Meat Processing Plant Pavlovskaya Sloboda and Izolyator Group



▲ The big prize of the friendly game is an excellent mood



▼ A tactical maneuver



► We will be glad to new matches, new friends and brave initiatives! The doors of our gym are always hospitably open!



◀ See you next time, friends!



▲ In attack

▼ Friendly volleyball match between Meat Processing Plant Pavlovskaya Sloboda and Izolyator Group



80 | New kind of corporate sport

Izolyator organized the first corporate rapid chess tournament. Competitions were timed to the 125th Anniversary of the Izolyator plant.

The chess tournament lasted 12 gaming days and revealed the following winners:

I place - Alexander Fomushkin, Electrician for the repair and maintenance of electrical equipment of the energy-mechanical department;

2nd place - Sergey Zinoviev, Maintenance and Testing Engineer of the energy-mechanical department;

III place - Mikhail Bobrovich, Turner of the insulation making.

The first chess tournament became a bright and strong contribution to the development of the corporate sports movement. From now on, the traditional annual Corporate Sports Festival of the Izolyator Group will be supplemented with one more sport.



▲ Awards of the first rapid chess tournament of Izolyator Group



◀ Fans are watching the game with great attention



▲ Games of the first rapid chess tournament among Izolyator employees

▼ The first corporate rapid chess tournament is in full swing





◀ Winners of the first corporate tournament in rapid chess, dedicated to the 125th Anniversary of the Izolyator plant, L-R: Mikhail Bobrovich (3rd place), Alexander Fomushkin (1st place), Sergey Zinoviev (2nd place)

▶ The chief judge of the tournament Pavel Zotov is announcing the rules of the competition to the participants



▼ The chief judge conducts the draw



▲ Chess will harmoniously complement the sports life of Izolyator, make it even more diverse and eventful



82 | The New Year futsal tournament of the Izolyator Group



At the end of 2021 the New Year futsal tournament of the Izolyator Group took place.

Three teams formed from various structural divisions of the Izolyator Group took part in the competitions, which were held in a round-robin system:

Impulse, The Imperceptible, and Phoenix.

In total, six exciting matches were played during the tournament.

At the end of the final game an awards ceremony of the winners and particularly distinguished players of the New Year's tournament took place.



▲ The second game of the New Year futsal tournament of the Izolyator Group: the teams Impulse and Phoenix are playing



▶ The match between Imperceptible and Phoenix

▼ The beginning of the second round of competition: Impulse and Imperceptible are playing

▼ The final game of the tournament



▶ Winners of the tournament - Imperceptible



◀ The sports festival ended, giving the joy of movement, a flurry of emotions and a sense of unity!



▼ Pavel Zotov, the best scorer of the tournament, Phoenix is awarded



▼ A special prize is awarded to the best goalkeeper of the tournament Mikhail Sheremetiev from Imperceptible



On a positive note

A corporate holiday dedicated to the Power Engineer's Day and the upcoming New Year was held in the Izolyator Group on December 22, 2021. It was held in the form of an exciting and informative musical quiz.

The festive event was opened by Alexander Slavinsky, CEO of Zavod Izolyator, who congratulated the team on the Power Engineer's Day and wished success to all participants of the quiz.

The game was attended by 12 teams, consisting of representatives of almost all structural divisions of the Group.

The holiday was dynamic and fun, evoking competitive excitement and a lot of positive emotions among its participants.

The highest erudition in the musical field and the most coordinated collective

▼ Alexander Slavinsky is congratulating the team on the Power Engineer's Day and opening the festive event



▲ The big holiday cake



work was demonstrated by the Soupchiki team, which has become a well-deserved quiz winner. The second place was won by Accounting, the third place was taken by Shazam. The Simka team was recognized as the most energetic, for which it was awarded a special quiz prize.

Alexander Slavinsky publicly thanked the organizers of the event for the quality of the preparatory work and the ability to transform

holiday into a bright and unforgettable event.

The event ended with a sweet treat: a large birthday cake was served, decorated with New Year's and corporate symbols. Informal networking, a positive emotional charge and well-coordinated teamwork rallied the friendly team of the Izolyator Group. ■



▲ The winner of the music quiz - the team Soupchiki

▼ Music quiz rules are announced





◀ Where there's music, there's dance

▶ Corporate festival in full swing



▲ Applause for the winners

▼ Brainstorming for the right answer



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.



Kazakhstan Electricity Grid Operating Company - KEGOC was established in accordance with the decree of the Government of the Republic of Kazakhstan in 1996. KEGOC is a system operator of the Unified Electric Power System of the Republic of Kazakhstan.



Gazprom is a global energy company. The main areas of activity are geological exploration, production, transportation, storage, processing and sale of gas, gas condensate and oil, the sale of gas as a motor fuel, as well as the production and marketing of heat and electricity.



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.



Saudi Electricity Company (SEC) is a state-owned electricity company with a monopoly on the production, transmission and distribution of electricity in Saudi Arabia.



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.



Haefely Test AG (Switzerland) designs and manufactures systems of surge voltage and current testing, systems of high-voltage alternating current testing, equipment for power cables, motors, generators, distribution and power transformers testing. Haefely Test AG and Hipotronics Inc. (USA) are operating under the common brand Haefely Hipotronics.



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. (TTD) 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 Dnestrenergo (SUE GC Dnestrenergo) services 35–330 kV substations and power lines throughout the territory of Transnistria. The main goal of the enterprise is to support the equipment and power lines.



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 plants (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.



PMTT. High-voltage Solutions (PMTT) manufactures 110–750 kV power transformers and autotransformers of over 25 MVA capacity including units in three-phase arrangement. The production capacity of PMTT is more than 10 000 MVA annually. Headcount — about 350 staff members.



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.



Siemens Transformers LLC produces, sells and services power transformers and autotransformers with a capacity of up to 250 MVA and rated voltage up to 330 kV. The project of Siemens Transformers LLC plant is the result of many years of experience in more than 20 Siemens transformer plants around the world, including Germany and Austria.



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.



Rosseti FGC UES is one of the world's largest power grid companies responsible for the operation and the development of the Unified National (All-Russian) Power Grid. The company is included in the list of Russia's strategic organizations.



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.



The ERSO group of companies is an international electro-technical holding. ERSO is a diversified integrated company focused on complex equipment and implementation of new construction projects, reconstruction and modernization of power facilities.



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

We are always in touch



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**HIGH-VOLTAGE
BUSHINGS FROM
12 TO 1200 KV**

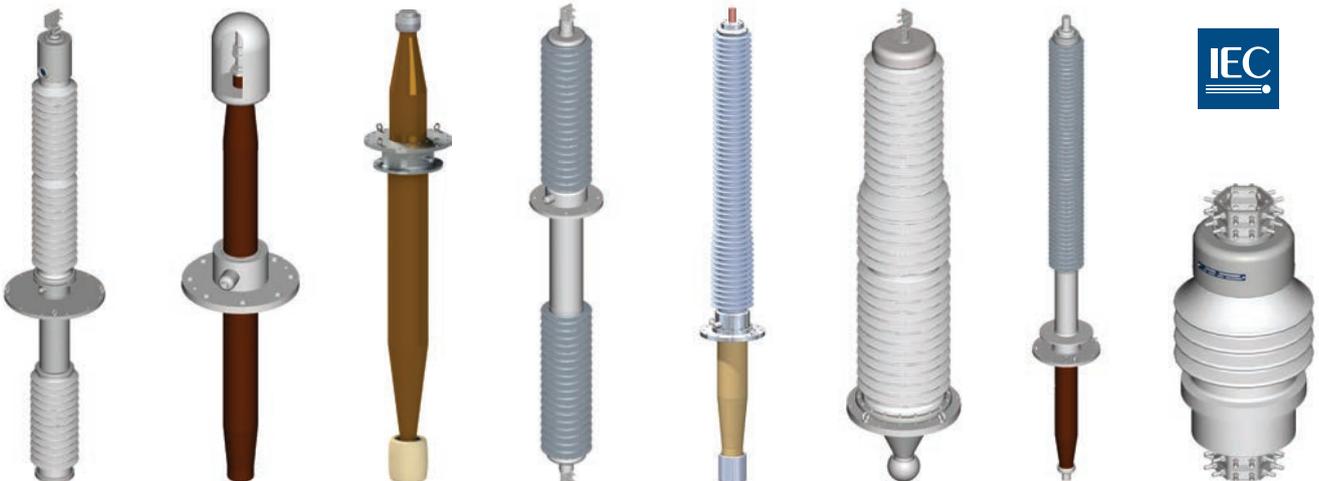


**COMPLETE RANGE OF
BUSHINGS**

Innovative products

Izolyator designs, makes, services and repairs high voltage bushings on alternating and direct current in the voltage range 12–1200 kV with Air — Oil, Oil — Oil, Air — Air, Air — SF₆, SF₆ — Oil, Air — Liquid nitrogen applications.

The solid internal insulation, which has a higher reliability and durability, is used in the majority of produced bushings. There are bushings with two types of solid insulation: RIP and RIN. The RIN insulation possesses extremely high hydrophobicity and resistance to atmospheric moisture, virtually eliminating any moistening of insulation. Porcelain sheds, polymer insulation directly applied on the internal insulation, composite housing with external silicone ribbing are used for external insulation.



Air–Oil bushings for oil switches
Voltage: 40.5–252 kV
Current: 1000–3150 A
Insulation: RIP or RIN

Oil–Oil bushings for cable connection of transformers
Voltage: 72.5–550 kV
Current: 630–1000 A
Insulation: RIP or RIN

Oil–Oil bushings for cable connection of transformers
Voltage: 72.5–550 kV
Current: 630–1000 A
Insulation: RIP or RIN

Air–Air wall bushings
Voltage: 72.5–252 kV
Current: 2000–4000 A

Air–Oil bushings for power transformers and shunt reactors
Voltage: 12–1200 kV
Current: 315–5000 A
Insulation: RIP or RIN (up to 550 kV)

Air–SF₆ bushings for switchgear
Voltage: 252 kV
Current: 2000–3150 A

DC HV bushings
Voltage: ±126–800 kV
Current: 1800–5400 A

Air–Oil detachable bushings for power transformers
Voltage: 20–40.5 kV
Current: 6–20 kA





MISSION

Participating in a stable and reliable energy supply, we help everyone to realize their potential.

VISION

We aim to be one of the global leaders in the industry and help to fill the world with energy and light, generating a high-quality charge in various parts of the world through smart and forward-looking solutions in the electric power industry.

SOCIAL RESPONSIBILITY

We build our social policy on the basis of a harmonious combination of the interests of the company owners, employees, the local community and society with strict observance of the laws of the Russian Federation.



