

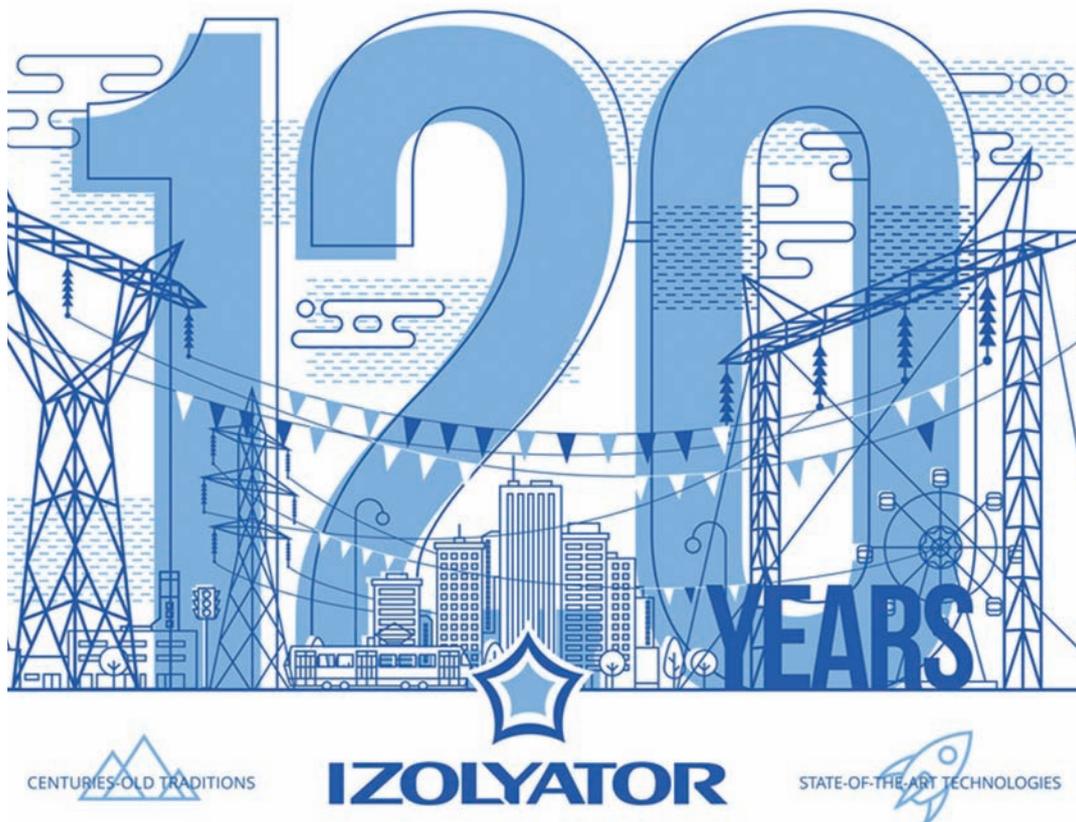
# IZOLYATOR *120 years*

CENTURIES-OLD TRADITIONS – STATE-OF-THE-ART TECHNOLOGIES

#2/2016 (9) APRIL-JUNE

## II QUARTER 2016 RESULTS

In 2016 Izolyator, the biggest Russian maker of high-voltage bushings celebrates its 120th Anniversary. Over the years, the company has gained a unique expertise in design, production and operation of high-voltage bushings of various voltages and applications.



**ALEXANDER SLAVINSKY**

Chairman of the Board of Directors at Izolyator, Chairman of D1 Subcommittee in RNC CIGRE

The history of high-voltage bushings development in Russia is inseparably associated with Izolyator plant. In its over 100-year history, the plant has made more than 570 000 high-voltage bushings that operate in the majority of power facilities in Russia and the CIS countries as well as 30 countries in the world.

Every achievement that Izolyator made was only possible thanks to the well-coordinated work of the highly professional team and all-round support from our partners.

The company is proud to have employed over 100 labor dynasties with many of those working here to date.

“Century-long traditions, state-of-the-art technologies” — these words became a motto for those who work at the plant which is justifiably believed a global leader in design and manufacture of high-voltage bushings.

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**PEOPLE ARE THE MAIN ASSET OF THE COMPANY**

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**IZOLYATOR IS A LEADING SCIENCE AND TECHNOLOGY PARTNER OF RNC CIGRE**

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# Izolyator. Century-long experience and innovative technologies for power industry



*Izolyator plant – advanced technology manufacturing facility*

## MILESTONES IN THE COMPANY HISTORY

The history of Izolyator plant is inseparably associated with origin and development of high-voltage bushings into a self-sufficient sector in power equipment production in Russia.

The plant was founded on 6 June 1896 in Vsehsviatskoe village on the outskirts of Moscow, and, in 1905, the products that it made won a gold medal at the Brussels International Exhibition.

The revolution nationalized the plant making it one of the leaders in GOE-

LRO plan fulfillment for bushings and insulating materials production. The plant faced a challenging objective to start porcelain bushings production for high-voltage transmission lines. In 1922-1924, the design bureau of the plant introduced the first line insulator designs, and,

in 1927, the plant grasped the production technology of suspended insulator.

In 1919-1929, the production output grew almost 100 times.

The time passed. The power industry of the country rapidly developed, voltages grew higher — and the plant developed accordingly.

In 1980 the plant completed design works of 1150 kV bushings for the first ever ultra-high-voltage AC line Ekibastuz — Kokchetav — Kustanay that was put into operation in 1989.

Jointly with NIIPT, Izolyator designed and later started mass production of the  $\pm 110$  kV 2500 A DC bushings for Vyborg DC substation for out-of-phase link between power grids of Russia and Finland, built in 1980-1984, remaining the largest in the world. In 1996, Izolyator and VEI named after Vladimir Lenin produced the first six Russian 35 kV RIP-insulated bushings and delivered for experimental operation.

Those milestones are only a small part of achievements that mark the bright history of the company. Nowadays the plant keeps the glorious traditions of the past with unstoping growth and development.



*Assembly station of 220 – 1150 kV bushings*



*Test Center of Izolyator plant*

**PROGRAMMING THE PROGRESS**

Today, Izolyator is a modern advanced technology enterprise, fitted-out with the latest equipment, able to design, manufacture and test bushings of alternating and direct current in the 12 — 1200 kV range. The manufacturing facility allows making of 12,000 high-voltage bushings a year.

The plant facilities constantly see new machinery added, existing equipment upgraded, the level of process automation raised. At least 10% of the plant's annual turnover is directed to R&D funding and new materials procurement. The plant expands its product range at all times by developing new designs of high-voltage bushings and modernizing product designs and production.

All implemented innovations adhere to the general policy that the equipment and technologies must comply with the highest world standards and quality requirements.

In 2002 — 2004, Izolyator created an original RIP-insulation technology in cooperation with the leading Russian scientific centers and applied it in mass production. Before that time, RIP-insulated bushings were assembled with imported insulation cores.

Mass produced RIP high-voltage bushings are highly reliable and have a long operation life.

They perfectly meet consumers' technical, operational and ecological requirements.

Today, Izolyator adheres to the policy of gradual transition of all products in its range to RIP technology as the most advanced and prospective for bushings of all voltage classes. Presently, all bushings up to 750 kV are produced with insulation of the type. Izolyator uses unique equipment allowing for mass production of RIP bushings of 1150 kV AC and 1000 kV DC voltages.

Thus, thanks to an active and consistent technical policy of Izolya-

tor, Russia can be proud to possess the largest operational experience of high-voltage bushings with RIP technology of various applications.

**INTERNATIONAL COOPERATION**

Over the years of reliable work, Izolyator has won trust from consumers both in Russia and abroad. Products of the plant are exported to more than 30 countries of the world.

In 2015 Izolyator became the first in the world supplier of high-voltage

RIP bushings to Power Grid Corporation of India Limited (PowerGrid).

The power markets of India and China are particularly attractive for Russian manufacturers of electrical engineering products as those countries are very similar to Russia in terms of power grids outstretch and scale. Just as immense seem cooperation prospects.

A strong interest for Russian manufacturers presents the market of Vietnam where Izolyator is promoting its products. The plant is prospecting a multi-faceted cooperation with many countries of Asia Pacific region, Africa, Latin America and Middle East.

Izolyator's key priority for the coming years remains expansion on European and Asian markets and global leadership in development, manufacture and implementation of modern technologies in power industry.

Our company will use every effort to prove our customers' trust and timely meet obligations on high-voltage bushings production and maintenance.

I would like to thank our business partners, Izolyator team and our plant veterans! I thank everyone who made a contribution with hard work and talent walking this path of glory!

Alexander Slavinsky,  
Chairman of the Board of Directors  
at Izolyator,  
Dr. Eng. Sc.



*Izolyator staff – a tight-knit team of professionals*

## People are the main asset of the company!



This year Izolyator plant celebrates the 120th Anniversary of the start of production. Throughout the year, there will be a number

of events organized for partners and staff to commemorate the outstanding date. The awarding ceremony for the company

employees became one of such. The staff members were awarded recognition letters and certificates of appreciation from the Governor

of the Moscow Region, Istra municipal district administration and Pavlo-Slobodsky village administration.



*Awards ceremony dedicated the 120th Anniversary of Izolyator*



*Awards ceremony for Izolyator and its staff for an active involvement in the Moscow Region development*

## There is nothing these people can't handle!

The staff members with employment period of fifteen to forty years at Izolyator who made a particular contribution to the company development and prosperity were given the highest corporate award — the badge of honor “For performing diligently over many years”!

The employees who have worked for over 40 years at the plant are a true company treasure:

- Alexander Bogatyrev, metal worker;
- Vladimir Nikolaev, metal worker;
- Marina Shepeleva, head of bureau in the quality department;
- Svetlana Yurchenko, dispatcher.

### For performing diligently over 25 years!



### For performing diligently over 15 years!



### For performing diligently over 40 years!



### For performing diligently over 20 years!



### For performing diligently over 10 years!



*The key personnel of the company is a mix of experience, professionalism and diligence*

# Our Veterans are a Wonderful Example of Life-Work Dedication!



Our Veterans are a Wonderful Example of Life-Work Dedication!  
 These veterans received the Invaluable Contribution Award:

- Anatoly Mitroshkin
- Nelya Barkova
- Boris Kukurkin.



*Nelya Barkova receiving the award*



*Boris Kukurkin receiving the award*



*Anatoly Mitroshkin receiving the award*



*Jubilee cake*



**IVAN PANFILOV,**  
 Commercial Director at  
 Izolyator

We are actively engaged in international business expansion and have already gained a reputation of an open company maintaining dialogue with partners across many countries.

Strengthening ties with grid companies and generation customers as well as transformer plants in Europe and Asia is a key objective that Izolyator has set.

To provide representatives of the leading power grids and electrical engineering companies of the world with an opportunity of a better introduction to our new technologies, especially the proprietary hard RIP insulation, we organized an international conference and a series of seismic tests of RIP bushings in Italy. The participants of the event were able to witness the highest quality of innovative designs and professionalism of our specialists. Izolyator's experience of innovation speaks for our ambition for a true global leadership in development, production and implementation of modern technologies in power industry!

We appreciate our partners for sincere interest to the achievements of Izolyator and hope that our dialogue on the power industry development will continue and become a fundament for cooperation.

# A NEW QUALITY OF INTERNATIONAL COOPERATION

## An international conference on the occasion of the 120th Anniversary of Izolyator



*The international events dedicated to Izolyator company anniversary were a success!*

In June 2016, on the occasion of its 120th anniversary, Izolyator organized an international conference where representatives of the leading global operators and power engineering companies shared unique experience of design, production, operation and maintenance of high-voltage bushings with hard RIP insulation. Besides, the conference participants discussed pressing topics on power generation, transmission

and distribution including modern power industry trends in the world in general.

Representatives from 10 companies in 5 countries – Russia, India, France, Germany, and Italy – took part at the conferences sending 22 delegates.

According to the attending experts, the event was meaningful not only for the RIP technology promotion but for the development of

the world power industry in general.

We would like to thank the participants for their interest to the innovative designs of high-voltage bushings with hard RIP insulation and a high opinion on the event organization. Our special thanks to Izolyator partners in Asia and Europe for an all-round support in the event execution and Izolyator products promotion on the global market.



*Participants of the International Conference dedicated to the 120th Anniversary of Izolyator*



*The audience – representatives of the leading world's power and industrial companies*



*Thank you letters awarding*

## Tests at CESI S. p. A. are a prominent milestone in the modern history of Izolyator



*Tests participants at CESI S. p. A.*



*Deputy Chief Designer at Izolyator Pavel Kiryukhin checking the bushing's readiness for testing*

On 6 — 10 June 2016, Izolyator carried out a series of successful seismic tests unmatched in the world's practice. They were held in one of the world's leading test laboratories CESI S. p. A.

Experts from the state power grid companies of India, Power Grid Corporation of India Limited, and Italy, Terna S. p. A and Enel S. p. A., representatives of the leading power OEMs of France (JST transformateurs), Germany (MR) and Italy (SEA, Getra S. p. A., Polynt) took part in the tests.

550 (420) kV RIP bushings designed by Izolyator under the order of Power Grid Corporation of India Limited underwent testing.

We would like to thank CESI S. p. A. and all participants for the tests execution on the highest technical level, for their intention to take practical steps in developing international cooperation in power industry!



Participants in the tests of Izolyator bushings



Group of international experts observing the tests



Izolyator bushings at the test rack

## CESI

CESI is an independent center of expertise and a global provider of technical and engineering services to customers throughout the energy value chain, including business and technical consultancy, engineering and operational support. The center acts as owner's engineer and provides qualified third-party opinion to power utilities worldwide. Through its top-class modern testing facilities located in Milan, Berlin (IPH GmbH) and Mannheim (FGH GmbH), CESI is among the leading international organizations providing measurements and inspection, testing & certification and design review services to the global power industry. The network of more than 1000 highly experienced professionals around the world, working from offices and through representatives in 35 countries, is dedicated to delivering customized solutions. CESI S. p. A. is an active contributor to International Council on Large Electric Systems (CIGRE). It is also engaged in Rosseti JSC's project to create Federal Electric Equipment Test Center in Russia.



**OLEG BAKULIN,**  
*Director on Partner Relations  
at Izolyator*

The second quarter of 2016 became a starting point for development of mutually beneficial cooperation with our partners in regard to new product deliveries and modernization of operating equipment.

Izolyator representatives held a number of meetings with our customers in Russia. Thus, we reached an agreement on our participation at the exhibition held by Rosseti JSC as part of the corporate professional contest.

Today, we carry on with deliveries under the 2015 contracts addressed to power grid and generation companies in Russian Federation and ship under the high-voltage bushings orders of 2016.

Besides, we have already discussed purchasing volumes for the second half of 2016 with our clients as we are well aware of the importance of timely preparation for the autumn-winter period by the utilities, making shipments schedule event more important.

Izolyator together with partners bid for supply of high-voltage bushings to power grid and generation companies and large industrial customers operating high-voltage equipment. The partner companies offering Izolyator products have been announced winners in the overwhelming majority of tenders. This result provides a good basis for sustainable operation and development of our company in the future.

## Rosseti JSC: a new level of interaction



*Meeting participants at Rosseti, (L-R): Sergey Petrov, Sergey Kataev, Alexander Slavinsky, Oleg Bakulin and Konstantin Sipilkin*

A working meeting was held between Rosseti JSC and Izolyator regarding issues of interaction between daughter companies and subsidiaries of the holding and our plant.

On behalf of Rosseti JSC:

- Sergey Kataev, Operations and Technology Management Director;
- Sergey Petrov, Deputy Production Director — Head of Production Technology Department;
- Alexey Kalinin, Chief Expert, Production Technology Dpt.

On behalf of Izolyator:

- Alexander Slavinsky, Chairman of the Board of Directors;
- Konstantin Sipilkin, R&D Director;
- Oleg Bakulin, Director on Partner Relations.

The partners discussed issues of coordination between the companies in respect to high-voltage bushings operation and warranty and post-warranty service of the power equipment.



The Public listed company Rossiiskie Seti (Rosseti JSC) is 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. In 2015 net electricity supply to consumers reached 720 bln kWh.

## MOESK: 35 and 110 kV Bushings Delivery

Izolyator supplied 225 pcs of 35 kV and 110 kV RIP bushings to the Moscow Unified Power Grid Company in the first half of 2016.



MOESK JSC (enters Rosseti JSC) is one of the largest power distribution companies in Russia. The key activities are electric power transmission and power grid connection services to consumers on the territory of Moscow and the Moscow Region.



*110 kV bushings assembly at Izolyator plant*

## Kubanenergo: Long Term Cooperation



Photo from Kubanenergo JSC's webpage

Alexander Slavinsky, Chairman of the Board of Directors at Izolyator visited the Public Listed Company of Energy and Electrification of Kuban in the city of Krasnodar.

Dmitry Ryazantsev, Chief Engineer, Deputy General Director on Technology at Kubanenergo JSC received the visitor.

The sides discussed long term cooperation and key issues of further interaction in fitting out Kubanenergo facilities with modern and reliable equipment.

We wish to thank Kubanenergo JSC and Dmitry Ryazantsev personally for the invitation and warm welcome, and efficient cooperation!



The Public Listed Company of Energy and Electrification of Kuban (Kubanenergo JSC) is the largest power grid operator on the territory of Krasnodarsky Krai and the Republic of Adygeya that transmits and distributes electricity via 110 kV and lower voltage power lines.

## MRSK SOUTH: Strengthening Ties

Alexander Slavinsky, Chairman of the Board of Directors at Izolyator visited the Interregional Distribution Grid Company of the South in Rostov-on-Don.

Pavel Goncharov, Board Member, Chief Engineer and Deputy General Director on Technology at MRSK South JSC received the guest. The sides prospected directions and overall cooperation strategy expressing mutual interest in strengthening further joint activities. We would like to thank MRSK South JSC and Pavel Goncharov personally for a warm welcome and efficient cooperation!



MRSK South JSC is an interregional distribution grid company (0.4-110 kV lines operator) that has utility connections to the unified national power grid with dominating share on the transportation and distribution market in four federal subjects: Rostov Region, Astrakhan Region, Volgograd Region and Republic of Kalmykia.



Photo from MRSK South JSC's webpage

## Professional Training Program for Engineering Staff

A visiting class of the listeners of the President's training program for engineering staff "Energy efficiency in power facilities design" was held at Izolyator plant. The topic of the day was "Modern energy efficient equipment for power grid facilities, its application in design and operation". The listeners are specialists of MRSK Center JSC, MRSK South JSC and Kubanenergo JSC.

A representative of the Distant and Additional Learning Institute of the National Research University



Visiting class at the Test Center at Izolyator plant

"Moscow Power Institute" was accompanying the group.

Dmitry Ivanov, Head of Test Center and Vladimir Ustinov, Deputy Quality Director delivered the class and plant tour introducing the listeners to design, modern production and test technologies of HV RIP bushings.

The class became an important step for raising qualification and professional development of the specialists of power grid companies.

## RRSK: Prospective Partnership

A delegation of the Regional Distribution Company (RRSK) visited Izolyator. Roman Dmitrik, General Director, and Andrey Mikhailov, Chief Engineer, Deputy General Director familiarized themselves with Izolyator activities and innovative HV bushings designs.

The guests were received by:

- Oleg Bakulin, Director on Partner Relations;
- Vladimir Ustinov, Deputy Quality Director;
- Pavel Kiryukhin, Deputy Chief Designer.

The visit agenda included a tour of Izolyator plant and talks about bushings supply for the power facilities of RRSK.



Presently, RRSK Ltd is a young and dynamic power grid company growing in number of consumers and distribution networks of up to 220 kV class.

*Tour of Izolyator plant, (L-R): Vladimir Ustinov, Roman Dmitrik, Andrey Mikhailov, Pavel Kiryukhin and Oleg Bakulin*

## Rosenergoatom: Operation of Izolyator Products



*Beloyarskaya NPP (photo from official webpage of Concern Rosenergoatom JSC)*

A meeting between Izolyator management and Alexey Zhukov, NPP Production and Operation Director, Deputy General Director at Concern Rosenergoatom JSC took place.

Alexander Slavinsky, Chairman of the Board of Directors and Oleg Bakulin, Director on Partner Relations

at Izolyator presented the company and its products. In the course of talks, the sides covered issues on high-voltage bushings operation at the power facilities of Concern Rosenergoatom JSC, their interchangeability with previously supplied products.



The Open Joint Stock Company Concern for Electric and Thermal Energy Production at Nuclear Power Plants (Concern Rosenergoatom JSC) is one of the largest companies in the power industry in Russia — the country's only to function as nuclear power plants operator.

## Kalininskaya NPP: Working Visit



*Kalininskaya NPP (photo from official webpage of Concern Rosenergoatom JSC)*

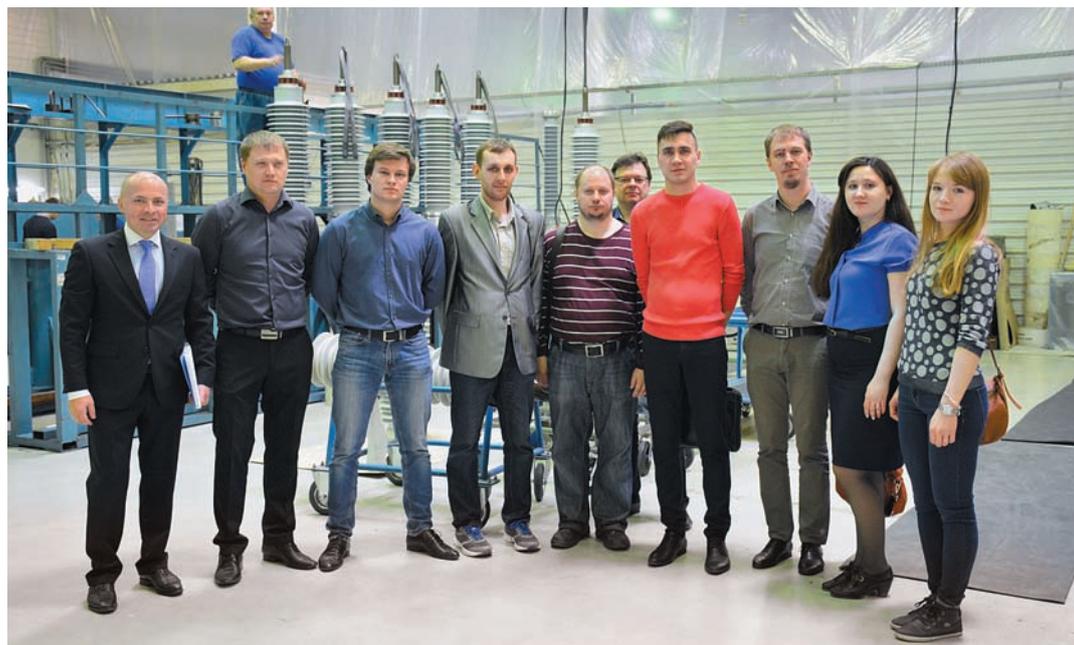
Oleg Bakulin, Director on Partner Relations at Izolyator paid a working visit to Kalininskaya NPP. The meeting agenda included Izolyator

corporate presentation and introduction of the power plant's management and specialists to Izolyator's product range.



Kalininskaya NPP is located at the north of Tverskaya Region, 125 km away from Tver. Distance to Moscow — 330 km, Saint Petersburg — 400 km. The NPP facility is situated on the southern shore of the Udomlya Lake. The total space occupied by the NPP complex is 287.37 ha. Using an outdoor switch gear, the power plant gives capacity to the unified power grid of Center via high-voltage power lines to Tver, Moscow, Saint Petersburg, Vladimir, Cherepovets. Thanks to its geographic position, the power plant provides high voltage wheeling.

# Atomenergoproekt Delegation Visited Izolyator Plant



Izolyator plant tour for Atomenergoproekt representatives. Assembly shop

A delegation of engineers from Atomenergoproekt JSC visited Izolyator.

The guests were received by Oleg Bakulin, Director on Partner Relations who spoke about the company products and development prospects. Further on, the host gave a tour of the plant acquainting the visitors with Pavel Kiryukhin, Deputy Chief Designer who described high-voltage bushings production and testing stages and innovative technological solutions.

## ATOMENERGOPROEKT

Atomenergoproekt JSC, owned by the State Corporation Rosatom, is an engineering company, general design contractor and general contractor in nuclear power plants erection. With more than 3000 highly qualified specialists that ensure the company's efficient operation in engineering, the interests of this business go far beyond Russia.

# Seminar in RusHydro

Izolyator took part in the seminar of the Volga Corporate University Training Center of Hydroelectric power — branch of the Federal Hydrogeneration Company

“The diagnostics of power equipment technical condition” seminar was intended for technical specialists of power equipment maintenance, monitoring departments and hydrotechnical constructions.

Vladimir Ustinov, Deputy Quality Director at Izolyator and D1 RNC CIGRE Subcommittee representative made a report on “High-voltage equipment testing. High-voltage bushings damage sources. Stationary systems of high-voltage bushings diagnostics. Systems of bush-



Boguchanskaya HPP (photo from RusHydro JSC official website)

ings insulation control. Innovative designs of bushings.”

We would like to thank RusHydro JSC for their invitation and the event organization on the high level!

## RusHydro

The Public Listed Company Federal Hydrogeneration Company – RusHydro Group is one of the largest power holdings in Russia. RusHydro is a leader in electric power production from renewable sources that develops generation on the basis of energy given by water flow, sea tides, wind and geothermal activity. The total installed capacity of the power plants in RusHydro is 38.7 GW.

# Votkinskaya HPP: Delivery Schedules Taking Shape

Oleg Bakulin, Director on Partner Relations held talks with the Votkinskaya HPP management. On behalf of Votkinskaya HPP, Eduard Skripka, Chief Engineer and Vadim Alexeev, Group Leader

Electrical Engineering Department participated. The visitor presented the product range and invited discussion of Izolyator high-voltage bushings supply and operation.

## RusHydro

The branch of RusHydro JSC — Votkinskaya HPP is a backbone junction in the Urals power network. The plant's key activities are: operation at peak values of the load curve, operating reserve provision at various network disturbances, regulation of the Kama river water passage for navigation and uninterrupted functioning of intake facilities of the cities.



Votkinskaya HPP (photo from RusHydro JSC official website)



## ALEXANDER SAVINOV,

Director on Strategic Sales  
at Izolyator

Development of relations with strategic partners is an important activity of our company.

Our partners have an opportunity to witness Izolyator products' high quality and their conformity with international standards at any moment. Thus, in May 2016, Izolyator carried out joint tests of 500 kV bushings with Mosenergo JSC. The tests went successfully, and our partners witnessed the design and production potential that our company possesses.

The following fact also speaks for Izolyator's outstanding design competence and capabilities to make durable equipment: one of Bashkir generation company's facilities has operated 110 kV bushings for over 50 years, fault-free!

Following the tradition, we create bushings offering the same reliability, only on the new — more advanced — technical level, and meeting requirements and demands of consumers.

Even though a large work has already been done, we see a lot of new projects with power grid and electrical engineering companies of Russia ahead. We will continue timely supplies of Izolyator quality products to our partners.

# Mosenergo: Inspection of Izolyator Bushings Tests



At the Test Center of Izolyator plant (L-R): Victor Kiryukhin, Alexander Savinov, Andrey Snetkov, Nikolay Shavlikov and Daniil Galimov

Mosenergo JSC inspected Izolyator HV bushings tests. There were acceptance tests of GKTIII-60-550/2000 IVUE.686355.172 bushings, made for TPP-26, a branch of Mosenergo JSC, performed.

To inspect the tests, Mosenergo JSC specialists arrived at the plant:

- Andrey Snetkov, Chief Specialist, Electrotechnical Equipment Service;
- Nikolay Shavlikov, Chief Specialist, Electrotechnical Equipment Service;

- Daniil Galimov, Chief Specialist, TPP-26.

The inspectors were welcomed and accompanied by:

- Alexander Savinov, Director on Strategic Sales;
- Victor Kiryukhin, Head of Design Bureau;

The tests and inspection went successfully. Upon completion of the test, the guests were offered a plant tour where they familiarized themselves with innovative design solutions, main stages in bushings

production and Izolyator plant development prospects.



Mosenergo JSC is the largest territorial generation company in Russia, one of the largest heat producers in the world. There are 15 power plants with total installed capacity 13 thnd MW in the structure. There are also district and quarter thermal power stations, local stations of heat and electricity supply in Mosenergo.

# North-Western TPP: Discussing Operational Experience

Alexander Savinov, Director on Strategic Sales at Izolyator paid a working visit to the North-Western TPP, a branch

of Inter RAO — Power Generation JSC. During the meeting, our representative discussed Izolyator 330 kV bushings op-

eration and quality issues with the TPP management and specialists. Izolyator delivered them in 2012.



Meeting at the North-Western TPP



The North-Western TPP is the first new generation power station in Russia that offers a highly economical and ecological technology of electricity and heat generation using a binary combined cycle plant. It is one of the most modern plants not only in Russia, but in the entire Europe. The combined cycle technology allows achieving 51.5% efficiency while similar units can demonstrate only 40% efficiency at maximum.

## Successful Tests of 1150 kV Bushing

A 1150 kV bushing made for Main Power Transmission Lines of Siberia passed electrical tests at Izolyator plant.

GMT-20-1150/1250 2 ShTs bushing is intended for installation in transformers. The maximum operating voltage at 50 Hz is 1200 kV, nominal current 1250 A.

Sergey Timashev, Lead Expert, Main Equipment Operation at FSK UES JSC was present at the tests.

He was received by

- Alexander Savinov, Director on Strategic Sales;
- Dmitry Mashinistov, Head of SVN-Service;
- Victor Kiryukhin, Head of Design Bureau.

Dmitry Ivanov, Head of Test Center managed the tests. Alexander Novikov, Quality Director also took part in the testing.

The tests went good. In addition, Sergey Timashev familiarized himself with the product range of the plant and technological infrastructure.



1150 kV bushing tests at Izolyator



Main Power Transmission Lines (MES) Siberia is a branch of FSK UES JSC that operates on the territory of the Siberian Federal District. Its service area includes ten subjects of Russian Federation with a population of 19.3 mln people. MES Siberia ensures uninterrupted operation of 433 power lines with a 22 804.6 km stretch (29194.4 km by circuits) and 118 substations with total transformer capacity 50462.2 MVA.

## Fortum JSC: Delivery of 110 and 220 kV Bushings



Nyagan GRES (photo from official website of Fortum JSC)

A lot of RIP bushings of 110 and 220 kV voltages were shipped by Izolyator to Fortum JSC in the first half of 2016.



Fortum JSC is a leading producer and supplier of thermal and electric power in Urals and Western Siberia. The company structure includes eight thermal power plants. Five of those are located in Chelyabinsk Region, three — in Tyumen Region, including Nyaganskaya GRES (Nyagan, Khanty-Mansiisk Autonomous District-Yugra).

## MES North West: Scheduled Visit



MES North West Headquarter

Alexander Savinov, Director on Strategic Sales at Izolyator held talks with the management of Main Power Transmission Lines North West (MES North West), branch of FSK UES JSC. In the framework of the scheduled visit, the sides discussed the high-voltage bushings' operation on power facilities of MES North West that were supplied

in 2015 and new Izolyator bushings supplies in 2016.



Main Power Transmission Lines of North West (MES North West) is a branch of FSK UES JSC operating on the territory of the North-Western Federal District. The service area includes 11 Subjects of Russian Federation.



**MAXIM ZAGREBIN,**  
 Head of OEM Sales  
 at Izolyator

The second quarter of 2016 was marked by a number of successful activities for Izolyator. One of our key and strategic partners is Togliatti Transformer. Together we have completed projects not only in the Russian market, but also in the markets of the CIS countries. We are very glad to have such reliable partners.

We developed cooperation with another large OEM — Power Machines — Toshiba. High-voltage transformers Ltd (Saint Petersburg), getting involved in multiple joint projects both on domestic and export markets. Power Machines — Toshiba. High-voltage transformers Ltd and Power machines JSC are our strategic partners on local and international markets.

An efficient form of our interaction is seminars for design offices and commercial divisions of power equipment OEMs. In the second quarter, we organized training for specialists of our old partner SverdlovElectro Group JSC (SVEL) in Ekaterinburg. At the same time, we effected the first delivery of 330 kV custom-made bushings to SVEL.

Being in Ekaterinburg, we used the chance to meet our partners in Uralelectrotyazhash plant and discussed cooperation issues.

Our relations with Siemens Transformers Ltd also developed constructively: we agreed on delivery of custom-made bushings for installation in transformers.

It is definitely worth mentioning a shipment of high-voltage bushings for Electrozavod JSC equipment manufactured for operation in the Crimea.

We will keep working on joint projects with the leading power engineering companies in Russia and sincerely thank our partners for productive cooperation!

## Video Instruction on Izolyator Bushings Installation

Izolyator has made a video instruction for partners and customers "Installation of high-voltage RIP bushings made by Izolyator".

In the video, bottom terminal and draw-lead type HV bushings installation processes are detailed on the example of a 500 kV bottom terminal bushing and a 220 kV draw-lead type transformer bushing installation.

Correct installation and measurements provide a solid basis for a bushing's fault-free operation over many years. That is why it is important to pay a special attention to the process. The film is available for viewing on Izolyator page on YouTube following the link on Izolyator corporate website.



A frame from the film about Izolyator bushings installation

## Power Machines – Toshiba. High-voltage transformers Cooperation Prospects



At the Test Center of Izolyator (L-R): Victor Kiryukhin, Maxim Zagrebina and Alexander Smirnov

Izolyator plant was visited by Alexander Smirnov, Lead Design Engineer at Power Machines — Toshiba. High-voltage transformers Ltd. That

was the guest's first visit. On Izolyator side, he was received by:

Maxim Zagrebina, Head of OEM Sales and Victor Kiryukhin, Head of Design Bureau. The hosts arranged a tour of the plant introducing the visitor to the modern technologies of production and testing of high-voltage RIP bushings.



Power Machines — Toshiba. High-voltage transformers Ltd is a joint venture of Power Machines JSC and Toshiba Corporation. The project started in September 2011 with signing of a JV set up agreement and construction of power transformers manufacturing facility in Russia.

## Power Machines – Toshiba. High-voltage transformers: Shipment of 24 – 500 kV Bushings

A lot of RIP bushings of 24 — 500 kV voltages were delivered by Izolyator to Power Machines — Toshiba. High-voltage transformers Ltd in the first half of 2016.



Photo from official website of Power Machines – Toshiba. High-voltage transformers Ltd.

# The First Delivery of 750 kV Transformer RIP Bushings in Russia

Izolyator delivered 750 kV AC high-voltage transformer RIP bushings to a Russian customer — Togliatti Transformer Ltd — for the first time.

The GKTII-30-800/1000 IVUE.686 356.705 bushing is designed for the maximum operating voltage of 800 kV at 50 Hz frequency. The nominal current is 1000 A.

Like in other bushings of the company, the proprietary RIP technology was used to make the bushings. It was first introduced and adapted for industrial engineering in 2002–2004.

The porcelain housing with dry filling — compression gel — on top of the RIP insulation is used for exterior insulation.

These bushings are included in the product range of Izolyator plant and were made as yet another consistent step in transition of the entire product range to the hard internal insulation — RIP — as the most reliable and pro-



750 kV transformer bushing assembly at Izolyator

spective. Thanks to this technical policy, Russia possesses the biggest experience of RIP bushings of various applications in the world.



The Private Limited Company Togliatti Transformer is one of the largest designers and makers of power engineering equipment in Russia and the CIS. Presently, power transformer production is a key business of the company.

## A Seminar in Togliatti Transformer

Izolyator held a seminar for the design office staff of Togliatti Transformer Ltd. The seminar was given by:

- Maxim Zagrebin, Head of OEM Sales;
- Yury Nikitin, Chief Designer.

The topics covered include design features of HV RIP bushings, possibilities to design and make custom-built bushings, technical service of operating equipment. The business agenda was dedicated to discussion of purchase volumes



Photo from official website of Togliatti Transformer Ltd

and delivery terms of high-voltage bushings.

We would like to thank Togliatti Transformer Ltd for their invitation and the seminar arrangement!

## Togliatti Transformer: Delivery of Bushings 24 – 750 kV

A lot of RIP bushings with voltage classes ranging from 24 to 750 kV were delivered by Izolyator to Togliatti Transformer Ltd in the first quarter of 2016.



Photo from official website of Togliatti Transformer Ltd

## A Seminar in SVEL Group



*Izolyator seminar at SVEL Group*

Izolyator held a seminar for technical specialists and sales force members of SverdlovElectro Group in Ekaterinburg

The seminar was given by:

- Maxim Zagrebin, Head of OEM Sales;
- Victor Kuryukhin, Head of Design Bureau.

The seminar program included information on the history of Izolyator

plant, key achievements, sales geography, types and designs of HV bushings, product development and production stages, testing, research and development, key suppliers of completing parts and materials, technical maintenance of equipment at warranty and post-warranty periods. SVEL Group specialists received detailed answers to their questions at the seminar.

Besides, Anastasia Kuznetsova,

Head of Purchasing Department and Denis Goryev, Chief Designer 500 kV received Izolyator representatives and discussed volumes of future shipments of high-voltage bushings and pending issues on a more efficient coordination.

We would like to thank SVEL Group CJSC for invitation, assistance with the seminar organization and a warm welcome!

## SVEL — Power Transformers: Delivery of 110, 220 and 330 kV Bushings



*Photo from official webpage of SVEL Group JSC*

A lot of RIP bushings with voltage classes 110, 220 and 330 kV were delivered by Izolyator to SVEL — Power Transformers, part of Sverdlov Electro Group, in the first half of 2016.

# SVEL

SVEL Group CJSC is a leading power equipment manufacturer in Russia. The company boasts one of the most impressive growth rates and production modernization in the industry.

## Meeting at Uralelectrotyazhmash



*Meeting at Uralelectrotyazhmash*

Izolyator representatives visited Energomash (Ekaterinburg) — Uralelectrotyazhmash JSC in Ekaterinburg.

Izolyator delegates:

- Maxim Zagrebin, Head of OEM Sales;

- Victor Kiryukhin, Head of Design Bureau.

The visitors were received by:

- Leonid Meshavkin, Purchasing Manager, Transformer Parts;
- Mikhail Yakimov, Chief Manager,

Group Leader;

- Stanislav Zverev, Lead Specialist, Group Leader;
- Galina Prokhorenko, Specialist;
- Alexey Sidorenko, Lead Design Engineer;
- Vera Ibragimova, Lead Specialist, Group Leader.

The sides spoke about current HV bushings deliveries, nearest plans and cooperation prospects.

We wish to thank Energomash (Ekaterinburg) — Uralelectrotyazhmash JSC for the invitation, warm welcome and interest to develop cooperation!

# UETM

Closed Joint Stock Company Energomash (Ekaterinburg) — Uralelectrotyazhmash JSC is the largest Russian manufacturer of power engineering products for generation, transmission, distribution and consumption of energy.

## Energomash — Uralelectrotyazhmash: 35 and 110 kV Bushings Delivery



*Photo from official webpage of Energomash (Ekaterinburg) — Uralelectrotyazhmash JSC*

A lot of RIP bushings with voltage classes 35 and 110 kV were delivered by Izolyator to Energomash (Ekaterinburg) — Uralelectrotyazhmash JSC in the first half of 2016.

## Electrozavod Holding: 24 – 750 kV Bushings Delivery

Electrozavod Holding is Russia's only maker of 500 and 750 kV shunt reactors. Izolyator plant supplies bushings for this type of equipment as well as bushings of other voltages for power transformers made by Electroavod.

A lot of RIP bushings of 24 to 750 kV voltages were delivered by Izolyator to the manufacturing plant of Electroavod Holding in the first half of 2016.



The Public Listed Company Electroavod Holding is a leading domestic and global OEM supplying various electrical engineering products to virtually every sector of economy including power industry, metallurgy, machine building, defense, utilities. Established in 1928, the first domestic transformer plant played a huge role in the country's industrialization and power industry development. Equipment of Electroavod trademark reliably operates in more than 60 countries of the world.



Production plant in Moscow (photo from official webpage of Electroavod Holding)

## Ufa Transformer Plant (UTZ): 110 kV Bushings Delivery

A lot of 110 kV RIP bushings was delivered by Izolyator to Ufa Transformer Plant, part of Electroavod Holding, in the first half of 2016.



Ufa Transformer Plant (photo from official webpage of Electroavod Holding)



## Subcommittee D1 RNC CIGRE Meeting

A meeting of Subcommittee D1 RNC CIGRE “Materials and development of new test methods and means of diagnostics” was held at the research base company — Izolyator plant.

The following members took part in the meeting:

Alexander Slavinsky, Subcommittee Chair, Chairman of the Board of Directors at Izolyator, Vladimir Ustinov, Coordinator and Deputy Quality Director at Izolyator, other staff members of the plant.

The covered topics include creation of working groups, logotype and website as well as editorial publicity.



Izolyator plant is a leading science and technology partner to RNC CIGRE

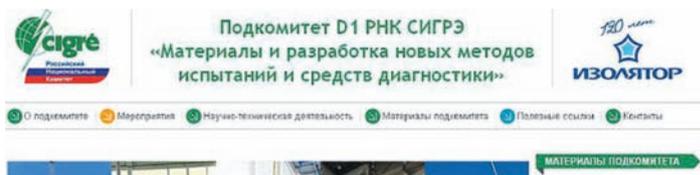


The Russian National Committee in CIGRE (RNC CIGRE) holds one of the leading positions in CIGRE structure both by representation and the high level of research it provides in the field of power industry and sustainable operation of the unique unified power network of Russia. The RNC’s goal is to represent the interests of Russian Federation in CIGRE and actively promote technical expertise exchanges and interactions between the members of RNC CIGRE and their foreign colleagues.

## D1 Subcommittee Section on RNC CIGRE Webpage

A website section dedicated to D1 Subcommittee topics has been launched on the RNC CIGRE webpage.

In the website section of the D1 Subcommittee one can find information on the structure, news and the key directions of activities of the subcommittee.



## Round Table on Direct Current Technologies

In the framework of the IV Russian International Power Forum (RIPF-2016) in Saint Petersburg, the Subcommittee B4 in RNC CIGRE arranged a round table “Problems and prospects of direct current technologies development in the unified power network of Russia”. The event received support from FIC JSC, NIPT JSC and NTC UES JSC. The participants discussed existing problems and incentives for



Panel of the round table “Problems and prospects of direct current technologies development in the unified power network of Russia”.

and testing”. Spokespersons and panelists agreed in opinion that the demand for DC technologies in the modern Russian power industry and their strategic importance for its future development raises no doubts.

“Problems and prospects of direct current technologies development in the unified power network of Russia” Round table working



test facilities development for converter equipment, pending issues

of standardization and attestation, technical solutions for power electronics, power transmission technology for direct current and their application in the unified power network of Russia and linking to other power systems.

Pavel Kiryukhin, Deputy Chief Designer at Izolyator made a report on “Direct Current high-voltage bushings: design, manufacture



The Russian International Power Forum is a unique platform for dialogue between OEMs, technology suppliers to the power industry and the largest consumers in the sector. The Forum appeared another stage in development of one of the best Russia’s specialized exhibitions – Power Industry and Equipment.

# RNC CIGRE Digest



## FSK UES JSC AND SKOLKOVO FOUNDATION DEVELOP COOPERATION

Andrey Murov, Chairman of the Board at FSK UES paid a working visit to Skolkovo Innovation Center to meet the Foundation Board and the President of Skolkovo Science and Technology Institute (Skoltech).

Such issues as cooperation on personnel professional training and innovations programs as well as joint activities with the Science and Technology Center of FSK UES and the Russian National Committee of the International Council on Large Electric Systems (RNC CIGRE) were discussed at the meeting.

## INTER RAO AND RNC CIGRE SIGNED MEMORANDUM ON COOPERATION

Inter RAO JSC and the Russian National Committee in CIGRE signed a Memorandum on cooperation in electric power systems research as part of RIPP-2016 agenda, reported the energy company.

Inter RAO JSC will become a research base for the respective fields of RNC's scientific and technical activities. For instance, the company will take part in the work of research committees "Rotating equipment" and "Power Industry impact on environment".



Alexander Slavinsky, Chairman of the Board of Directors at Izolyator, Chairman D1 RNC CIGRE Subcommittee, Vice President AES RF, Vice President TRAVEK Association, Dr. Eng. Sc.:

One of the most important events in the company life that happened early this year is that Izolyator received the status of a leading science and technology partner to the Russian National Committee of the International Council on Large Electric Systems (Conseil International des Grands Réseaux Electriques — CIGRE). This is the largest international non-governmental

and non-commercial power industry organization.

D1 RNC CIGRE Subcommittee "Materials and development of new test methods and means of diagnostics" was created on the basis of Izolyator plant. The nearest plans see both individual members and member societies of RNC CIGRE joining the subcommittee's research in the respective fields. We are convinced that our cooperation with RNC CIGRE will help us take our work to a totally new level in the interests of all participants and power industry development in our country.

# The 46th Session of CIGRE in Paris

The biennial session of CIGRE is a central event in the life of the largest international organization on science and technology exchange in power industry. The main objective formulated for the session is technical expertise exchange between engineering community, scientists and technical specialists of all the countries in the field of high-voltage power generation and transmission.

The 46th Session of CIGRE will be held on 21 — 26 August in Paris.

A guest of honor Claudio FACCHIN, President, Power Industry at ABB will open the plenary sitting with a presentation on "Essential modifications in the power industry — forming the power networks of the future".

The key topics of the 46th session of CIGRE:

1. Designing of equipment according to ecological requirements
2. Service, overhaul and equipment life extension
3. Real time monitoring of equipment and systems

4. Development of DC solutions
5. Coordination between networks and system operators
6. Public acceptance and societal approval of equipment
7. Integration of renewable sources of energy. Active distribution networks
8. Information systems

The 46th CIGRE session is expected to gather 8500 participants, hold 370 events and 16 poster sessions in 6 days. More than 240 exponents will present their achievements at the technical exhibition.



Conseil International des Grands Réseaux Électriques (CIGRE) is the largest international non-profit Association for promoting collaboration with experts from all around the world by sharing knowledge and joining forces to improve electric power systems. Founded in 1921 in France CIGRE is one of the most authoritative and significant international associations which unites scientists and power engineers from all over the world and makes significant impact on the strategy of the electricity industry in many countries.





**MAXIM OSIPOV,**  
 Head of CIS Sales  
 at Izolyator

In the second quarter of 2016, Izolyator had a successful cooperation with power engineering companies and OEMs in the CIS countries. Our interactions with Central Asian partners deserve a special mention.

A large HV bushings supply is realized with our regional partner in Kazakhstan — the system operator of the unified power network KEGOC.

We also strengthened our relations with another partner in Kazakhstan — Kentau transformer plant. We continue to actively promote our products in Tajikistan, Uzbekistan and cooperate with old partners in Belarus and Ukraine. In the second quarter of 2016, a meeting with partners in Moldavia was held, which is also an achievement as it sets the stage for our products promotion.

Izolyator's participation in the power sector seminar in Kyrgyzstan was a good idea, because there were representatives of all six branches of the National Power Networks of Kyrgyzstan JSC there including PVES (high-voltage network company) directors, chief engineers, substations chiefs.

In future we will maintain our expansion activities in the neighboring countries. Our success builds on reliable, high-quality and competitive products of Izolyator brand.

## BelEnergoContract: Cooperation Talks

Alexander Schepkov, Deputy Director at BelEnergoContract (Minsk, Belarus) visited Izolyator. Maxim Osipov, Head of CIS Sales and Victor Kiryukhin, Head of De-

sign Bureau received the guest. At the meeting the colleagues introduced production capabilities of Izolyator plant and talked about cooperation.



Belenergocontract is an official representative of power equipment OEM VARISCO S. p. A. (Italy). It offers efficient solutions and a wide range of power products.



Izolyator plant tour (L-R): Victor Kiryukhin, Alexander Schepkov and Maxim Osipov

## Plan of Deliveries to Electric Networks of Armenia

Maxim Osipov, Head of CIS Sales visited Moscow office of Tashir Group that includes Electric Networks of Armenia JSC. Artak Iskandaryan, President at Tashir Group received the visitor. The sides discussed plans and further cooperation prospects of HV bushings delivery to Electric

Networks of Armenia JSC expressing mutual interest in development of long term relations.

We would like to thank Tashir Group and Artak Iskandaryan personally for the invitation, warm welcome and productive cooperation!



The main activity of Electric Networks of Armenia JSC is varied electric power distribution and sales. The total power lines stretch is 36 thnd km. The company services approximately 985 000 consumers. Electric Networks of Armenia JSC has an exclusive license for transmission and distribution of power on the territory of the Republic of Armenia with fixed tariffs calculated from the incurred costs and adjusted ROI value. Electric Networks of Armenia JSC is part of the Tashir Group, which is a Russian industrial and development holding.



Photo from official website of Tashir Group

# Cooperation Development with the Enterprises of Kazakhstan

As part of the agenda of the business trip to Kazakhstan, Maxim Osipov, Head of CIS Sales and Dmitry Karasev, Sales Manager met Murat Botabaev, Director at TOO ASA-

snab — Izolyator’s Partner in Kazakhstan. The partners discussed further cooperation in regard to high-voltage bushings delivery by Izolyator. The sides expressed inten-

tion to actively develop mutually beneficial business relations with leading companies in power industry and electrical engineering in Kazakhstan.

We would like to thank Murat Botabaev and TOO ASA-snab that he leads for invitation, a warm welcome and an efficient cooperation!



Kazakhstan possesses large deposits of natural resources (oil, gas, coal, uranium) entering the pool of nations rich with energy resources. The key industry in the country is the power industry with total installed generation capacity of 18, 992.7 MW. About 70 % of electric power is produced by coal burning plants, 14.6% — hydro power plants, 10,6 % — gas power plants, 4.9 % — oil power plants, 0.4 % — renewable energy. Availability of water resources, with 170 bln kW/h annual potential capacity, makes it possible to cover 10 % of the entire demand in power.



Maxim Osipov (L) and Murat Botabaev

## ATEF Group: Discussing Deliveries Plan



Maxim Osipov in ATEF Group



Maxim Osipov (L) and Fatulla Movsumov in Azerbaijan

Maxim Osipov, Head of CIS Sales at Izolyator and Fatulla Movsumov, Izolyator’s Partner in Azerbaijan visited ATEF Group in Baku. The sides discussed plans of high-voltage bushings deliveries and prospects of beneficial and long term cooperation.

We would like to thank ATEF Group for invitation, a warm welcome and interest to cooperate!



ATEF Group consists of five large plants producing electrical engineering products and structural steel with combined area of 120 000 square meters, own R&D division. The modern equipment from the best brands and highly qualified specialists allow the group to produce advanced and reliable products. The plants use only the best available materials and completing parts from biggest manufacturers. More than 35 countries in the world operate the company’s products.

## TOO DOC Co. Ltd: Meeting Izolyator Plant

Representatives of TOO DOC Co. Ltd visited Izolyator plant for the first time. The company is the partner on the market of Kazakhstan.

TOO DOC Co. Ltd was represented by Nurlan Sarbalin, Executive Director and Stanislav Ryapisov, Chief Engineer.

The guests were received by:

- Maxim Osipov, Head of CIS Sales;
- Victor Kiryukhin, Head of Design Bureau;
- Dmitry Karasev, Sales Manager.

The sides entered talks about joint activities and cooperation development plans. During the plant tour the visitor had an introduction to design and modern technologies of HV RIP bushings production and testing.



By the internal insulation winding machine for 220 — 1150 kV bushings (L-R): Dmitry Karasev, Nurlan Sarbalin, Victor Kiryukhin, Maxim Osipov and Stanislav Ryapisov



At the parts machining station



At the station of the internal insulation saturation and polymerization



Introduction to the RIP insulation production process specialties



At the 220–1150 kV bushings assembly station

## Meeting in Dnestrenergo Group



Maxim Osipov at Dnestrenergo



Dnestrenergo HQ in Tiraspol

Maxim Osipov, Head of CIS Sales at Izolyator and the partner of the company in Transdnier Ivan Lupashko visited the state unitary enterprise Dnestrenergo Group in Tiraspol. Sergey Gladky, Substa-

tions Chief welcomed the guests. The sides discussed directions and plans of cooperation on a long term basis as well as advantages of HV RIP bushings application expressing mutual interest in further activities.

We would like to thank GUP Dnestrenergo Group and Sergey Gladky personally for invitation, a hearty welcome and readiness to develop cooperation!



The state unitary enterprise Dnestrenergo Group provides services of electric power transmission by high-voltage power lines (35, 110, 330 kV).

## State Company Moldelectrica: Mutually Beneficial Cooperation



Meeting in Moldelectrica (L-R): Vladimir Sitnikov, Ivan Lupashko and Maxim Osipov

Maxim Osipov, the Head of CIS Sales at Izolyator and Ivan Lupashko, Partner in Moldavia visited the state company Moldelectrica in Chisinau. The sides discussed directions and plans of cooperation on a long term basis as well as advantages of HV RIP bushings application expressing mutual interest in further activities.

We would like to thank SC Moldelectrica for invitation, a hearty welcome and readiness to develop cooperation!



In the beginning of 2015, the state company Moldelectrica operated 183 substations of 35 kV and higher voltages with total capacity of 4749.3 thnd kVA including Vulkashneft 400 kV substation, three 330 kV substations: Chisinau, Beltz and Streshen, 131 110 kV substations, 47 35 kV substations and one 10/6 kV substation.

## Seminar in The National Electric Network of Kyrgyzstan JSC



At the substation of The National Electric Network of Kyrgyzstan JSC, second on the right — Victor Kiryukhin

Izloyator held a seminar for the technical specialists of the National Electric Network of Kyrgyzstan JSC. Izolyator was represented by Maxim Osipov, Head of CIS Sales and Victor Kiryukhin, Head of Design Bureau.

Murat Kalkabaev, Operation and Maintenance Chief at the National Electric Network of Kyrgyzstan JSC received the visitors. Parallel to an active discussion about technical issues in the auditorium, the hosts arranged a visit to one of substations for the practical part of the seminar. The specialists received exhaustive

replies to their questions. We would like to thank the National Electric Network of Kyrgyzstan JSC for their invitation and the seminar organization on the highest level!



The National Electric Network of Kyrgyzstan JSC is a power company to transport electric energy generated by power plants via high-voltage lines across the Republic of Kyrgyzstan to distribution companies and large industrial consumers.



**NATALIA MAZOVA,**  
International Business  
Development Manager  
at Izolyator

Our recent talks with the state Belgian power grid Elia and transformer OEM CG Power Systems Belgium became an important step in development of relations with European partners. Belgium via Elia became the first in Europe to initiate transition from OIP bushings to bushings with hard RIP insulation. In the course of the program realization, our company became the first supplier of HV RIP bushings to Belgium.

In April 2016 we organized a quadripartite meeting where representatives of Izolyator, Elia, CG Power Systems Belgium NV and Federal Grid Company of the Unified Energy System took part.

Our foreign partners received verifiable information about the quality of our products from FSK UES JSC, found out about our high-voltage bushings operation in power facilities of Russia. The landmark event of the second quarter of 2016 was of course the international conference and high-voltage RIP bushings tests in the independent international test center CESI in Italy.

## International Exchange of Experience of Innovative Power Equipment Operation



*Business meeting in FSK UES*



*Setting up strong business ties and experience sharing are the main topics of the meeting*

In order to strengthen Russian Federation's positions on European power markets and promote Russia — Belgium cooperation in power industry, there was an arrangement made that the Federal Grid Company of the Unified Energy System and Belgian state company Elia share experience in power equipment operation. Belgium via Elia became the first in Europe to initiate transition from OIP bushings to bushings with hard RIP insulation. In the course of the program realization, Izolyator became the first supplier of HV RIP bushings to Belgium.

Successful cooperation with Belgian grid company Elia became possible as a result of large amount of work with European partners done by Izolyator with an active support from the Federal Grid Company.

In the recent years, Izolyator increased export share and signed contracts for delivery of high-voltage products to the countries of European Union including Belgium. The quadripartite meeting took place at FSK UES JSC headquarter between the top management of the company, representatives of Izolyator, Elia and CG Power

Systems Belgium NV transformer plant.

Nikolay Shvets, Deputy Chairman of the Board represented FSK UES JSC. The following colleagues took part in the discussion of topical issues: Alexander Slavinsky, Chairman of the Board of Directors at Izolyator, Ivan Panfilov, Commercial Director at Izolyator, Natalia Mazova, International Business Development Manager at Izolyator, Kirill Lunin, Director, Power Equipment Technologies at FSK UES JSC and other representatives of FSK UES, Izolyator plant, power grid Elia and the transformer plant from Belgium.

The sides shared experience of the grid companies in Russian and Belgium in the area of high-voltage equipment operation on power facilities.

The specialists from the Belgian companies and Izolyator told about their joint activities and international cooperation track record with high-voltage bushings with hard RIP insulation application in European power facilities.

Izolyator is a regular supplier of high-voltage bushings for power facilities of the Unified national (all-



Alexander Slavinsky, Chairman of the Board of Directors at Izolyator

Russian) power network fully qualified by FSK UES.

Based on the long term successful cooperation with Izolyator plant and a high opinion of its products, FSK UES recommended Izolyator as a supplier of high-volt-

age bushings both for the power system of Belgium and Europe in general.

In the conclusion, FSK UES and Elia expressed interest in further exchanges and continued dialogue on power industry topics and ex-



Dirk Cousy, Head of Procurement at CG Power Systems Belgium NV

perience of electrical equipment operation, including high-voltage bushings with hard RIP insulation made by Izolyator.

We would like to thank representatives of Belgian state grid company Elia, CG Power System

Belgium NV transformer plant and FSK UES management for their high appreciation of Izolyator's activities and their trust resulting in delivery of innovating power equipment to Russian and European power markets.



On the right — Rudy van Den Bosch, Quality Manager at CG Power Systems Belgium NV



Bert Wouters, Specialist, Technical Governance and Expertise at Elia



FSK UES JSC was created as operator of the Unified national (all-Russian) power network with the purpose of its preservation and development.



State power grid Elia is a system operator in Belgium and key player on European power market.



CG Power Systems Belgium NV is a developer of innovative electrical engineering products and turn-key solutions of a wide range.



The meeting passed in the atmosphere of mutual interest and lively conversation

## CG Power Systems Belgium NV: 110 and 150 kV Bushings Delivery

A lot of 110 and 150 kV RIP bushings was delivered by Izolyator to CG Power Systems Belgium NV in the first half of 2016.



**YAROSLAV SEDOV,**  
*Business Development  
 Manager at Izolyator*

In the second quarter of 2016, we accomplished a number of important projects with European partners. Among them, cooperation development with Belgian state grid company Elia and CG Power Systems Belgium NV transformer plant. Our company became the first supplier of high-voltage RIP bushings to Belgium, which carries out a large-scale transition program from OIP bushings to RIP technology.

We enter negotiations with other grid companies of Europe on admittance of our company to similar programs. Izolyator is a pioneer on this market, so we actively discuss application opportunities for our high-voltage RIP bushings in power facilities of Italy and Czech Republic.

We value every project and its importance for further promotion of our products. Today, Izolyator is not only recognized in Europe, but is perceived as a reliable and prospective partner.

## Elia Audit: Technology and Product Are Said World-class

The visit of representatives of Belgian state power grid company Elia and CG Power Systems Belgium NV transformer plant to Russia began with Izolyator HV bushings manufacturing facility. The guests saw the plant, audited the production system, inspected high-voltage tests of finished equipment and discussed trilateral cooperation development.

### INTRODUCTION TO HV BUSHINGS MANUFACTURE PROCESS

Representatives of the Belgian delegation familiarized themselves with the details of production process and quality management system in the plant scrutinizing every production stage of a high-voltage bushing. They met with designs and modern production technologies of high-voltage bushings with hard internal RIP insulation.

Bert Wouters, Expert HV Substations TGX / Technical Governance & expertise at Elia appreciated highly the reliability of Izolyator bushings and showed confidence on their applicability for Elia's power grid facilities.

### PLANT'S QUALIFICATION AUDIT

In the course of the plant audit, the guests familiarized themselves with high-voltage bushings production technology, their service life, storage and transporting conditions.

Upon the successful result of the audit, Bert Wouters marked the high level of the plant's technological infrastructure and product quality that meets all relevant international standards' requirements.

### INSPECTION OF HIGH-VOLTAGE BUSHINGS TESTS

Representatives of the Belgian companies inspected the second stage of type tests ran on Izolyator transformer 100 and 172 kV bushings made for operation in Elia's power grid.

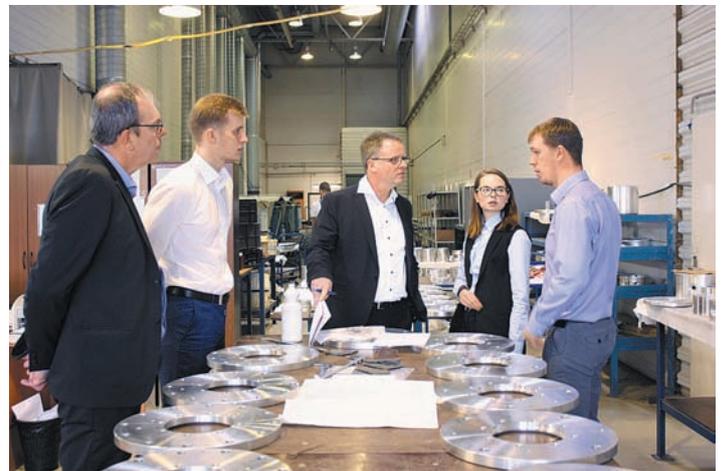
The tests results showed that the bushings features correspond to all international standards.

### TRILATERAL TALKS

Izolyator plant hosted trilateral talks between Elia, CG Power Sys-



*Inspection of Izolyator HV bushings' tests*



*Izolyator plant's qualification audit*



*Examination of the winding machine for internal insulation of 220 – 1150 kV bushings*

tems Belgium NV and Izolyator representatives.

The Belgian companies' representatives marked a number of Izolyator's advantages and achievements, namely:

- a high technological level of HV RIP bushings production;
- unique history of the plant;
- ability to design RIP bushings for high and ultra-high voltages and

quickly implement new designs into experimental and mass production;

- turn-key solutions availability for customers: from design to technical service in warranty and post-warranty period;
- positive track record with European power grids and leading international power equipment OEMs.

# Saudi Arabia: Developing Cooperation

Abdulaziz Mohammed Almalah Holding Group Company (Amnest Group, Saudi Arabia) representatives paid a working visit to Izolyator.

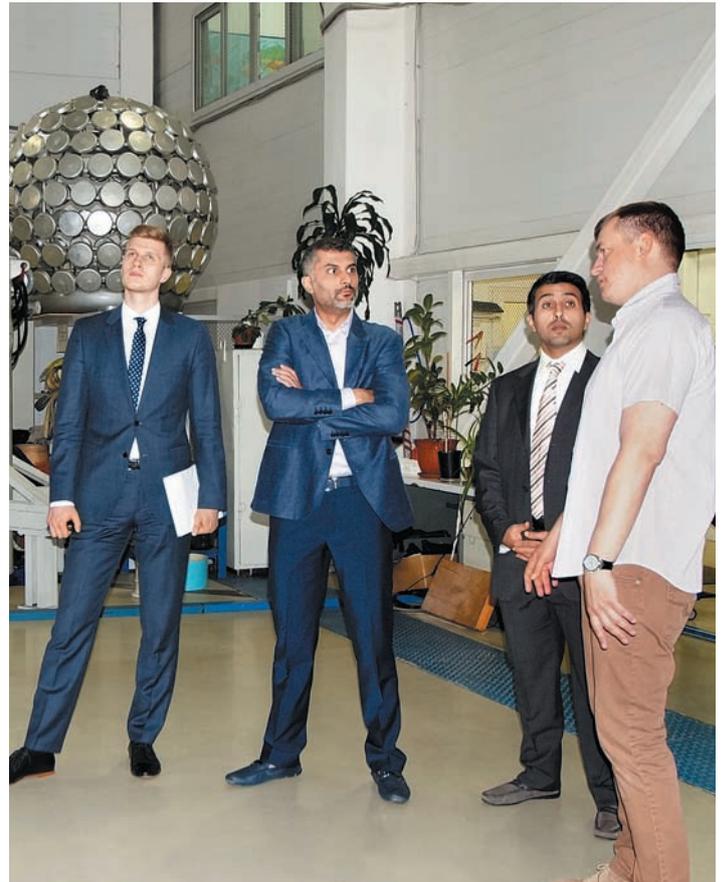
On Izolyator side, the visitors were received by Ivan Panfilov,

Commercial Director, Andrey Shornikov, International BDM and Yaroslav Sedov, BDM.

The hosts presented the plant's production capabilities and discussed cooperation on joint projects in power industry.



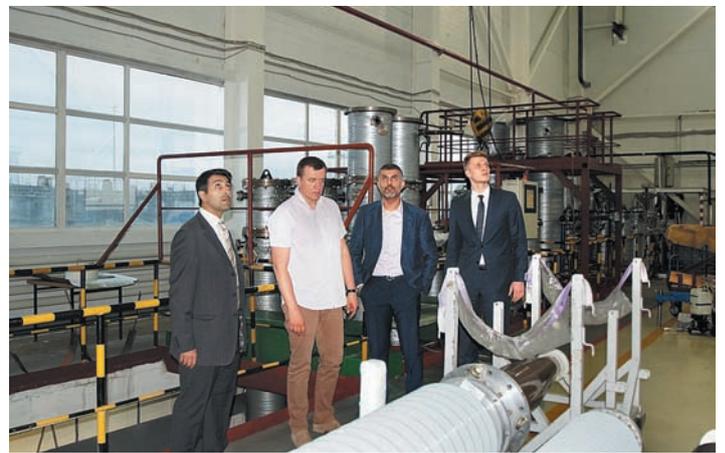
At the 220 – 1150 kV bushings assembly station



Examining the Test Center of Izolyator plant



Side-by-side comparison of bushings by external insulation type



The guests are impressed by the fit out and scale of production



Examining the winding machine for 220 – 1150 kV bushings internal insulation winding



Discussion of cooperation prospects and directions



**ANDREY SHORNIKOV,**  
*International Business  
 Development Manager  
 at Izolyator*

The biggest event of the second quarter of 2016 was a series of successful tests of high-voltage bushings with hard RIP insulation made for the state grid company of India Power Grid Corporation of India Limited.

We invited the Indian colleagues to our plant and carried out a series of type tests of our products. The final chords in the series were tests that we did in one of the world's leading test laboratories — CESI S. p. A. in Italy.

An inspection from PowerGrid and other experts — representatives of grid companies and transformer plants from European countries — arrived to see the tests.

All the tests of our products, including seismic test, went successfully.

At the moment, we are preparing to effect a direct shipment of our products to PowerGrid.

Our company provides technical support from equipment installation to training and technical seminars for the client's staff.

We view this project as prospective and hope that our cooperation with the Indian partners will continue.

## PowerGrid Inspection

The Indian state power grid operator Power Grid Corporation of India Limited inspected tests of Izolyator high-voltage bushings

Izolyator carried out type and acceptance tests of transformer RIP bushings for 72 kV and 252 kV.

Inspecting engineers of PowerGrid

Kannadi Sankaran Namboodiri and Rajendra Kurava oversaw the tests.

Dmitry Ivanov, Head of the Test Center managed the tests.

The following Izolyator staff members were also present:

- Vladimir Ustinov, Deputy Quality Director;

- Natalia Mazova, International BDM;

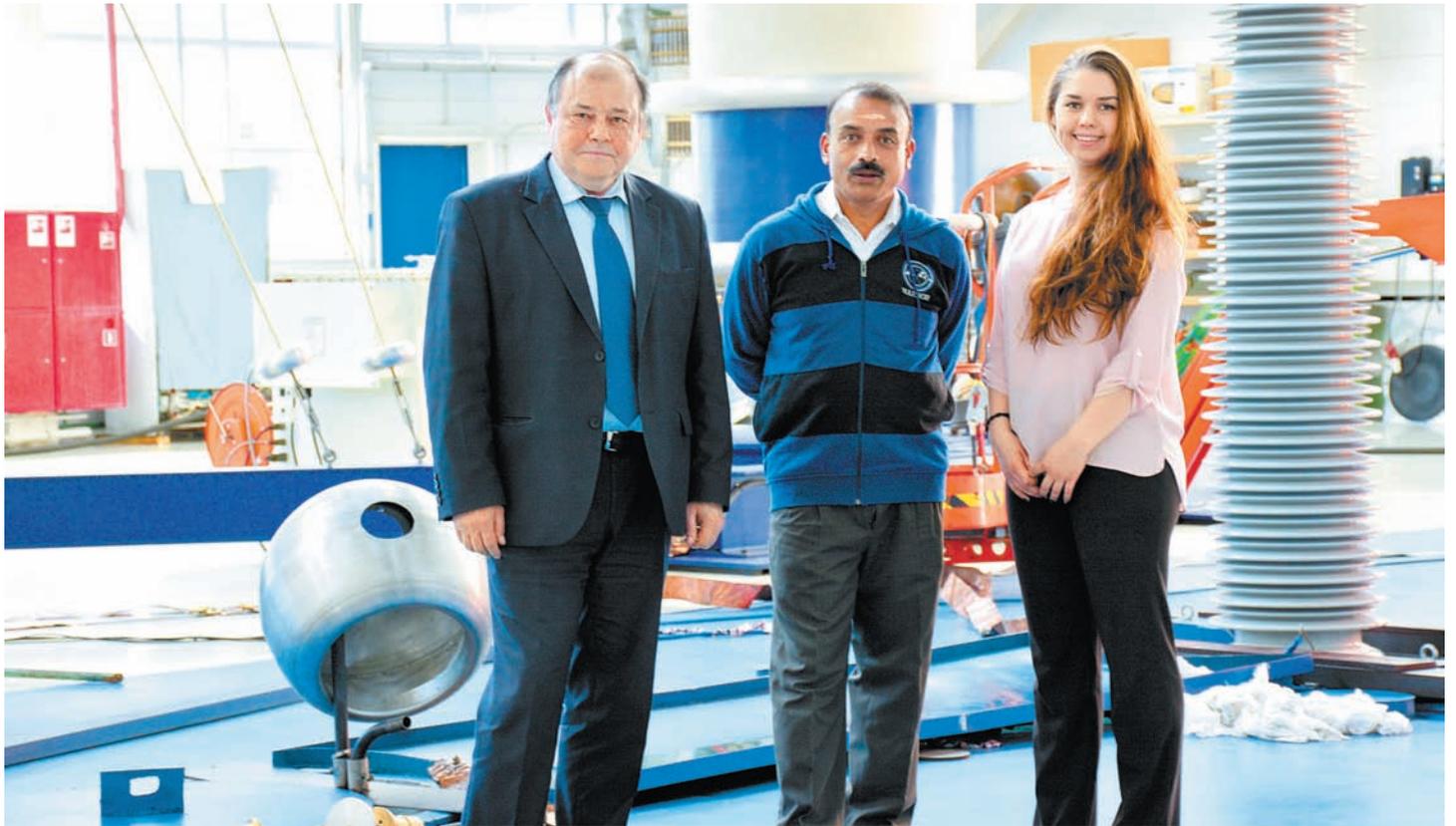
- Yaroslav Sedov, BDM;

- Victoria Loschinina, Sales manager.

The bushings passed the tests proving the high quality of Izolyator products.



*Rajendra Kurava (L) and Dmitry Ivanov at the tests of Izolyator bushings*



At the tests of Izolyator bushings, (L-R): Vladimir Ustinov, Kannadi Sankaran Namboodiri and Victoria Loschinina

## CG Transformer Plant in India: Delivery of 35, 220, 500 kV Bushings

A lot of RIP bushings of 35, 220, 500 kV voltages were delivered by Izolyator to the CG transformer plant in India in the first half of 2016.



Power Grid Corporation of India Limited (PowerGrid) is an India-based company, engaged in construction, operation and maintenance of inter-state transmission system (ISTS). The company's core business is transmission of bulk power across different States of India. The Company's business also includes telecom and consultancy services. The Company's telecom business uses the PowerGrid's transmission infrastructure across the country. The Company's consultancy services are engineering, procurement and construction within and outside India, in the field of electrical power transmission and distribution to governments and utilities, including energy efficiency, smart grid and training. The Company owns and operates transmission network of about 106,804 Ckm of Extra High Voltage (EHV) transmission lines, 184 EHVAC & High Voltage Direct Current (HVDC) Sub-stations and 205,923 MVA transformation capacity.

## Izolyator is Official Supplier of Indian NTPC Limited



एन टी पी सी लिमिटेड  
(एन टी पी सी लिमिटेड)  
**NTPC Limited**  
(A Govt. of India Enterprise)  
(Formerly National Thermal Power Corporation Ltd.)  
केन्द्रीय कार्यालय नोएडा  
Corporate Centre NOIDA

Ref: 01/CQA/M-498/9562-501/5281

Dt. 26.04.2016

Sh. S.K. Gupta,  
Sr Manager,  
Heavy Electrical Plant,  
Piplani, Bhopal-462022

Sub: Sub vendor proposal of M/s MASSA LLC (IZOLYATOR COMPANY) for manufacturing & supply of Resin Impregnated Paper (RIP) Bushings for Power Transformers Package of Tanda TPP Stage-II (2X660MW)

Dear Sir,

This has reference to subject proposal of M/s BHEL. In this regard, please note that your proposal has been reviewed and accepted as under:

M/s MASSA LLC (IZOLYATOR COMPANY) having work address "77, Lenin St. Pavlov-Skaya Sloboda Village, Istra District, Moscow Region-143581, Russia" is acceptable for manufacturing & supply of Resin Impregnated Paper (RIP) Bushings up to 420 KV rating for Power Transformers Package of Tanda TPP Stage-II (2X660MW) subject to condition(s) as under:

1. The material shall be manufactured and supplied as per the requirement of Technical Specifications, approved drawing and provisions of approved Data Sheet.

Yours faithfully  
For T E Josekutty  
CTF (Tanda)

Copy to:  
1. GM (QA&I) – for information please



NTPC Limited is the largest state-owned energy company established in 1975 with a purpose of accelerating development of power economy in India. Overall installed capacity of the power plants including joint ventures corresponds to 43128 MW. The company set a target of 128000 MW of total installed capacity by 2032 which will come from diverse sources of energy: 56% — coal, 16% — natural gas, 11% — nuclear energy, 17% — renewable energy.

## XXIII Scientific Technical Conference of TRAVEK Association



Chief Designer at Izolyator Yury Nikitin at the rostrum at the Conference

Izolyator took part in the XXIII Scientific and Technical Conference of TRAVEK Association "Power and distribution transformers. Reactors. Diagnostic systems" in Moscow. Izolyator took part in the XXIII Scientific and Technical Conference of TRAVEK Association "Power and distribution

transformers. Reactor. Diagnostic systems" in Moscow.

The conference received support from the Academy of Sciences of RF, the Academy of Electrical Engineering Sciences RF, Russian National Committee CIGRE, the Ministry of Industry and Trade RF, the Ministry

of Energy RF, Rossiiskie seti JSC, FSK UES JSC.

This year more than 150 electrical engineering companies and organizations from Russia, the CIS and abroad took part in the conference work. Experts and technical managers of transformer and reactor OEMs from Russia, CIS and other countries, scientific and design organizations and universities made reports at the conference.

The participants discussed ongoing research and development of new types of transformer and reac-

tor equipment, prospects of power distribution transformers and reactors development, new completing parts and insulation materials and many other questions of present interest.

The XXIII Scientific Technical Conference of TRAVEK Association "Power and distribution transformers. Reactors. Diagnostic systems" is an excellent platform for new equipment and technologies demonstration, sharing of ideas not only for Russian but for international enterprises in power industry.



International Association on transformers, high voltage equipment, electrical ceramics and other spare parts and materials — TRAVEK — established on 11 April 1991 in order to implement the business cooperation, contributing to marketing, manufacturing and technology development, to ensure product competitiveness in world markets.

### Fault-free Transformer. Scientific basis and practical solutions that work Seminar



Fault-free Transformer. Scientific basis and practical solutions that work Seminar attendees in Nizhny Novgorod, third on the right: Alexander Slavinsky (photo from official website of Delta Trafo Ltd)

The third specialized seminar "Fault-free Transformer. Scientific basis and practical solutions that work" was held in Nizhny Novgorod. Izolyator co-organized the event.

More than 100 corporate delegates from 16 regions of Russia attended this annual event.

Alexander Slavinsky, Chairman of the Board of Directors at Izolyator spoke about the 120 year long experience of the company in development and production of high-voltage bushings under Izolyator trademark.

Victor Kiryukhin, Head of Design Bureau at Izolyator made a report on "Evaluation of the technical condition of high-voltage bushings".

The seminar participants spoke highly about the event organization also noting professionalism of the speakers and the practical value of their reports.

We would like to thank Delta Trafo Ltd for invitation and the seminar organization!



Nizhny Novgorod based Delta Trafo has been in the services market for 45 years developing, producing, modernizing and repairing power, electric furnace, traction and auto transformers up to 220 kV class for the machine building industry.

## MNTK – 2016

The X International Science and Technology Conference Safety, Efficiency and Economy of Nuclear Power Industry (MNTK-2016) went in Moscow.

Traditionally, Concern Rosenergoatom JSC organized the event. More than 800 people including 60 delegates from 20 foreign countries took part in its work. Alexander Slavinsky, Chairman of the Board of Directors and Yury Nikitin, Chief Designer represented Izolyator.

The conference considered the most pressing tasks for the industry in the areas of NPPs operational safety, installed capacity utilization factor increase (ICUF), nuclear plant life extension and decommissioning as well as issues of economic efficien-

cy and optimal development for the industry.

In the framework of Safe and effective NPP operation in Russia section discussions, Yury Nikitin gave a report "Evaluation of the technical condition of bushings as criterion of a higher reliability".

Concern Rosenergoatom JSC planned the next International Science and Technology Conference for 2018.



Concern Rosenergoatom JSC organizes the International Science and Technology Conference (MNTK) every two years in Moscow.



The X International Science and Technology Conference Safety, Efficiency and Economy of Nuclear Power Industry Working

## ELECTRO – 2016

The 25th Jubilee Electrical Equipment. Lighting. Buildings and Structures Automation International Exhibition – Electro-2016 – organized by Expocenter went in Moscow.

The display organized by Expocenter went with support from the State Duma Committee on Science and High Technologies under the patronage of the Russian Federation Chamber of Commerce and Industry.

On the total area of 15 thousand square meters, Electro – 2016 showcased all segments and tendencies in the power industry within its four days program having gathered in one venue electrical products manufacturers, consumers and distributors.

200 Russian exhibitors provided competition for the visitors' attention to the largest global players on the electrical products market.



Opening session of Electro — 2016 (photo from official website of the exhibition)

## Electromontazh 2016 Congress

On 6–7 June 2016, Izolyator became a partner to Electrical equipment, tools and materials section of the power engineering congress Electromontazh 2016 (electric installation) that was held during the 25th international exhibition Electro - 2016 taking place in Expocenter in Moscow.

The all-Russian Congress Electromontazh 2016: from high standards to professional competences gathered specialists of the electrical engineering market, leading power equipment OEMs, end users from many sectors, infrastructure companies, electrical fitting organizations,



Panel of Electromontazh 2016 Congress, R — Yury Nikitin (photo from official website of Electro Exhibition)

professional associations, educational institutions and government agencies in one venue.

The Congress activities were divided into four topical sections. Yury Nikitin, Chief Designer at

Izolyator made a report "Izolyator HV bushings' condition evaluation" at the "Electrical engineering equipment, tools and materials" section.

The Congress introduced broad opportunities for innovations promotion, experience sharing and setting up new business contacts.

Upon conclusion of the event, Izolyator was awarded a diploma for its active work at the Congress sessions.

We would like to thank the organizers for the high level of the event execution!

## Acoustic and vibrational methods in power equipment diagnostics Conference



Participants of the Acoustic and vibrational methods in power equipment diagnostics Conference (photo from official website of information agency elec.ru)

The Acoustic and vibrational methods in power equipment diagnostics Conference was held in the town of Kyshtym, Chelyabinsk Region.

The Public Council of Specialists on Power Equipment Diagnostics within ITC UralErgoEngineering, Ekaterinburg became one the organizers of the event.

Over 70 specialists from many cities on Russia and foreign specialists from the People's Republic of

China took part in the conference work.

There were 19 reports made at the conference, all dedicated to acoustic and vibrational methods application for diagnostics of power equipment and general problems of power equipment diagnostics.

Vladimir Ustinov, Deputy Quality Director at Izolyator took part in the work of the conference presenting the D1 RNC CIGRE Subcommittee's activities.

## MEI Conference



Svetlana Kryuchkova, Deputy Chief Process Engineer at Izolyator is making a report

Izolyator took part in the scientific conference "Petroleum oils in power industry: application and quality control 2016" held in MEI.

The conference gathered leading experts from chemical laboratories and producers of oils, oil-filled power equipment, new and operating oils quality control devices, oil cleaning and regeneration equipment.

Specialists from various industries shared their experience of oils operation. In the framework of the conference, the professional community discussed issues of import substitution, new requirements to oils quality control and operation, analytic report on the current state regulations and application and quality control aspects of diverse oil types.

# Ceremony in Remembrance Of The Plant Workers — Veterans and Homefront Workers During the World War II



Monument on the plant's territory



Moment of silence



On these days, the Victory banner flutters above the plant

Izolyator management and team held the annual flower-laying ceremony to the monument on the plant territory and observed a moment of silence in remembrance of the veterans and homefront workers of the World War II.

During the World War II Izolyator's production facilities were fully used for the needs of defense. Many plant workers volunteered to the front. The Moscow Council of Workers' Deputies awarded Izolyator staff with a certificate of merit for patriotism shown in people's volunteer corps and heroism in battles to defend Motherland.

The plant was bombed by the German aviation several times, so many workers distinguished them-



The entire plant staff at the ceremony

selves in firefighting after the air strikes.

In 1941, under the order of Council of People's Commissars Izolyator was evacuated to the town of Kosulino in Sverdlovsk Region.

During the years of war, demand in Izolyator products only increased: the plant had to supply power plants both in the East and help rebuild power networks of the liberated territories while continuing to deliver under direct orders from the war industry needed for the front.

By the ruling of the State Defense Committee dated 18 November 1942 the plant was given the objective to bring the product output to the levels of 1940. The staff took it as a battle-order - so, in 1944, Izolyator plant was recognized a winner in the All-Union

socialist competition with the third place.

By 1945, the plant mastered industrial production of 60 new types of bushings including a specialized bushing for radio units and other defense purposes. The plant's entire product range was fully restored for mass production, for example, 154 and 220 kV oil-filled insulators that had been out of production since the first years of war were assembled.

In the modern days, Izolyator staff hold the memory of the deceased comrades. Their names are listed on the monument erected on the plant premises. On this day, we bow our heads to the memory of the fallen, and wholeheartedly thank every veteran living among us.

## Professional Training of Izolyator Staff



*Exam on the civil law and labor legislation basics*



*Accounting principles exam*



*Thoughtful preparation – success is guaranteed!*

Izolyator completed a large training program for personnel to increase company management skills. The plant employees studied the legislation of Russian Federation, accounting, bushings design process and management of the high-voltage bushings life cycle in a course of lectures.

The training was done both by invited highly qualified instructors and professors and by leading specialists of Izolyator.

The tests and exams to check the new knowledge were organized into several stages.

Alexander Slavinsky, Chairman of the Board of Directors at Izolyator chaired the examination board.

The examination boards also included:

- Sergey Moiseev, General Director,
- Tatiana Kravets, Deputy CFO,
- Elena Posokh, Chief Accountant,
- Anna Skvortsova, HR Manager,
- Yury Nikitin, Chief Designer,
- Svetlana Kryuchkova, Deputy Chief Process Engineer.

All company employees have successfully finished the program and seriously raised their professional level.

## Civil Defense and Emergency Situations Training at Izolyator



*Training site for carbon-dioxide and dry powder fire extinguishers application to put out inflammable materials and liquids catching fire*

On 25 April 2016, there was a routine practice in fire safety at the plant. Under the guidance of the civil defense, emergency situations and industrial safety specialist, the staff members practiced in firefighting, staff evacuation and fire extinguisher usage to put out inflammable materials and liquids catching fire.

The private firefighting contractor crew that ensures fire safety at the plant was invited to the training.

The company staff demonstrated a high qualification and ability to act with confidence in an equipment fire situation effectively using emergency fire-fighting equipment. The training tasks set by the General Director were 100% fulfilled.



*For an effective firefighting on a burning wood structure, a dry powder fire extinguisher must be used*



*A worker on duty is preparing a fire extinguisher for firefighting a simulated fire*

## A Big Sports Festival

The series of festive events dedicated to the 120th Anniversary of the company was continued by a big sports festival where more than 200 Izolyator employees demonstrated their skills in volleyball, soccer, table tennis, badminton and airgun, arch and arbalest shooting.

A paintball tournament came as the culmination of the day: together with the prize for the winners — Izolyator 120 years Cup — it demonstrated to all the colleagues how important it is to hang together, foster teamwork and stay in high spirits in order to achieve goals.



*Higher, faster, sharper! And merrier, too!*



*Team spirit and will to win is a universal principle to succeed!*

120 year



# IZOLYATOR

Century-long traditions, state-of-the-art technologies



Removable Air – Oil bushings  
for power transformers  
Voltage: 20-35 kV  
Current: 6-20 kA



Air – Oil bushings  
for power transformers  
and shunt reactors  
Voltage: 10-1150 kV  
Current: 315-2500 A



Oil — Oil bushings for cable  
connection to transformer  
Voltage: 110-500 kV  
Current: 630-1000 A



DC bushings  
Voltage:  $\pm$ 126-800 kV  
Current: 1800-5400 A



Air – Oil bushings  
for oil switches  
Voltage: 35-220 kV  
Current: 1000-3150 A



Air – Air wall bushings  
Voltage: 66-220 kV  
Current: 2000-4000 A



Air – SF6 bushings  
for switchgear  
Voltage: 220 kV  
Current: 2000-3150 A

## Izolyator bushings in the global power industry:

- Generation — SDPP, TPP, NPP;
- Transmission and distribution — bulk, distribution and local networks;

- Consumption — industry, transport and oil & gas;
- Izolyator bushings are supplied to the largest transformer plants in the world.

