

## **PROFILE**

## Mission. Vision. **Social responsibility**





**Vision** We aim to be a global leader of the industry and help to fill the world with energy and light, creating a high-quality charge in various parts of the planet with smart and advanced solutions in the electric power industry.

The history of high-voltage bushings development in Russia is inseparably associated with Izolyator plant. In its century-long history, the plant has produced over 620 thousand high-voltage bushings, operating at the overwhelming majority of power facilities in Russia and neighboring countries as well as 30 more countries in the world.

One of the key events for Izolyator was receipt of the leading science and technology partner to the Russian National Committee (RNC) of the International Council on Large Electric Systems — CIGRE (Conseil International des Grands Réseaux Électriques) status. That is the largest international nongovernment and noncommercial organization in power industry.

Today Izolyator has become a research base for CIGRE National Study Committee D1 "Materials and Emerging Test Techniques". Collaboration with RNC CIGRE allows us to bring Izolyator's work to a whole new level in the interests of all global market players and for Russia's energy system development in general.

All Izolyator's success became possible thanks to the wellcoordinated work of our highly professional team and a strong support from our partners. We shall do our best to fulfill the obligations in high-voltage bushings production and after sales support of our customers.

Century-old traditions — state-of-the-art technologies — these words have become a motto for those employed at the plant, which is justly considered a global leader in development and production of high-voltage bushings.



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.

#### Dr. Alexander Slavinsky

Chief Executive Officer of Zavod Izolyator LLC Chairman of Board of Massa Izolyator Mehru Pvt. Itd. Head of CIGRE National Study Committee D1 Vice-President of AES RF

## **Facts and achievements**





12 000 BUSHINGS PER YEAR



MARKET SHARE
IN RUSSIA AND NEIGHBORING
COUNTRIES



70 - 80%



STAFF











THE MOST EXPERIENCED
HIGH-VOLTAGE INSULATION
EQUIPMENT
MANUFACTURER
IN THE WORLD

## **Company structure**

### **Zavod Izolyator LLC**



Management and control of Izolyator business development. Strategic planning of production and sales markets.

#### **Massa LLC**



Design, production, testing, sales and maintenance of high-voltage bushings for power equipment.

### **Izolyator-AKS LLC**



Design, production and sales of high voltage cable accessories in 126–252 kV voltage range.



Massa Izolyator Mehru Pvt. Ltd.



Production and sales of high-voltage bushings for power equipment on the territory of India and Asia.

# Representative Office of Izolyator Group in Uzbekistan



Sale of high-voltage insulation equipment in Uzbekistan and Central Asia.

## **Designing. Production. Maintenance**

#### **R&D Center**

- · creation of new designs of insulating equipment
- development of new production technologies
- · carrying out research activities and prototyping
- · serial products upgrades
- highly qualified technical service
- · complex diagnostics
- · warranty and post-warranty repair
- · consulting technical services of customers

#### **Production of Bushings**

- the most technologically advanced production equipment from the top OEMs of the world
- patented production technology of RIP and RIN insulation
- · patented technology of polymer external insulation making
- making of the internal insulation up to 12 m long and 750 mm in diameter

### **High-Voltage Cable Accessories Production**

- proprietory design of stress cones and actuating bodies of cable accessories
- · modern hi-tech equipment from the leading global OEMs
- complete cycle including production, testing, training in installation and maintenance of cable accessories
- manufacture of cable accessories for a wide range of copper and aluminum cables for 185 to 2500 mm<sup>2</sup> conductor cross-section

#### **Test Center**

- testing under alternating current up to 1200 kV
- testing under direct current up to ±1600 kV
- testing by full and chopped lightning impulse 1.2/50 μs
- testing by switching impulse 250/2500 μs
- · testing of insulation materials and prototypes











group

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 currnent 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 elmiminating 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



oil—oil bushings for cable connection of tranformers Voltage: 72.5—550 kV Current: 630—1000 A Insulation: RIP or RIN



bushings for cable connection of tranformers Voltage: 72.5–550 kV Current: 630–1000 A Insulation: RIP or RIN

Nil-Nil



Air-Air wall bushings Voltage: 72.5-252 kV Current: 2000-4000 A



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

Air-Oil bushings

and shunt reactors Voltage: 12-1200 kV

Current: 315-5000 A

RIP or RIN

(up to 550 kV)

for power transformers

## **Cable accessories of Izolyator-AKS**

126—252 kV CABLE ACCESSORIES



Izolyator-AKS designs and makes high-voltage cable accessories in the 126 to 252 kV voltage range for cable cross-sections from 185 to 2500 mm<sup>2</sup>. It is a new business line of Izolyator. All types of cable accessories are produced for XLPE insulated cables: cable connectors for connecting a power cable to a gas-insulated

switchgear or transformer, outdoor terminations with a silicone insulator for transitioning an overhead power line to a cable line, joints with a direct connection of screens and with separation of screens (transposition type).

### **CABLE JOINTS**

## OUTDOOR TERMINATIONS

## CABLE CONNECTORS



#### ISM(R)-126/172 Max operating voltage 126/172 kV Cross-sections of cable conductors, with which the accessories are used 185–2000 mm<sup>2</sup>



IKM-126/172 ISKM-126/172 Max operating voltage 126/172 kV Cross-sections of cable conductors, with which the accessories are used 185–2000 mm²



IKM-252 ISKM-252 Max operating voltage 252 kV Cross-sections of cable conductors, with which the accessories are used 400–2500 mm²



IKV-126/172
Max operating voltage 126/172 kV
Cross-sections of cable conductors,
with which the accessories are used
185–2000 mm²



IKV-252 Max operating voltage 252 kV Cross-sections of cable conductors, with which the accessories are used 400–2500 mm²

## 400-2500 mm<sup>2</sup>

Max operating voltage 252 kV

Cross-sections of cable conductors, with which the accessories are used

ISM(R)-252



## RIN — a new generation HV insulation: more durable, lasts longer, easier to operate

Bushings with RIN-insulation, retaining all the advantages of RIP-insulated counterparts, have superior operational and technical characteristics.

## High reliability, stable parameters and extended service life.

Low level of water absorption of the main insulation of the bushing, even with intense exposure to moisture. Low dielectric loss factor of main insulation:  $\tan\delta$  0.20–0.25 %. Absence of partial discharges in the insulation at increased voltage up to the maximum operating voltage.

#### Shorter lead time of products delivery.

The use of synthetic cloth allows to abandon the thermal vacuum drying of the wound insulation, significantly reducing the production time of the bushing.



## Operation at both extremely low and extremely high temperatures.

RIN insulation has a high thermal conductivity and a low coefficient of thermal expansion. This leads to a decrease in mechanical stresses in the bushing design elements, which, in turn, ensures high reliability and a long service life of the bushing in a very wide range of operating temperatures.

## Transportation and storage of bushings without moisture protection measures.

The resistance to atmospheric moisture of the main insulation allows transporting and storing the bushing indefinitely in the standard original packaging.

The solid RIN-insulation was developed by the Izolyator design office with a view to qualitatively improving the technical and operational characteristics of the high-voltage bushings produced by the plant. Studies of the electrical and mechanical properties of the new insulation, as well as relevant testing, were successfully carried out at the National Research University 'Moscow Power Engineering Institute'.

Izolyator high-voltage bushings with RIN insulation comply with the GOST R 55187-2012 requirements and are certified by the Rosseti Group of companies for use at facilities of its subsidiaries and affiliates.



### RIN-insulation at the forefront of cutting-edge technologies

A high-temperature superconducting current-limiter, designed and manufactured by SuperOx, was put into commercial operation at the 220/20 kV Mnevniki substation of the United Energy Company in Moscow.

This unrivalled unit is equipped with 252 kV
Air — Liquid nitrogen high-voltage bushings
with RIN insulation, which were designed for
the first time in the world and made by
Izolyator specially for the project.



For the first time in Russia, high-voltage bushings, immersed into a cryostat with liquid nitrogen, were successfully tested at the Izolyator plant. The specially designed 126 and 252 kV RIN bushings with capacitive regulation of the electric field withstood the temperature difference from - 200 °C at the bottom part to +10 °C at the top.



The first in Russia 252 kV bushing with solid internal RIN insulation was installed for pilot operation in the Vladimir region.

The bushing is used to replace an OIP analogue on a 40 MVA transformer at the 220 kV Dalnyaya substation of the Main Power Systems of the Center, a branch of the Rosseti FGC UES.

## **Global partnership**

























































































































































































Certificates of official supplier, references and reference letters from consumers of Izolyator products are available on request.

We appreciate all our partners for a fruitful cooperation!

## We are always in touch



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# IZOLYATOR SALES DIVISION IS INVITING TO SET UP COOPERATION IN ANY SUITABLE FORM FOR YOU

#### THINKING OF BECOMING OUR PARTNER?

We will provide you with extensive information on commercial, organizational, technical and other aspects of our company activities.

#### **HAVE QUESTIONS YET?**

We will submit all information in hard copy or by email on your first request.

#### **WOULD YOU LIKE TO VISIT OUR PLANT?**

We will arrange for an informative plant tour to show all production stages to you.

#### **Izolyator sales contacts:**

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For more details on our products and services visit www.mosizolyator.com

