Precious Metals Products

Ekaterinburg Non-Ferrous Metals Processing Plant / EZOCM

SAFINA
Dear clients and partners!

JSC "Ekaterinburg Non-Ferrous Metal Processing Plant" has a rich history which is deeply intertwined with the history of the precious metals processing industry itself. No wonder that the date of the plant foundation – 23th of October, 1916 – is the date of beginning of precious metals industrial refining in Russia. The plant was one of the refining originators and was the first enterprise in Russia that began to produce industrial items of precious metals and took part in formation of new non-ferrous enterprises, the plant was and is in the forefront of research and technology development of the industry.


Since 2008 the plant started to work on the new production area in Verhnjaja Pyshma city in Sverdlovsk region. Relocation gave the enterprise the possibility to grow and to develop new potential markets. At present installation of the whole production flow is finished. The plant management and personnel look forward to challenging future. For the remaining time till the plant’s centenary celebration Ekaterinburg Non-Ferrous Metal Processing Plant sees its main aim to reach the status of technologic leader in the modern stage of Russian market development.

Chief Executive Officer
Denis A. Borovkov
EZOCM History

The Plant’s background is full of key milestones in scientific and research activities in the field of precious metals processing and their commercial application.

- **1916** – launch of Yekaterinburg refinery and start of industrial production of platinum-group metals (PGM) in Russia
- **1920 - 1930** – launch of production of platinum technical items, i.e. laboratory ware and thermocouple wire
- **1950 - 1960** – establishment of the Plant’s Central Laboratory
- **1957** - adoption of the new logotype as a symbol of plant contribution in scientific-technical development of the country
- **1978** – implementation of the first Comprehensive System of Product Quality Management in the non-ferrous metals industry
- **1993** – establishment of JSC «Ekaterinburg Non-Ferrous Metals Processing Plant» (EZOCM)
- **1999** – international statuses «Good Delivery» are given by London Bullion Market Association and London Platinum and Palladium Market
- **2004** - Renova became the main shareholder of the plant
- **2007-2014** – moving to the new territory: Verkhnjaya Pyshma (30 km to Yekaterinburg city) and realization of Technological Modernization Program
EZOCM Today

Leading company
Market share > 50%

The only
100% private refiner in Russia

Central analytical laboratory is one of the best in industry

Quality police:
Global Quality
TÜV SÜD
Good Delivery

Unique producer in Russia for a number of high-tech products

More than 300,000 different product types from 256 alloys for 1,200 customer companies

Plant is a part of RENOVA Group, a large Russian conglomerate, which operates assets in Russia, Europe, Asia, America and Africa
EZOCM: Quality Policy

ISO certified since 1992

Central Analytical Laboratory is accredited by the Federal Agency on Technical Regulation and Metrology

Good Delivery status since 1999
The laboratory is accredited for analyzing all materials containing precious metals.

Central Analytical Laboratory

- The biggest bank of certified reference materials in Russia - over 150 CRM types
- Over 300 analyses techniques
- Precise analysis of impurities by 3 spectral analysis methods
- Provides Assay Office of the Russian Federation with reference materials
- Approx. 15,000 samples analyzed per year, 50% of which are irregular objects
EZOCM: Products and Major Applications

**Mining & Metals Industry**
- Refining of mineral and secondary raw materials
- Certified Reference Materials
- Thermocouple Wire
- Labware

**Glass Industry**
- Targets for Low-E float glass
- Bushings for glass fiber production
- Wire including thermocouple wire

**Chemical Industry**
- Catalyst Gauzes for Nitric Acid Production
- Chemical compounds from PGM-metals

**Electronics & Electrical Engineering**
- Semi-Finished Products: plate, foil, stripes, wire, rods
- Powders and Compounds
- Contact details

**Automotive Supplier Industry**
- PGM-components for spark plugs
- Chemical compounds for Catalytic converters

**Jewelry & Financial Investment**
- Semi-Finished Products for Jewelry production
- Certified Reference Materials
- Test Needles
- Bank standard and measured bullions

**Medicine**
- Dental Materials
SAFINA JOINT STOCK COMPANY has a long tradition in the complex processing and manufacture of products from precious and nonferrous metals. SAFINA is a company with significant influence and scope in the European, North American and Asian markets.

Past and present in years:

• **1860** – foundation of G. H. Scheidsche Affinerie Vienna, focused on processing of precious metals for jewelry production

• **1920** – independent business company founded in Prague

• **1952** – national company SAFINA established

• **1992** – joint stock company SAFINA established

• **Since 2000** – significant influence and scope in European, North American and Asian markets

• **Since November 2014** SAFINA, a.s. is a member Renova Group, which also includes all SAFINA’s subsidiaries – SAFINA Poland, SAFINA Slovakia, SAFINA Romania, SAFINA Materials (USA) and Joint-venture GUODA-SAFINA (China).
The fundamental aim of SAFINA is to continually develop production technology that reflects global trends.
SAFINA: Quality Policy

Development and production of precious metal alloys for dental surgery, jewellery and chemical industries, including recycling of wastes containing precious metals. Design and production of process equipment components, catalysts and chemicals from precious metals. Manufacturing of rivets.

Development and production of precious metal alloys for dental and other medical device applications.

Activities including and associated with development and production of precious metal alloys for dental surgery, jewellery and industries embodying catalysts for chemical industry, recycling and treatment of waste containing precious and non-ferrous metals, development and production of process equipment and its components of precious metals and manufacturing of rivets.

Calibration of thermoelectric temperature sensors made of precious metals.

ISO 9001:2008 - since 1997
EC Certificate – Full Quality Assurance System (dental alloys and amalgams)
ISO 14001:2004 – since 2005
CSN EN ISO/IEC 17025:2005
SAFINA: Products and Major Applications

**ReProcessing of waste material, containing Ag, Au, Pd, Pt, Rh:**
- Waste of industries:
  - Electronic
  - Automotive
  - Pharmaceutical
  - Glass
  - Chemical
  - Petrochemical
  - Jewelry
  - Dental
  - Foto-video waste

**Electronics & Electrical Engineering**
- Semifinals of precious metals: contacts, solders, alloys, wire, sheets, anodes, etc.
- Fastening materials: rivets, materials of Al, Cu and its alloys, Fe
- Solution for galvanization and electroless plating
- Silver powders

**Chemical Industry**
- Chemical compounds of silver, gold, platinum metals
- Precious metal catalysts

**Glass Industry, etc.**
- Sputtering targets: Large Area Coating silver planar targets, silver tubular targets, non precious metals tubular targets
- Glass melters
- Platinum laboratory equipment
- Thermocouples (supplied to NASA)

**Jewelry & Financial Investment**
- Semifinals: wires, sheets, nuggets, locks and chains
- Jewelry coating by Rh
- Gold and silver jewelry
- Bullions of Au, Ag, Pt, Pd with buy-back guarantee

**Medicine**
- Dental alloys, including dental amalgams
- Solders for dental and metal ceramics alloys
- High purity pharmaceutical platinum
United Market of SAFINA and EZOCM

- SAFINA’s current market
- EZOCM’s current market
- Presence of both companies
EZOCM & SAFINA Markets

- Automotive industry
- Jewelry
- Metals trading
- Glass industry
- Chemical industry
- Biomedical devices
- Electric and microelectronics
- Thermocouples, labware and others
Platinum, Palladium, Gold, Silver, and Iridium can be supplied in forms of bullions, anodes, powder, sponge, and within chemical compounds.
Jewelry

Rods, wire, foil, plates, etc.

Granules, powders

Bars, anodes

Precious metals chemical compounds including rhodium sulphate for extra bright plating
Central electrode is the main component of a spark plug where platinum group metals are used.

**Products**

Wire of Iridium grade 99.9% and higher, diameter 0.08-6.00 mm, and other products by EZOCM are used in high performance spark plugs.

**Wire, rivets, balls**

Materials include:
- Platinum pure (Pt), PtIr, PtRh, Multicomponent alloys,
- Platinum with added non-ferrous metals (Co, Cu, Ni),
- Palladium Pure(Pd), Palladium- silver alloys, Palladium- silver alloys with added non-ferrous metals(Co, Cu, Ni),
- Iridium-rhodium alloys,
- Rhodium Pure(Rh).
Chemical compounds (salts) of platinum, palladium, rhodium are used in catalytic converters of exhaust systems.

**Application**

**Products**

**Chemical compounds**
- Palladium (II) nitrate - Pd(NO3)2, solution: [Pd] – 30%
- Rhodium (III) nitrate – Rh(NO3)3, solution: [Rh] – 15%
- Monoethanolamine hexahydroxoplatinate (IV) (solution): (MEA)2[Pt(OH)6] [Pt] – 20%
- Chloroplatinic acid – H2PtCl6, solution: [Pt] – 34%
Products for the Biomedical Industry

**Products**

**Wire**
- Material: 99.95% Pt, PtIr10, PtIr15, Niobium, NiFeCo
- Diameter: 0.25mm - 0.5 mm

**Coil of wire, coil of ribbon**
- Material: PtW8, PtIr12
- Thickness: 0.030mm - 0.070mm

**Helical screw**
- Material: PtIr10, Pt with TiNi, IrO2 coating

**Cathode**
- Material: PtIr10, Pt with TiNi, IrO2 coating

**Foil**
- Material: Rh 99.9%
- Thickness: from 0.01 mm

**Compound**
- IrO2

**Applications**

**Implanted devices:**
- pacemakers,
- implantable cardioverter defibrillators (ICDs),
- electrophysiology catheters,
- neuromodulation devices (including brain pacemakers and cochlear implants)

**Treatment of brain aneurysms**

**Kidney hemodialysis devices**

**X-Ray equipment**

**Biomedical components**
Products for Electrical and Microelectronics Industries

**Products**

- **Semi-finished products:** rods, wire, foil, plates, etc. of various sizes
- **Gold wire**
  - Au 99.9%, Au 99.99%
  - Diameter: from 0.025mm
- **Chemical compounds:**
  - Potassium dicyanoaurate (K[Au(CN)]₂)
  - Palladium(II) chloride (PdCl₂)

**Applications**

- Are used in various highly reliable power components and devices
- Is used in microelectronics assembly for the use in:
  - medical,
  - automotive,
  - telecoms,
  - LED industry
- Used in printed circuit boards manufacturing
Products

**Bushings for fiberglass production**

**Glass-melters for fiberglass production**

More than 70 types of glass melters (GMA) with a tube and slit feed (PtRh-7, PtRh-10, PtRh-20, PtRh-30 alloys, dispersion-reinforced (DR) materials)

**Planary Targets**

Ag up to 4N purity, Au up to 5N purity
Pt and Pd targets in the form of sheets

**Rotatable Targets**

Ag rotatable targets
Zn, ZnAl, ZnSn rotatable targets

**Bonded Targets**

Pt targets on Cu backing plate
Planary Au and Cr targets bonded on Cu backing plate

**Bimetal soldered targets of silver-copper and gold-copper systems**

Applications

**Fiberglass manufacturing**

Deposition of coatings on glass, including low-emission (low-e) float glass (architectural glass)

**Thermocouples and wires**

Material: PTRh thermocouples type S, B and R
Diameter of wire: from 0.04 mm to 0.80 mm

**Temperature measurement**
Products for the Chemical Industry

**Products**

Catalyst gauzes and catalytic systems

**Applications**

Are used in:
- nitric acid production (for the use in fertilizer and other industries)
- hydroxylamine-sulphate production
Labware for Various Industries

Products

Beakers, lids, bowls, boat pans, electrodes etc.
Made of pure platinum, platinum and rhodium alloys or platinum and gold alloys, nickel, iron.

Applications

All types of laboratories in practically all branches of industry and scientific disciplines:
Chemical and analytical operations in fluoride and sulphate systems for resolution of oxides, fluorides, carbonates, phosphates, borides, several silicates and some other compounds.
In opening process of samples of silicate rocks and minerals, minerals and ores of titanium, niobium, tantalum, zirconium, manganese, chrome and other minerals and many industrial materials.
During evaporating and concentrating process of samples of natural waters, processing mediums, mineral acids and recrystallization of chemical reagents.
In definition of organic and biological materials, soils and other ash contents.
Iridium Wire

Wire of Iridium grade from 99.9% and higher, of other alloys iridium with the diameter 0.06-6.00 mm. It’s is made by using hot drawing method.

For manufacture of an electrode in car high-class spark plugs.

Iridium crucibles

Iridium crucibles including crucibles with a solid-drawn bottom made of I99,9 grade iridium.

For the electronic engineering industry and laser techniques as well as for scientific researches.
We are looking forward to mutual and beneficial cooperation!

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