



Тау-Кен **АЛТЫН**

gold & silver refinery

History

- One of key priorities of the State Industrial and Innovative Policy in Kazakhstan is to ensure processing and production of high value-added goods, works and services that underlines the importance of the mining and metallurgy industry development.
- On July 3, 2012 an official *capsule and first pile* ceremony was held in the Industrial Part of the *Astana – New City* Special Economic Zone in Astana marking the commencement of the Gold Refinery construction by Tau-Ken Altyn LLP. On 19 December 2013 the Refinery was officially placed in service in presence of the Head of State. Its design capacity is 25 tons of gold and 50 tons of silver a year.

Technical Control (TC)

- Technical Control is one of the most critical divisions of the Plant since control and adjustment of processes are exercised throughout all stages from acceptance of raw materials to release of finished products.
- One of the main criteria for a successful refinery is to be recognized at the international market of precious metals. With this purpose TC has the most advanced metrology equipment including measuring instruments, test tools, tolerance control and make-to-order measurement instruments ensuring highly precise and accurate weighing, measuring and testing of materials containing precious metals with the weight starting at 0.001 g.

Initial Melting Workshop

- This facility is equipped with modern induction furnaces with various capacities: 5kg; 10kg; 30kg; 60kg; and 150kg.
- These furnaces enable the Plant not to depend on volumes of processed feedstock. Each furnace can be started individually for a given feedstock volume.



- *Their advantages:*
- Environmentally safe – each furnace has an individual aspiration system preventing any emission of pollutants to the environment and the working area since all vapor is delivered to the filter;
- Energy-saving – 10 times higher than similar analogues;
- Compact size.
- *Workshop does:*
- – Initial melting of the feedstock and further correctional sampling and analyzing;
- – Anode melting of silver for silver electrolysis workshop;
- – Anode melting of gold for gold electrolysis workshop;
- – slug treatment.

- Silver electrolysis workshop
- This facility has both main and auxiliary equipment. Electrolytic cell is the main equipment with rectifier while the auxiliary equipment includes cementing units, filters and vacuum system for sludge pumping.
- Basic products of the silver electrolysis shop include cathode silver CpA-1 with 99.99% purity and other products of the electrolytic process.
- The electrolytic cell is made of polypropylene, a dielectric and chemically resistant material.
- The Cell is fitted with stainless steel cathodes and stainless steel frames for anodes with filter bags to collect anode sludge generated from the electrolytic refining of silver.

- Gold Electrolytic Workshop

- Electrolytic refining of gold provides for a highly pure product . This facility is designed to produce cathode gold meeting quality standards.
- The workshop is based on electrolytic units each consisting of separate and independently operated cells. The equipment material is polypropylene ensuring a longer service life due to its resistance to acids and various environmental factors. A distinctive feature of this equipment is its absolute environmental safety thanks to aspiration systems in each element of the equipment. All evaporation resulted from the electrolytic process is trapped by aspiration system towers that automatically neutralize it using caustic soda ensuring 99% treatment. Only after that the clean air is released. A separate rectifier for each electrolytic unit, enabling to operate a required number of electrolytic cells depending on the composition and amount of the feedstock.

- *Gold and Silver Granulation Furnaces*
- Static induction melting furnace for production of granules from alloys of precious metals in the graphite crucible equipped with the automatic temperature regulator. The temperature is controlled automatically by the temperature regulator built in the microprocessor. The furnace control is exercised from the microprocessor-based control panel.
- *Advantages:*
- Lesser melting duration thanks to the new technology applied;
- Compact size;
- No electromagnetic impact;
- Low noise.



***FLAMELESS TUNNEL FURNACE
for production of standard gold and
silver bars and weighed bars***

- Tunnel furnace is an innovation patented by IECO, an Italian company.
- *Advantages:*
- Environmentally safe;
- Energy saving;
- No extra treatment required;
- No loss;
- Safe operation;
- Fully automated.
- It should be noted that all equipment is manufactured in accordance with EU technical standards and adapted to Kazakhstan standards.

Central Plant Laboratory



THANK YOU

FOR YOUR ATTENTION