

# UST-KAMENOGORSK TITANIUM AND MAGNESIUM PLANT



FULLY INTEGRATED TITANIUM PRODUCER

# UST-KAMENOGORSK TITANIUM AND MAGNESIUM PLANT

- UKTMP has been in operation for almost 50 years
- It is the youngest of the 3 Former Soviet Union Titanium sponge producers
- During Soviet time 100% of UKTMP sponge went to VSMPO, mainly, for defense and aerospace applications
- Kazakhstan became an independent republic in December 1991, UKTMP was privatized in 1996-1997
- Specialty Metals Company became its major shareholder

# UST-KAMENOGORSK TITANIUM AND MAGNESIUM PLANT

UKTMP is the only fully integrated Titanium producer in the world:

1. Ilmenite mining operation
2. Titanium slag production
3. Titanium tetrachloride and magnesium production
4. Titanium sponge production
5. Titanium melting facility
6. Titanium slabs production (to be commissioned in 2014)

# SATPAYEVSK ILMENITE MINE



# ILMENITE CONCENTRATE PRODUCTION



# TITANIUM SLAG PLANT

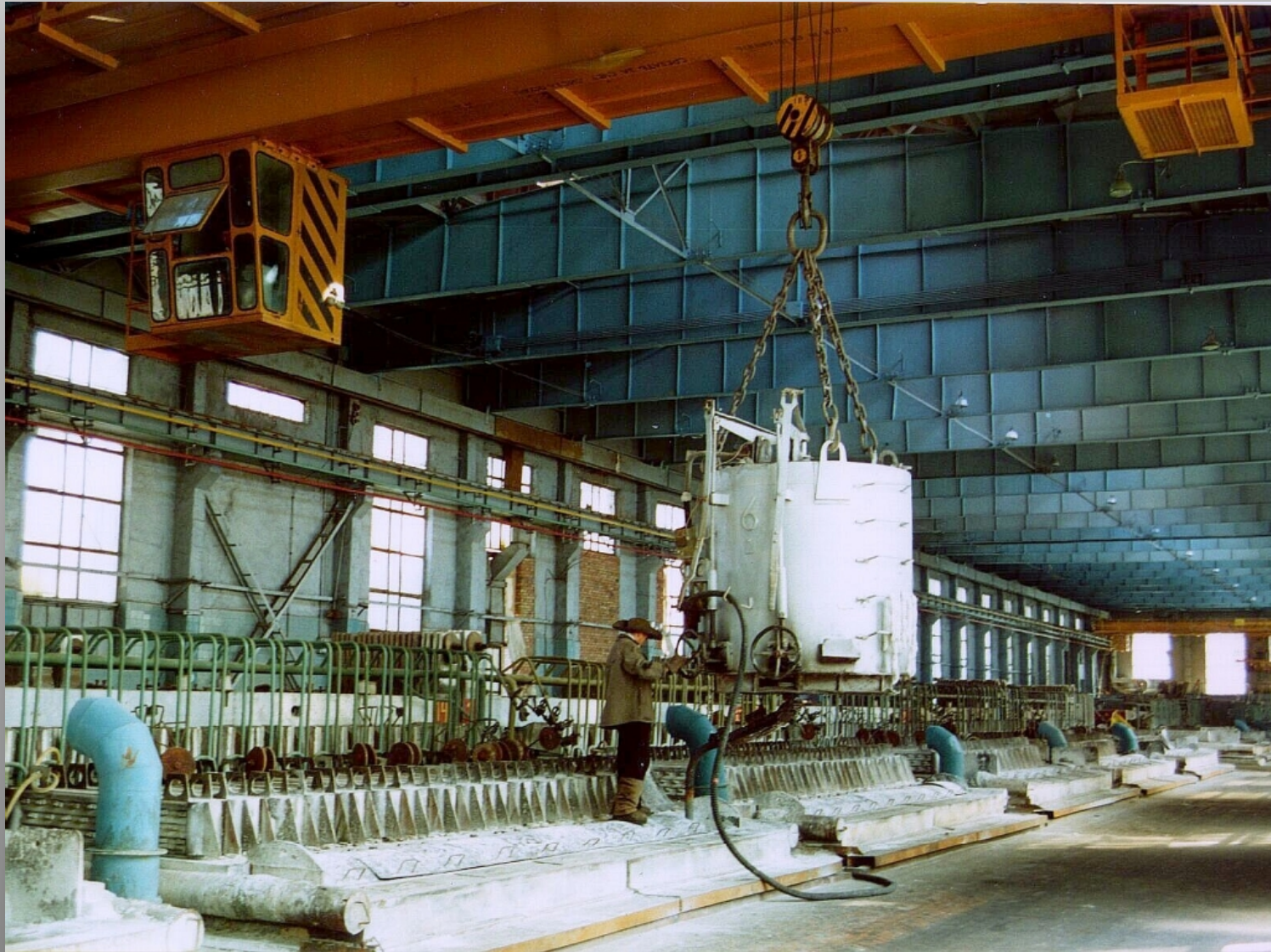


# TITANIUM TETRACHLORIDE PLANT



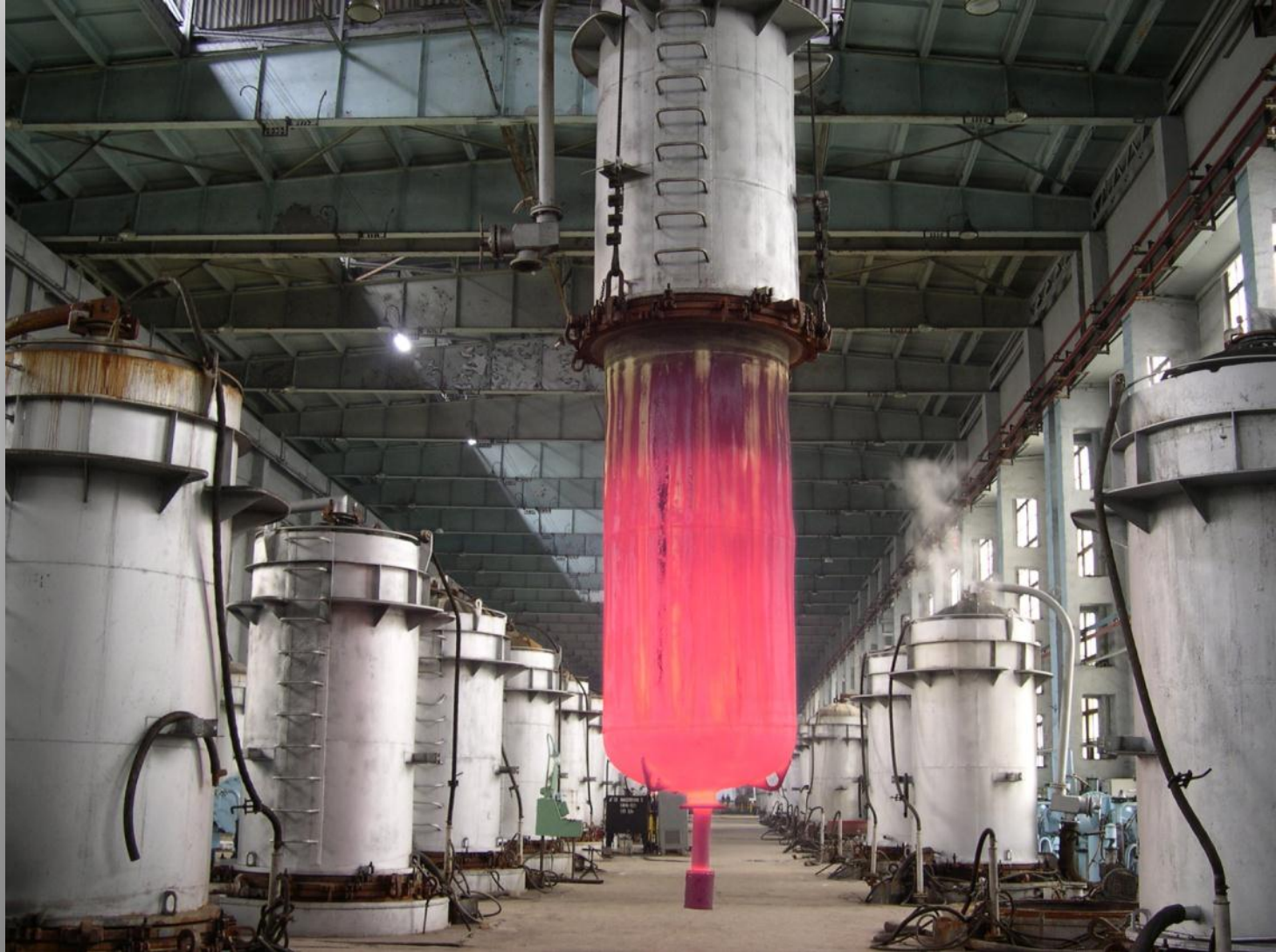
# MAGNESIUM PRODUCTION

## ELECTROLYSIS



# TITANIUM SPONGE PRODUCTION

## VACCUUM DISTILLATION



# TITANIUM SPONGE PRODUCTION

## *TITANIUM SPONGE CAKE*



# TITANIUM SPONGE PRODUCTION

## CRUSHING, SCREENING



# TITANIUM SPONGE PRODUCTION

## 100% VISUAL CONTROL



# UST-KAMENOGORSK TITANIUM AND MAGNESIUM PLANT

UKTMP is ISO 9001,  
AS9100, and  
ISO14001 certified.

UKTMP is certified by  
all aero engines  
manufacturers and  
OEMs



**BUREAU VERITAS**  
Certification

Certification  
Awarded To  
**JSC UST-KAMENOGORSK TITANIUM AND MAGNESIUM PLANT**  
HQ: UST-KAMENOGORSK, EAST KAZAKHAN REGION  
THE REPUBLIC OF KAZAKHSTAN, 070017

SEE APPENDIX FOR LISTING OF ADDITIONAL BUILDINGS

Bureau Veritas Certification North America, Inc. certifies that the management system of the above organization has been audited and found to be in accordance with the requirements of the management system standards and scope of supply detailed below

STANDARDS

**ISO 9001:2008 AND AS 9100 C**  
**IN ACCORDANCE WITH AS9104A**

Bureau Veritas Certification North America, Inc. is accredited under the  
Aerospace Registrar Management Program

SCOPE OF SUPPLY

**PRODUCTION OF TITANIUM SPONGE, MAGNESIUM INGOTS, TITANIUM SLAG,  
VANADIUM PENTOXIDE, TITANIUM INGOTS AND ALLOYS.**

Original Approval Date: **2 July 2009**

Subject to the continued satisfactory operation of the Organization's Management System, this certificate will remain valid until: **30 June 2015**

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization.

Certificate No.: **271757**  
Issue Date: **1 July 2012**

  
For Bureau Veritas Certification North America, Inc  
390 Benmar Drive, Houston, Texas, USA  
[www.us.bureauveritas.com/bvc](http://www.us.bureauveritas.com/bvc)



**ANAB**  
ACCREDITED

# TITANIUM INGOTS PRODUCTION

## WEIGHING AND BLENDING UNIT (WBU)



# TITANIUM INGOTS PRODUCTION

## 8,000 T COMPACTING PRESS



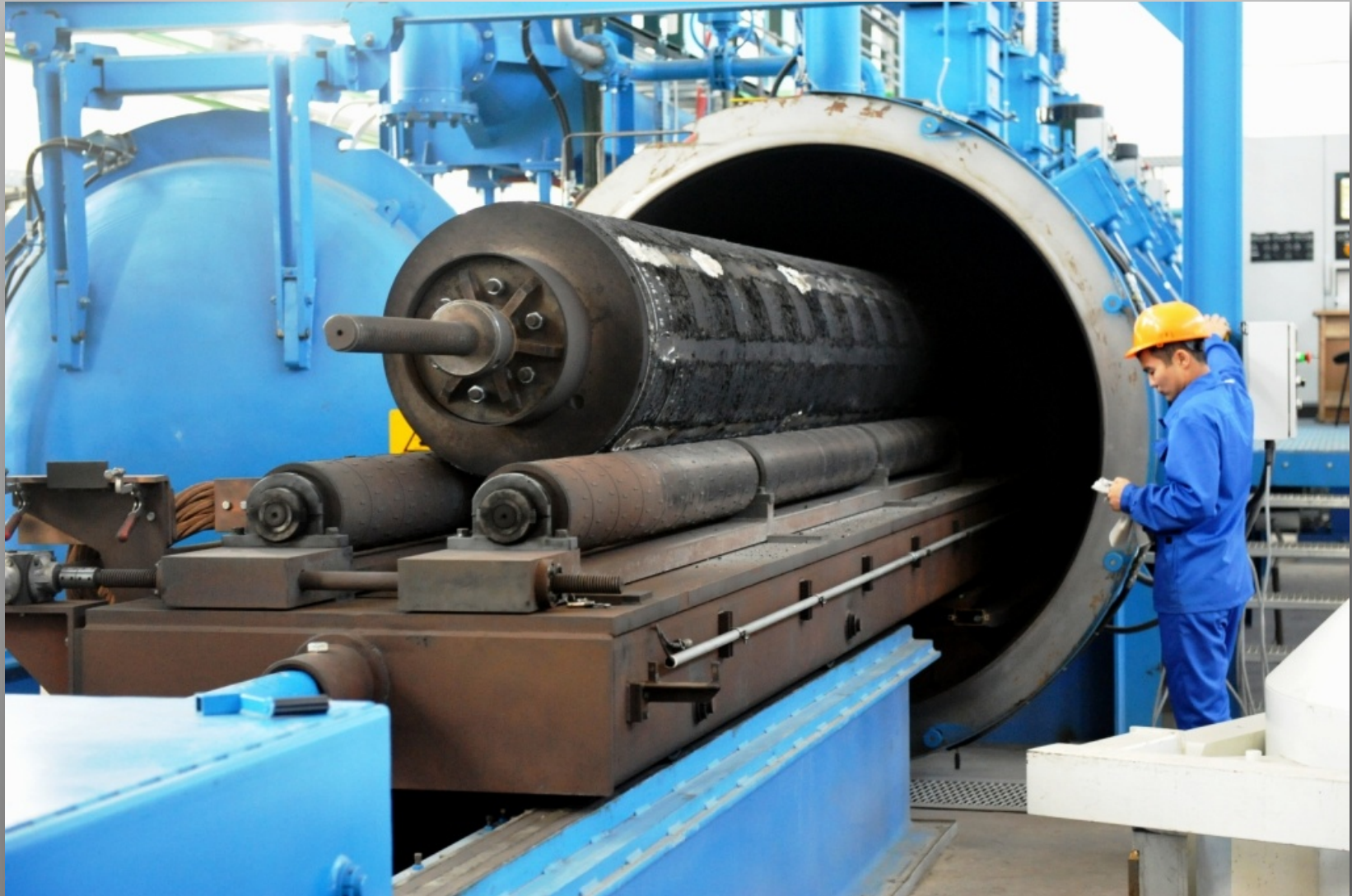
# TITANIUM INGOTS PRODUCTION

## COMPACTING PRESS / ELECTRODES SEGMENTS



# TITANIUM INGOTS PRODUCTION

## *PLASMA WELDER*



# TITANIUM INGOTS PRODUCTION VACUUM-ARC REMELT FURNACES (VAR)



# TITANIUM INGOTS PRODUCTION

## TITANIUM INGOT

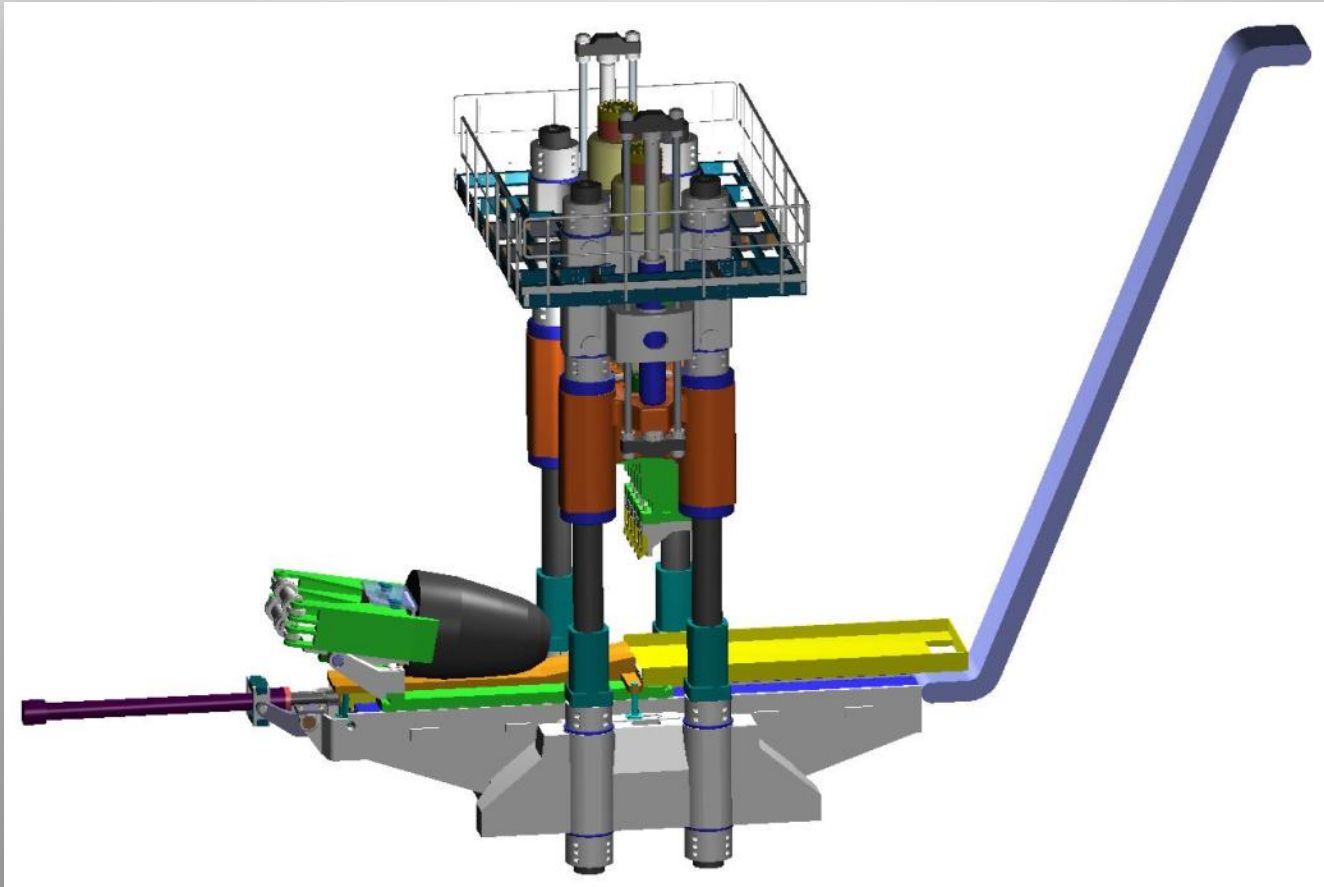


**In September 2011 UKTMP and Eramet-Aubert & Duval inaugurated their Joint Venture – Titanium forging plant UKAD located in France**



# 2013/2014 INVESTMENTS

# NEW TITANIUM SPONGE SHEARER



- manufactured by Siempelkamp, Germany
- value of investment 5 M USD
- will be commissioned in Q2 2014

# PRODUCTION OF TITANIUM SLABS



- Inauguration scheduled in Q3 2014
- value of investment 72 M USD

# PRODUCTION OF TITANIUM SLABS



- EB furnace, manufactured by Retech, USA
- will be commissioned in Q2 2014

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# UKTMP Development Program for 2012-2022

- Modernization of operating concentration plant Ltd SP «Satpayevsk Titanium Mines LTD»
- Construction of the second concentration plant Ltd SP «Satpayevsk Titanium Mines LTD»
- Construction of the second ore heat-treating furnace in the shop of Ti slag production.
- Improvement of process of magnesium electrolysis due to introduction of leak tight construction of electrolysis cells.
- Purchasing and installation of a new VAR furnace in the Shop No.14 (the 6<sup>th</sup>) for producing of Ti ingots and alloys.
- Implementation and extension of automatic control system of Ti ingots and alloys production processes.
- Commissioning of electron beam furnace. Titanium scrap processing.
- Reconstruction of the shearer for slicing Ti sponge cake and installation of a new conveyer for transferring sponge to the crushing area.
- Engineering and building a new Ti sponge production facility with bigger vessels (up to 10 tons).
- Recycling of residues from TiCl<sub>4</sub> production including extraction of rare metals (Scandium, Vanadium Pentoxide, etc.).