



TMK

"UZBEKISTAN TECHNOLOGICAL METALS COMPLEX" JSC

PROCESSING OF TECHNOGENIC WASTE



GREEN INDUSTRIAL TRANSFORMATION



TMK

"UZBEKISTAN TECHNOLOGICAL METALS COMPLEX" JSC



WASTE - RESOURCE - PRODUCT

JSC "Uzbek Technological Metals Combine" implements projects for the processing of technogenic waste, involving both accumulated and current waste streams into secondary industrial circulation

This direction covers two types of secondary resources: technogenic tailings from tungsten ore beneficiation at the "Ingichka" deposit, as well as ash and slag waste from JSC "Angren TPP" and JSC "New Angren TPP".

The implementation of these projects reduces environmental impact, enables the recovery of secondary resources into the production cycle, and supports the development of a green industry.

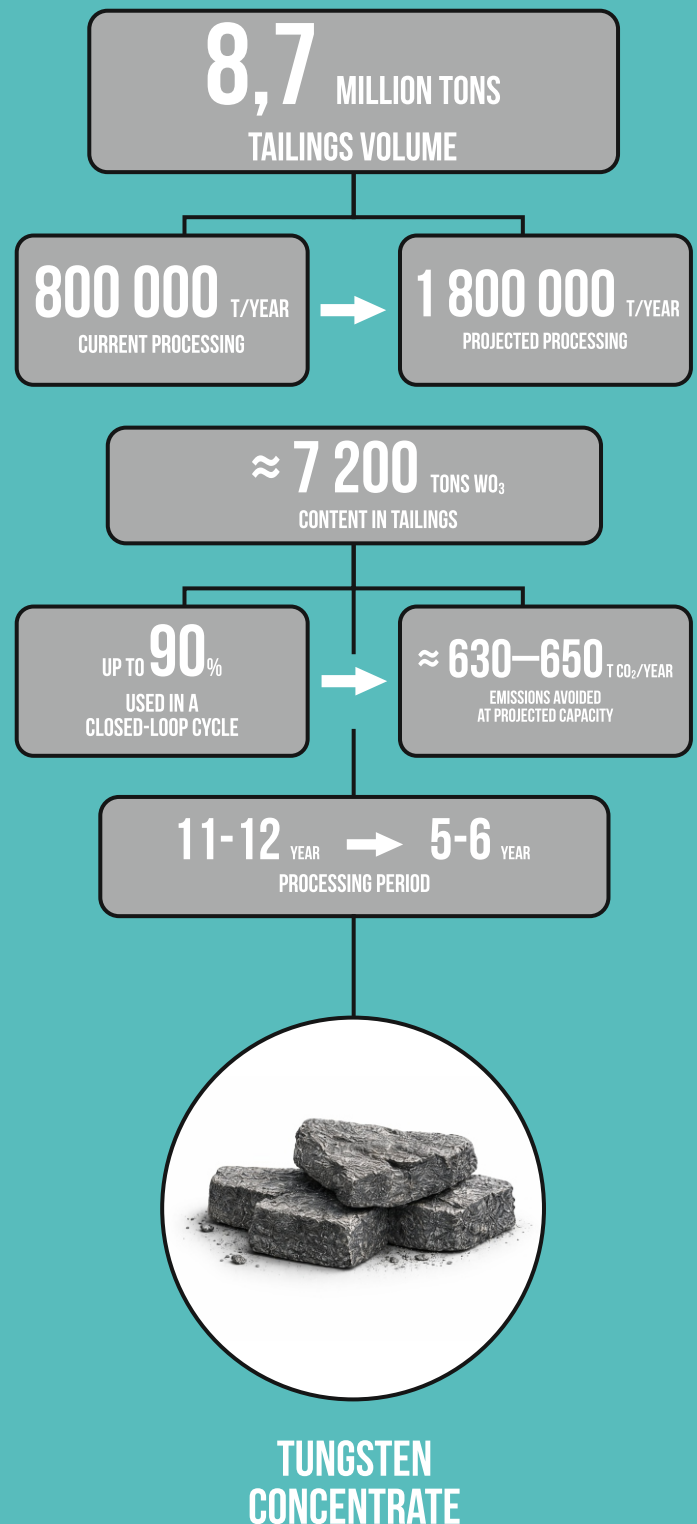
INGICHKA

Technogenic materials from Ingichka represent tailings from the beneficiation of skarn-scheelite ores, previously deposited in Tailings Storage Facilities No. 1 and No. 2 after tungsten ore processing. These tailings retain a commercially significant tungsten content, enabling their reprocessing without additional extraction of primary ore.

KEY PROJECT INDICATORS:

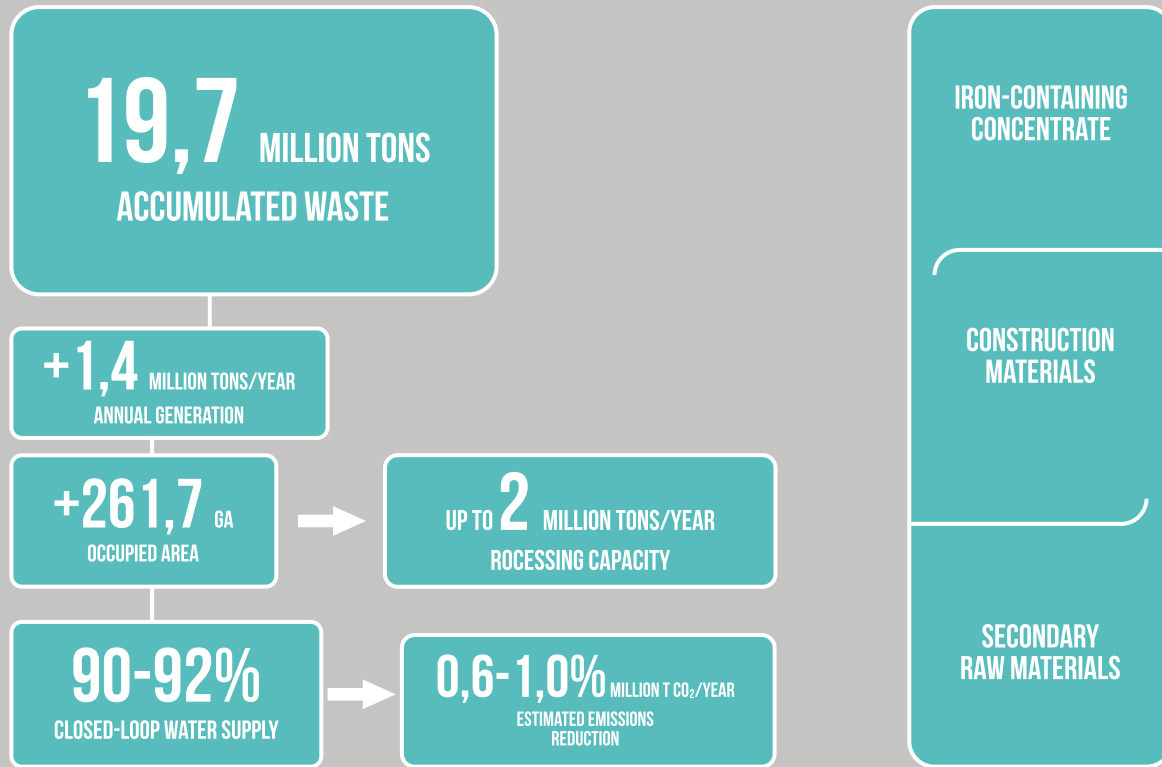
Reclamation

After completion of tailings processing, technical reclamation of the released tailings storage areas is planned, including land leveling, surface stabilization, restoration of the soil layer, and revegetation.



ASH AND SLAG WASTE — SECONDARY MINERAL RAW MATERIAL

**Processing of ash and slag waste from JSC
“Angren TPP” and JSC “New Angren TPP”**



Environmental impact:

Recovery of valuable components without increasing primary mining activities, reduction of accumulated waste, mitigation of dust emissions, and subsequent site rehabilitation.

Processing timeline:

At a processing capacity of up to 2 million tonnes per year, the accumulated historical volume of ash and slag waste can be processed in approximately 10 years.

However, taking into account the current annual generation of approximately 1.4 million tonnes per year, full elimination of accumulation requires either a phased reduction in waste generation or further expansion of processing capacity.

Reclamation:

As areas of ash disposal sites are progressively freed, step-by-step technical reclamation is planned, followed by land restoration and reduction of anthropogenic environmental pressure.



ENVIRONMENTAL PERFORMANCE INDICATORS

WASTE RECYCLING



442 tons
ash and slag diverted
from tailings storage

- Reuse of industrial waste
- No additional raw material extraction

POSITIVE

USE OF REAGENTS

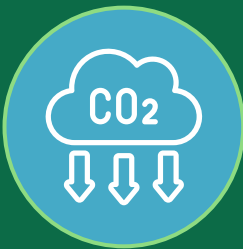


Zero
physical
separation
only

- No acids
- No cyanide
- No leaching

POSITIVE

AIR DUST LEVELS

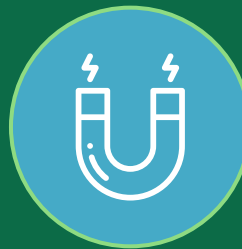


Wet process
dust fully
suppressed

- Industrial waste reuse
- Eliminates exposure to crystalline silica

POSITIVE

Fe LOSSES IN TAILINGS



Avg. 4.6% Fe
in tailings stream

- 63.6% of incoming Fe remains in tailings multi-stage separation required

POSITIVE

Environmental Impact: reduction in accumulated waste volumes, no expansion of ash disposal areas, lower dust emissions, preservation of land resources, transition to a circular economy.



ENVIRONMENTAL PERFORMANCE INDICATORS

ENERGY EFFICIENCY



~0.9 kWh/t
(pilot)

- Magnetic separation
- Minimal energy

POSITIVE

WATER CONSUMPTION



3 L/kg of solids;
530 m³/year total

- 90% recycled water
- 10% fresh make-up water

POSITIVE

TAILINGS INERTNESS

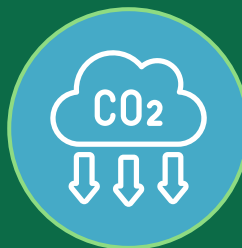


No reagents
no chemical
contamination

- Inert silicate matrix

POSITIVE

GHG EMISSIONS REDUCTION (ESTIMATED)



~0,3–0,5 t
CO₂e / per t Fe
no chemical
contamination

- Compared to
~1.5–2.0 t CO₂e
per t in iron ore
mining

POSITIVE

TECHNOGENIC WASTE

IS NOT A LOSS OF THE PAST, BUT A RESOURCE FOR

THE GREEN PRODUCTION OF THE FUTURE.