Duddar Project

Energy Saving & Environmental Protection Facilities

MHD

2020.12

1. Project Overview

- The project is located in Lasbela District, Balochistan, Pakistan; 135km straight line distance from Karachi, 200km road distance;
- It is also the only underground non-ferrous metal mine in Pakistan; the maximum mining depth is 1000m and the current mining depth is 600m.

Panorama of the Mine Site

Mine Location Map

Table of Technical & Economic Indicators

No.	Name of Index		Unit	Quantity
1	Geological Reserves		Tons	14,310,000
2	Designed Utilization Reserves		Tons	9,900,000
3	Mining Production Capacity			
	Mining Capacity		Tons/Day	1,500
			Tons/Day	500,000
4	Length of mine infrastructure		Years	4
5	Mine Life		Years	18
6	Concentration capacity		Tons/Year	500,000
7	Products	Lead Concentrate	Tons/Year	20,000
8		Zinc Concentrate	Tons/Year	80,000
9	Total investment		USD	106,510,000

MCC HUAYE DUDDAR MINING COMPANY (PVT) LTD.

Representative Engineering of Mining Production System

Vertical Shaft Operation Site

Ramp Work Site

Inclined Shaft Operation Site

Mine Hoist

Underground Pump Room Chamber

Adit

MCC HUAYE DUDDAR MINING COMPANY (PVT) LTD.

Representative Engineering of Ground Production & Auxiliary Systems

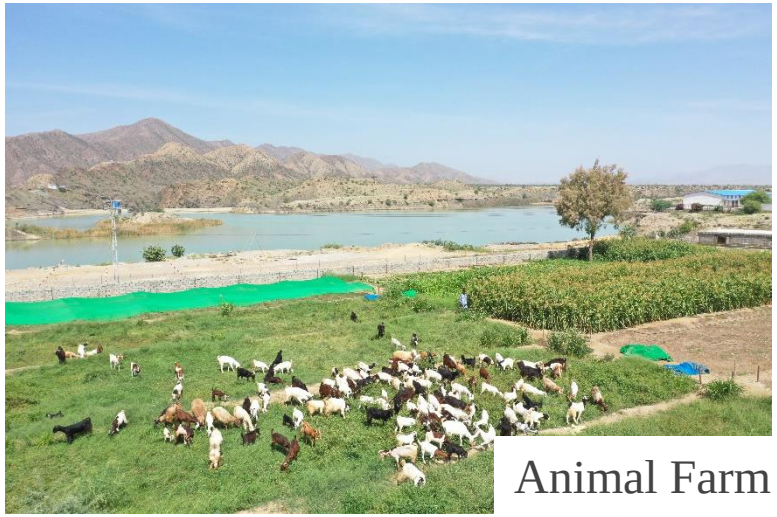
Concentrator Plant

Power Plant

Dam

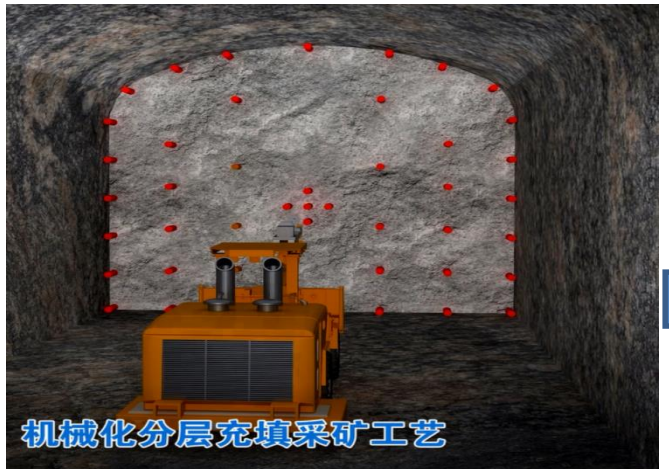
Water Purification Plant

Fishpond



Animal Farm

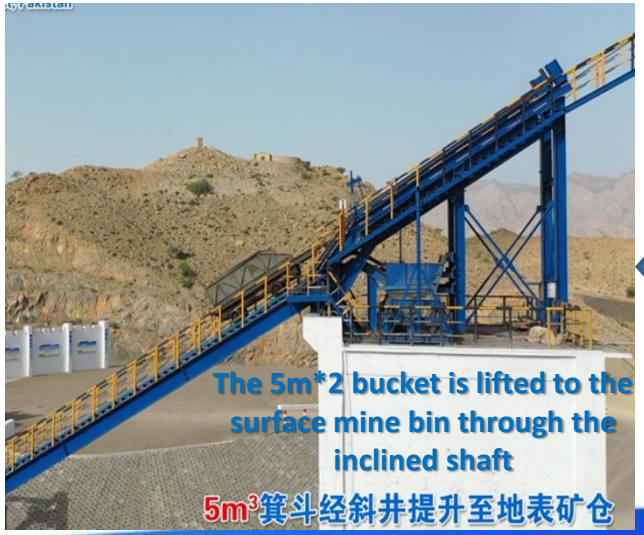
Procedures of Mining Technology



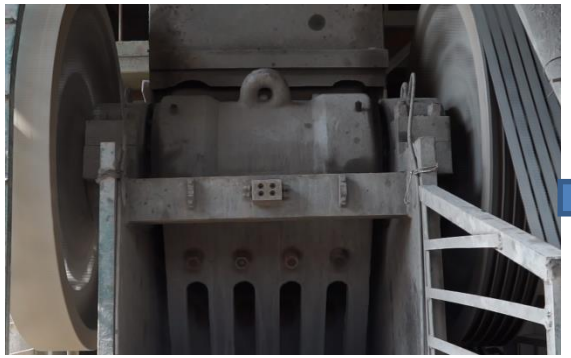
Mechanized stratified mining filling process

shovel out of mine

unload the Ore to the chute



Beneficiation Processes



Crushing ore

Two-stage grinding

Re-grinding of medium ore

Lead and zinc flotation

Concentrate dense

Concentrate dewatering

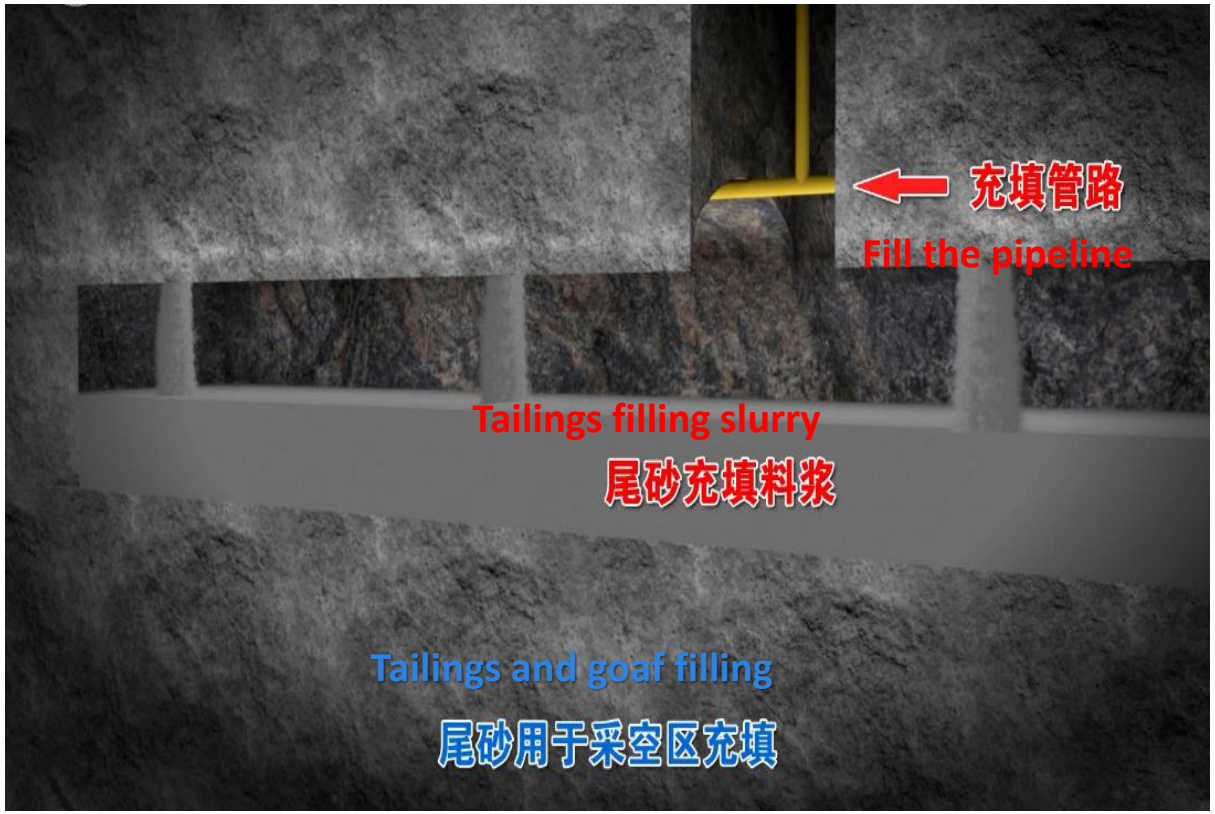
Tailings discharge

Tailings reuse

Take a variety of measures to reduce solid waste emissions

- Backfilling of excavated waste rock into the quarry area, reducing solid waste emissions by over 65,000 tonnes per year.
- Reducing tailing sand discharge by 200,000 tonnes per year by using the tailing sand cement filling process. Duda produces 500,000 tonnes of raw ore per year, generating an average of 405,000 tonnes of tailings per year,

of which 50% of the coarse particles are added to the filling slurry for use in the filling of the void, reducing tailings discharge by approximately 200,000 tonnes per year.



Take a variety of measures to reduce solid waste emissions

- Construction of tailings impoundments for the storage of tailings to avoid contamination
  - Storage capacity: 4 million m^3
  - Dam body and bottom impermeable treatment
  - Designed to a 100-year flood standard

Full view of the tailings dam

Tailings dam discharge facilities

Take a variety of measures to reduce solid waste emissions

- After crushing, the waste rock is used for filling of the quarry and as building material ;
  - Producing 100,000m³ of filling material per year, consuming 50,000m³ of waste rock and reducing solid waste emissions by nearly 80,000 tonnes ;
  - Waste stone crushed and used as building material for road building and site formation

Waste rock for road and dam construction

Production of sand after crushing of waste rock

Crushing of waste rock to produce infill aggregates

Complete environmental protection facilities such as ventilation and dust reduction

Mine ventilation facilities

Mine Sprinkler

Automatic dust sprinkling at ore unloading stations

Water recycling and reuse

This technology is mainly applied in rainwater recycling and on-site production wastewater recycling, with a total of 100,000m³ of water collected up to now.

- Technology applications
  - Rainwater recycling system
- On-site production and domestic wastewater utilisation systemsTechnical measures
  - Rainwater and mine gushing water are collected and purified through sedimentation and water purifiers for irrigation, water sprinkling and mineral processing chemicals.

Industrial backwater sedimentation tanks

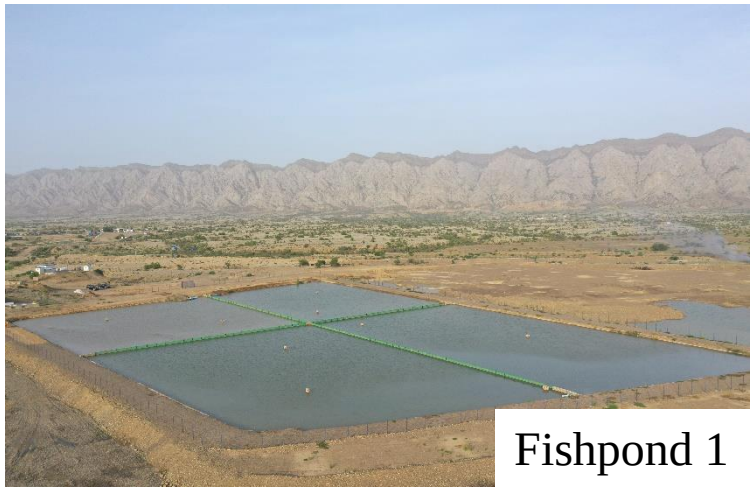
- Production wastewater and domestic sewage are precipitated for beneficiation return water.

Application Summary

- Conserved water resources, collecting and using over 100,000m³.
- Ensured water for site living and construction, producing good benefits.

Rainwater and mine water sedimentation and purification ponds

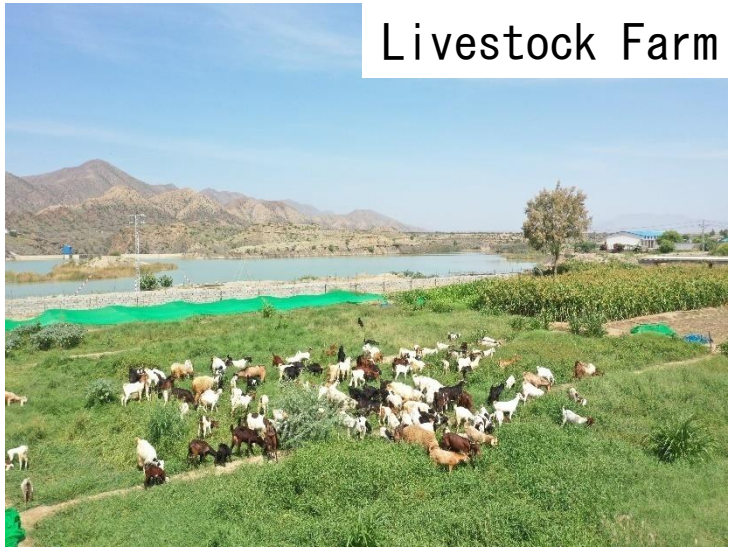
Integrated use of water collection and construction of a green ecological mine



Fishpond 1

Fishpond 2

Vegetable patch



Livestock Farm

Orchard

Greening of the office area