

**Save water by pumping material with a high solid content. The mine Fruta del Norte is situated 90 km East/North-East from Loja, Ecuador. The plan is located nearly 1.400 m above sea level.**

#### About Fruta del Norte

The Fruta del Norte gold deposit was discovered in 2006. Lundin Gold purchased the asset in late 2014. They constructed the mine and infrastructure on time and on schedule in five short years. First gold production was reached in November 2019 and commercial production was achieved in February.

#### Material transport

The medium is pumped via a DN 200 delivery line from the paste treatment plant to two different bore holes. The delivery distance tot the first bore hole is 605 m.

#### Material/Description

The delivery medium is dehydrated tailings with an average dry solids content of at least 67% volume weight. This paste contains 5-7% cement.

#### The pumping system

The heart of the backfill system is the Putzmeister HSP double piston pump with seat valves and the conveying pipeline system. For paste backfilling, the HSP pumps allow high pressures in the pipeline and therefore long conveying distance (up to 5 km).

#### Backfilling – how it works

The tailing slurries from the surface process are fed to a paste thickener so that the thickening slurries attain the maximum possible density (paste). Together with 5-7% cement as a binder, the thickening tailing slurries will be pumped back to the mine.

## Backfilling at Fruta del Norte / Ecuador



▲ The backfill plant with the cement silo

General overhead of pump ▼



## What makes Putzmeister special

### Putzmeister Constant Flow (PCF)

The hydraulic power dampener reduces pressure peaks, resulting in less vibrations and shock in the delivery line.

Each hydraulic drive cylinder has its own hydraulic circuit. The hydraulic drive cylinders are synchronized with each other by the control system for a nearly constant material flow.

That's why building a backfilling system with Putzmeister HSP double piston pumps equipped with the PCF-System is the best solution for long lifetime of the pipelines and fastenings and less noise.



The 25100 HSP double piston pump

### Benefits of backfilling

#### Increase safety

- No danger of water in abandoned workings
- Gives stability to the work site

#### Saving environment

- Saves water by pumping with a high solid content
- Process water can be used
- Less tailings to be stored

#### Saves costs

- Need less cement as a result of the high solid content

And last but not least, it increases acceptance by the public. Equipped with the PCF-System is the best solution for long lifetime of the pipelines and fastenings and less noise.



### Machine equipment

HSP 25100

HA L 260

Damper PCF M

Non-return valve

Hydraulic power pack

Boundary layer injection

### Delivery quantity

Delivery quantity\* max. 115 m<sup>3</sup>/h

Average duration of the operation approx. 10 – 16 h/day

Maximum delivery pressure 50 bar

Maximum dry solids content 67.1 %

### Pipeline

Pipeline outer diameter 219.2 mm,

Wall thickness 11.2

\* the delivery quantity of the pump is determined by the level in the supply tank.



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