

Backfilling at Lisheen Mine (Anglo American), Co. Tipperary, Ireland with HSP seat valve pumps

The Lisheen Mine is an underground lead /zinc mine including surface processing plant. The plant produces flotation tailings, which are partially used as backfill. The remaining tailings are disposed of in a tailing management facility (T.M.F.). During the project life, approx. 7.5 Mt of tailing will be backfilled.

The heart of the backfill system is the Putzmeister double piston pump with seat valves (Type HSP) and the conveying pipeline system. For paste backfilling, the HSP pumps allow high pressures in the pipeline and therefore long conveying distances. The conveying distance from the surface tailing plant to the underground backfilling areas is about 5 km without any booster pumps.

The tailing conveying capacity is designed for 150 m³/h and an operating pressure up to 120 bar.

For 100 % availability, two pump units are installed, one in operation, and the other one as stand-by.

The tailing slurries from the surface processing ore plant are fed to a paste thickener so that the thickening slurries attain the maximum possible density (paste). Together with a binder preparation, the thickening tailing slurries will be mixed and stabilised in a double shaft mixer up to a solid content of 70 % by weight. The paste contains 5 – 7 % cement, the grain size distribution is from 10 to 1000 µm.



Thickener



Lisheen plant and processing facility

Double piston pump HSP 25100 HPS

Delivery cylinder Ø	360 mm
Delivery cylinder length	2,500 mm
Flow output	150 m ³ /h
Pipeline pressure	120 bar



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Pump equipment

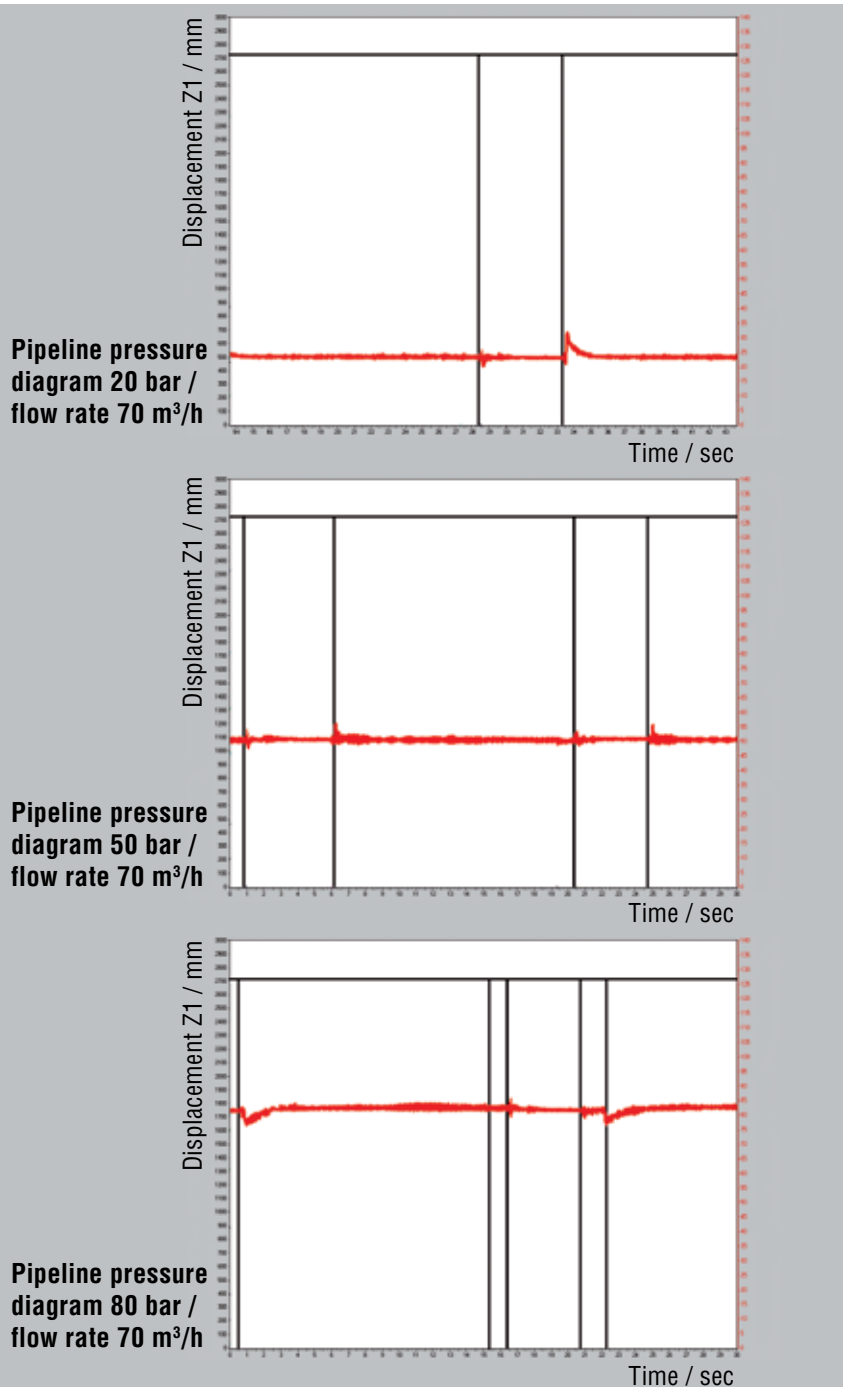
2 seat valve pumps, type HSP 25100 HPS and 2 power packs, 500 kW each.
For reduction of pressure differences during the switchover of poppet valves, the Putzmeister pumps are equipped with a "PCF" control system.

PCF – Putzmeister constant flow

for nearly constant product flow rate
and for reduction of water hammer
especially for very liquid material.

The advantages of the pumping
method incl. PCF-control system:

- Closed fine tailing circuit
- Hermetically sealed conveying path for material within the pipeline
- Reduced pressure pulsation in the pipeline
- Variable pump capacity from 10 % up to 100 % for laminar paste flow conveying
- Constant flow with low pulsation in pipeline in a pressure loss range up to 120 bars



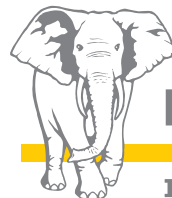
Putzmeister Solid Pumps GmbH

Max-Eyth-Str. 10 · 72631 Aichtal / Germany

P.O.Box 2152 · 72629 Aichtal / Germany

Phone +49 (7127) 599-500 · Fax +49 (7127) 599-988

psp@pmw.de · www.pmsolid.com



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