

Two BoVac Disc filters L176 are operated in a Gold/Copper Mine in Bulgaria for the filtration of flotation tailings which are used for mine backfill. The dewatered and discharged filter cake is mixed with cement and pumped back to the underground to fill the galleries. For this special application the filtered tailings need to have a certain residual moisture to ensure constant conditions for pumping.

The first BoVac Disc filter started operation in 2010. The implementation of the BoVac Disc filter for this dewatering duty was part of the mine upgrading and modernization project when the plant switched the mining method away from the environmentally challenging caving to a drill and fill method to increase both production rate, production reliability and sustainability.

During layout tests the tailings consisted of particles with a mean diameter size of d_{50} of 20 to 30 microns and were concentrated to > 50 wt.-% in a thickener. Target value for solids throughput was specified to 100 t/h and target cake moisture was specified to 23 wt.-%. Layout tests showed that the required 100 t/h solids throughput could be achieved with one disc filter of 176 m² filter area.

Since filter commissioning the characteristics of the slurry have changed especially with respect to particle size distribution. The mean particle diameter d_{50} increased from 25 μm to 40 μm and solids throughput of the BoVac Disc filter increased accordingly to rates higher than needed. As a consequence, flocculent dosage could be reduced stepwise and the filter can be operated even without flocculent. The achieved filter performance is 110 t/h for solids throughput rates and residual cake moisture ranges to 19-22 wt.-%. After many years of operation the filters are in excellent condition thanks to the preventive maintenance concept of the plant.

BoVac Disc Filter L176

Units installed	2
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Filter area per unit	[m ²]	176
Material of construction		S 235 JR
Power of filter drive	[kW]	7.5
Foot print incl. receiver & tank	[m]	9 x 7 per unit
Year of commissioning		2010

Process and Operation Data

Solids throughput	[t DS/h]	105–110
Solids content in feed	[wt.- %]	50
Cake moisture content	[wt.- %]	19–22
Time of operation		24/7
Maintenance demand	[h/month]	12

Product Data

Product		copper/gold flotation tailings
Medium particle size	[μm]	40–45
Flocculant dosage	[g/t DS]	10–15

