NEW WAY OF DEWATERING MINES

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In underground mining, water will cause problems if not removed. It is common for this water to be contaminated with suspended solids from the mining process (shotcrete fibers and drill fines). To manage the water the most common method is to blast openings in the tunnel wall and use them as sumps. The sumps are used to pump water systematically to a permanent pump station that pumps the water out of the mine.

Maintenance of these sumps is challenging – it is critical they are cleaned regularly. This sump cleaning rarely occurs - meaning the sumps become full of sludge and sediment. This can cause damage to the sump pumps as well as causing a reduction in the sumps water capacity causing flood water to run down the decline. To address the reduction in sump capacity while avoiding sump maintenance - commonly the pumps are changed to manual mode and left to run continuously. The pumps begin to snore (pump air), wear out and stop working. This causes more flooding and production downtime.

In 2018 Xylem and Boilden mine (a Swedish mining company), started a partnership to develop a dewatering system adapted for autonomous mining. Autonomous mining would mean less people underground. The partnerships' goal was to reduce unplanned maintenance, production downtime and dewatering costs while improving safety.

The solution was to create a pumping system that could move solids, was easy to maintain, and able to adapt with production. A Mobile Pump Station (MPS) was designed – with specific innovation focus on the pump. The BIBO Alpha was developed an intelligent plug and play dewatering pump with a built in VFD.

The general overall lifetime of the pumps was increased by 3 times and dewatering costs were reduced by 30%.