

CASE STUDY



PROJECT THICKENER REPLACEMENT DRIVE FOR NICKEL MINE

PRODUCT DBS Replacement Thickener Drive

INDUSTRY Mining

LOCATION Western Australia

BACKGROUND

A Western Australian nickel mining operation had previously mothballed its ore processing plant during a downturn in commodity prices. As nickel demand and commodity pricing strengthened, the mine prepared to restart production and undertook a detailed audit of critical ore processing and water management equipment. During this assessment, the drive of one of the thickeners (concentrators) was identified as requiring major repair or complete replacement. Due to the age of the existing Dorr Oliver 109S2 drive, original equipment manufacturer (OEM) spare parts for the failed worm gear were no longer available, limiting the feasibility of a straightforward repair.

The client considered two options: manufacturing a replacement worm gear to refurbish the existing drive (with the lift mechanism still in working order), or replacing the drive entirely, including the lift. This uncertainty introduced risk to the plant restart schedule, with potential impacts on downtime, maintenance costs, operational reliability and the long-term performance of the mine's thickening processes.

SOLUTION

MAK Water worked closely with the client to evaluate the technical and commercial risks of refurbishment versus full replacement, drawing on our experience in mining process water and wastewater solutions. We proposed supplying a new, pier-mounted replacement drive complete with lift from our US supplier, DBS Manufacturing, engineered as a direct bolt-in replacement for the existing Dorr Oliver 109S2 drive.

This approach eliminated the need for custom worm gear manufacturing, simplified engineering and on-site modifications, and reduced installation complexity. The DBS replacement drive was designed and configured to match the existing thickener duty, helping ensure a smooth transition during commissioning and supporting a reliable restart of ore processing operations, with improved long-term asset performance and maintainability.

MAK WATER KEY SOLUTIONS

- Pier mounted thickener drive unit designed as a direct bolt in replacement for the existing Dorr Oliver 109S2 drive,
- DBS model D80-EH2-L7524 with 75 ton power lift
 - 15 HP (11 kW) rake drive and 1.5 HP (1.1 kW) lift drive
 - 4-20 mA torque transducer
 - 4-20 mA lift position transducer
 - 10 year warranty on main gear/bearing

RESULTS AND BENEFITS

- **Reduced installation and downtime.** New replacement drive with lift simplified installation and minimised plant downtime compared with refurbishment.
- **Peace of mind.** 10-year warranty on the main gear and bearing provided assurance not available with the repair option.
- **Value for money.** Delivered the best whole-of-life value compared to refurbishing the ageing drive.
- **Reliability.** Modern thickener drive technology offers improved reliability and reduced risk of unplanned outages.
- **Sustainability.** Greater efficiency and lower energy use supported more sustainable mining operations.



DBS replacement drive undergoing factory testing