



Brine Sealing

The Challenge:

Mine processes will introduce harsh, abrasive environments for all process equipment. Sealing heavy brine/sea water with a specific gravity of 1.2 presents a very demanding task for any type of shaft seal.

In Europe's deepest mine, potash is mined at 1.5 miles below the earth's surface while extending 5 miles out beneath the ocean. Mine dewatering is a means to keep the mine from flooding. In this particular mine, brine water is continuously pumped as it leaks through the earth's strata. These high-head pumps discharge to settling lagoons on the earth's surface. The criticality of this equipment is self explanatory, due to the fact that without these dewatering pumps, the mine will flood.

Equipment/Application details:

- Pump: Mackley multistage
- Model: JSH200
- Suction Pressure: 0.3 bar g (5 psig)
- Discharge Pressure: 137 bar g (1985 psig)
- Temperature: 37°C (98°F)
- Shaft Speed: 1490 RPM

The Solution:

There is an understandable desire to use a dual seal in mine dewatering applications, mainly to take advantage of the security of a "back-up" seal. Scheduling a pump outage, with a strong sense of security, while one backup pump is online is comforting. Single seals with hard faces to resist the abrasives can be a solution, but the single seal will not provide the convenience and security of the back-up seal.

The dual seal also provides for a means of preventing abrasives from penetrating the seal interface. Utilizing environmental control plan 54, a higher - pressure forced circulated barrier fluid, will provide a clean lubricating fluid between the seal faces. Seal face scoring can be virtually eliminated with this plan, increasing seal life.

The 280 dual seal has successfully sealed mine dewatering pumps since 1999. A customer testimonial included a statement that said: *"We wouldn't think of using anything other than the Chesterton 280 seal in our pumps."*

280 Features:

- High torque capability
- Heavy duty rugged design
- Unified seal face alignment to accommodate axial motion capabilities.
- Monolithic seal faces
- Self-centering locking
- Micro-polished o-ring surfaces