Ensuring efficient and reliable thickening is a key step in the alumina refining process. Outotec® is a global leader in the design, fabrication, and supply of innovative thickening and clarifying solutions for the minerals industry. Our High Rate Thickener is used to optimize performance at plants around the world.

**BENEFITS**

- Maximized performance thanks to design optimized specifically for alumina refining operations
- Reliable equipment combined with our global support network ensures high availability
Industry-leading solutions based on over 50 years’ experience
As the global leader in minerals and metals processing technology, we offer comprehensive alumina refinery solutions throughout the Bayer process. Our work in the alumina industry began more than 50 years ago, when Outotec (formerly Lurgi) developed circulating fluidized bed (CFB) technology for alumina calcination. Since then, Outotec has built over 50 calciners worldwide with low energy consumption and high product quality.

Our alumina refinery technology solutions include grinding, digestion and evaporation, clarification and washing, filtration, and hydrate washing and calcination.

Thickening technology for alumina refineries
Outotec thickeners were first installed in 1985 in the minerals processing industry. The features of these early units, combined with Outotec’s commitment to R&D, testing, and after-sales service, led to our solutions being quickly adopted in a wide range of industries.

Today, Outotec thickeners and clarifiers have a reputation for outstanding performance and reliability. Our innovations, including for feed systems, rake design, drives, and control strategies, offer opportunities to enhance the performance of traditional alumina thickener and clarifier applications.

Typical red mud handling process

**Our alumina industry product range includes:**
- Settlers
- Washers
- Fine seed thickeners
- Oxalate thickeners
- Red mud neutralization
Robust design for high reliability
Outotec multi-pinion drives use individual planetary gearboxes as pinion reducers, driving a large diameter geared slewing bearing to provide high output torques and load bearing capacity.

The drive assembly is mounted inside a purpose-built casing based on the latest FEA modeling methodology. The slewing bearing and pinions operate in a fully immersed oil bath, which ensures constant lubrication and long life – even under the most demanding conditions.

Red mud thickeners operate in extreme scaling conditions. Scale growth on the mechanism and tank results in high axial and torque loads on the rake drive, requiring an operational duty cycle specific to red mud thickeners. Outotec drives and mechanisms are designed for precisely these types of conditions, resulting in high reliability and long operational life.

Feed systems optimized for each individual application
Feedwell™ design is critical to thickener and clarifier performance. Outotec feed systems are optimized for each specific application based on our design experience, testing, and computational fluid dynamic (CFD) modeling to ensure optimal flocculation and aggregate settling.

The control of feed density is extremely important to flocculation efficiency. Outotec dilution systems are integrated with the feedwell and automatically dilute incoming slurry to the target level.

For scaling applications in red mud, it is important to minimize the surface area of the feedwell. Outotec’s extensive experience, coupled with performance analysis with CFD modeling, means we can offer relatively simple feedwells with optimized flocculant dispersion, solids distribution, and aggregate growth.

For non-scaling duties, the Outotec Vane Feedwell improves the efficiency of feedwell performance in alumina applications. Superior aggregate formation and solids distribution in the tank result in higher underflow density, better clarity, and improved process stability while minimizing flocculant consumption.
Benefits of Outotec thickeners and clarifiers:

- Innovative designs enable performance optimization opportunities for alumina applications
- Outotec drives are specifically designed for alumina conditions, resulting in high reliability and long operational life
- Application-specific rake mechanisms reduce torque and increase cleaning-cycle intervals
- Optimized feed systems use CFD modeling to maximize underflow density and overflow clarity
- Outotec Vane Feedwell technology delivers superior performance in non-scaling applications
- Customized control strategies help you to consistently meet performance targets
- Optimized tank and structural design reduce CAPEX investment
- Global technical and after-sales support network help you to maximize uptime