HPAL plant success story – Indonesia

Reference project

Industry

Project overview

A mining company based in Indonesia invested over $1.1 billion as part of Phase III development of an HPAL (High Pressure Acid Leach) plant that refines ore used in lithium batteries, with Velan supplying 100+ severe service valves, ensuring reliable performance across multiple phases.

Project information

Industry sector	Hydrometallurgy, HPAL
Date delivered	2022
Project manager	Lawrence Thong
Velan product line	Severe service Securaseal® metal-seated ball valves

The customer has invested over US$ 1.1 billion in the construction of the Phase III HPAL plant in Indonesia. The facility's primary products are laterite nickel ore, which can be processed into MHP (mixed hydroxide precipitate) and further refined into nickel and cobalt sulphates. MHP is a crucial material in the production of lithium batteries for the automotive industry. The plant has a refining capacity of 65,000 MTPA, with plans to expand production to 120,000 MTPA.

The project is a joint venture between an Indonesian and Chinese company. In January 2023, three autoclaves were installed, with Velan service personnel providing on-site support throughout the startup and initial operation. Shortly after, in February 2024, several additional autoclaves were commissioned and Velan followed up with on-site product training in September 2024.

High-pressure acid leach (HPAL) nickel-cobalt mining site.

Typical photo of surface mining.

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Velan solution

So far, Velan has supplied over 100 severe service metal-seated ball valves to the HPAL plant, sufficient for two autoclaves. Since startup, they have completed three full campaigns, each campaign lasting seven months with only one week of downtime for quick maintenance checks. Throughout these campaigns, Velan valves have maintained high performance without requiring additional support.

All Velan valves supplied to this location feature our latest 4th generation ceramic coating, known as VEL-8. This coating marks a significant advancement over the 3rd generation, delivering notable improvements in hot hardness and abrasion resistance. Velan manages every aspect of the formulation of VEL-8, from sourcing the coating powders to controlling the spraying parameters. We are confident that the advanced VEL-8 coating has played a crucial role in enhancing the overall performance of these isolation valves.

Slurry feed line valves into autoclave consist of NPS 10 (DN 250) titanium isolation valves.

Customer feedback

Instrumentation and Operations teams, have expressed great satisfaction with the performance of Velan's valves and the assistance provided by Velan's aftermarket support team. Since startup and commissioning, the valves have operated for nearly 24 months without any major incidents requiring a shutdown of the autoclave unit—a remarkable achievement.

The Head of the AIE (Automation, Instrument & Electrical) department has shown a strong preference for Velan's HPU (Hydraulic Power Unit) control solutions, particularly in the most demanding discharge isolation line. Velan's HPU easily integrated into the DCS (Distributed Control System), featuring a local control module and HMI, (Human-Machine Interface) while maintaining the smallest footprint on the autoclave deck.

Slurry discharge line of NPS 14 (DN 350) with compact HPU skid into first letdown drum. This is the highest elevation point in the autoclave circuit.

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A top executive overseeing plant operations, has been highly satisfied with the performance of Velan's severe service metal-seated ball valves and recently replaced a competitor's valve with Velan's NPS 14 (DN 350) valve for the same challenging discharge line into the letdown drums.

Ongoing support from local Velan service partner

Velan has partnered with PT Contromatic Primi Mandiri (PTC) in Jakarta to provide local inventory and factory-certified technicians to support customers in Indonesia. We have recommended a Life Cycle management strategy for Velan's severe service metal-seated ball valves, ensuring long-term performance and product integrity. Velan and PTC will collaborate closely with the customer to implement this service strategy effectively.

Velan offered product training on-site in September 2024.

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