

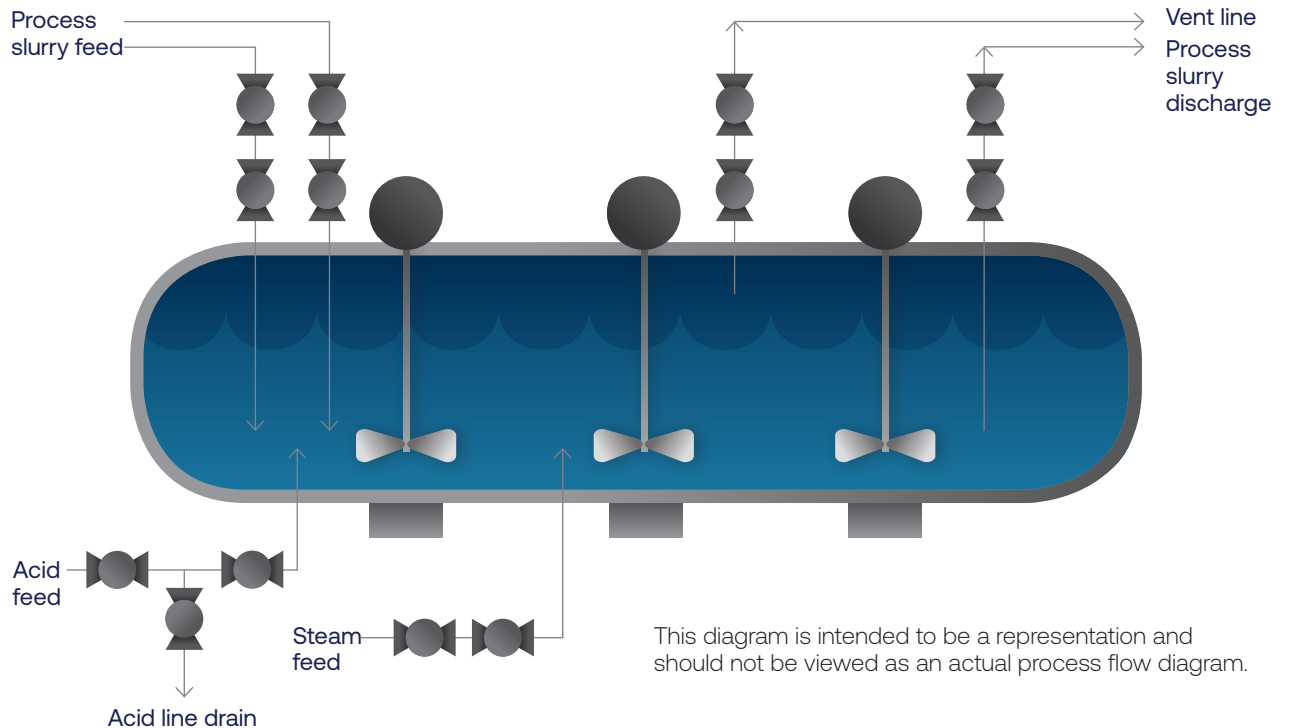
NELES

Step-change in autoclave process uptime: How Neles valves improve plant performance

Background & Challenge

Processing nickel ore is a tough job. When the process flow sheet includes autoclaves, it gets even tougher. Neles' expert team was presented a challenge by a leading Finnish nickel processing customer: the customer had experienced problems with its autoclave valves, particularly in the level control operations. Various valve types had been tested in the application with unsatisfactory results. In the effort to solve the customer's problem and improve the plant's uptime, Neles' team started by interviewing the customer's experts and studied the process conditions. Applying knowledge and knowhow from previous similar types of cases, Neles decided to suggest a special valve solution for the autoclave application and supplied valves from the Neles Wear Block™ portfolio.

Nickel leaching autoclave





Key takeaways

- The right valve solution will bring substantial safety improvements, especially for applications with severe process conditions such as high pressures, acidic media and elevated temperatures
- High performing valves will positively impact productivity. In this case, valve lifetime extended from few weeks to 18 months
- When it comes to challenging process applications, the payback time of a highly engineered valve is short and the return on investment high

Solution

Neles Wear Block™ valve portfolio consists of valve solutions that are constructed from materials that have been developed through years of research with rigorous field testing. The key idea of the concept is to combine the erosion resistance properties of ceramics with the mechanical properties and reliability of steels into composite materials and multi-material constructions.

Over the past years, our technology group has teamed up with various customers to develop solutions for the toughest applications. Today, our customers can benefit from our ability to select the optimal valve solution to precisely match the specific process conditions of High Pressure Acid Leaching (HPAL) and Pressure Oxidation (POX).

In addition to being able to withstand high temperatures, pressures, acidity levels and erosive media – all of which are present in the autoclave leaching process – one of the key benefits of our solution is its ability to fight against the risks related to solids build-up. Sedimented solids is one of the main concerns at many sites where autoclave processing is involved.

When solids stick to the cavities of process equipment, not only is the equipment performance compromised but also the safety of the workplace. Where other valve solutions give in, Neles Wear Block™ concept will do the job.

Results

Neles valves have proven their capability to withstand the harsh process conditions set by the nickel autoclaving process. Where other valves lasted for only weeks, our Wear Block valve solution achieved 18 months service life. With our solution, the customer was able to reduce plant downtime, contributing significantly to process performance. Well-functioning valve solution also means safe operation, a top priority for any industrial operation.

As a result of the co-operation, the customer has decided to replace all level control valves at the site with our solution.

Upstream (upper image) and downstream side after 18 months of operation:

