Flotation Cells and Thickener Underflow

Flotation cells and thickener underflows are an integral part of the mining and mineral processing industry. These systems are commonly used in base metal processing (iron ore, copper and gold) and in mineral processing (phosphate and potash).

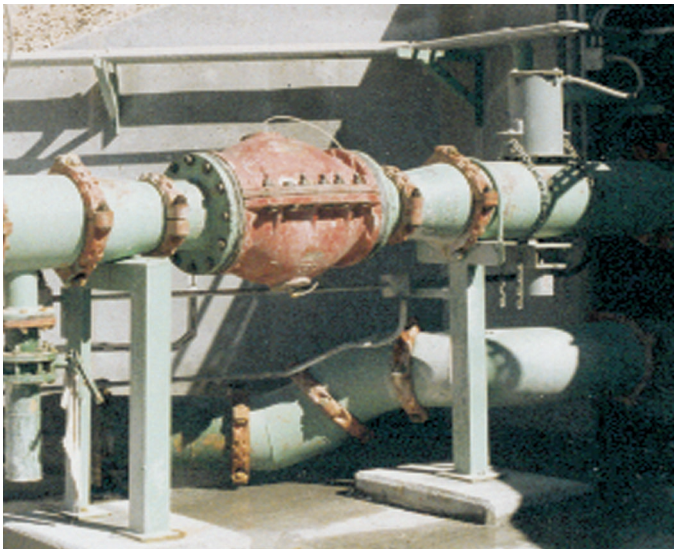
One of the most widely used methods of recovering valuable minerals in the mining industry is using flotation tanks. Inside these tanks, the ground ore is mixed with water to form a slurry. Hydrophobic materials then separate from hydrophilic materials through the use of chemical additives. The tanks, known as flotation cells, are agitated; this adds air, forming bubbles to which the hydrophobic minerals link. As a result, the minerals rise to the top of the cell. There, they collect in a launder. The ore that does not float is taken away as tailings, which may be subjected to further flotation.

Thickeners are designed to separate processed solids for recirculation and reprocessing, or for distribution to tailings. In the thickener unit, valuable water is extracted from the slurry to reuse in other parts of the mining operation. The remaining solids material becomes concentrated for more efficient transfer to the tailings storage facility.

When installed in a flotation cell or thickener underflow, Red Valve Pinch Valves provide superior control for extraction of minerals, maximizing efficiency and profitability. Flotation cells and thickener underflow lines are an area where Red Valve Pinch Valves play a vital role in increasing production and decreasing maintenance and downtime. Crushed ore entering flotation cells or spent ore discharging from a thickener underflow retain high solids content that can quickly destroy many types of valves. Red Valve Pinch Valves, which are full-port when open, minimize erosion and optimize valve life.

There is an ever-growing demand for mines to increase their performance, while simultaneously decreasing operating costs and environmental footprints. Red Valve Pinch Valves effectively regulate flotation cells and underflow thickener lines, playing a significant role in improving mine efficiency.

PCV - Series 5200 Control Pinch Valve on a flotation cell tank at a mine in Chile.



PAV - Type A Air-Actuated Pinch Valve maintains levels on thickener underflow system at a South American mine.