

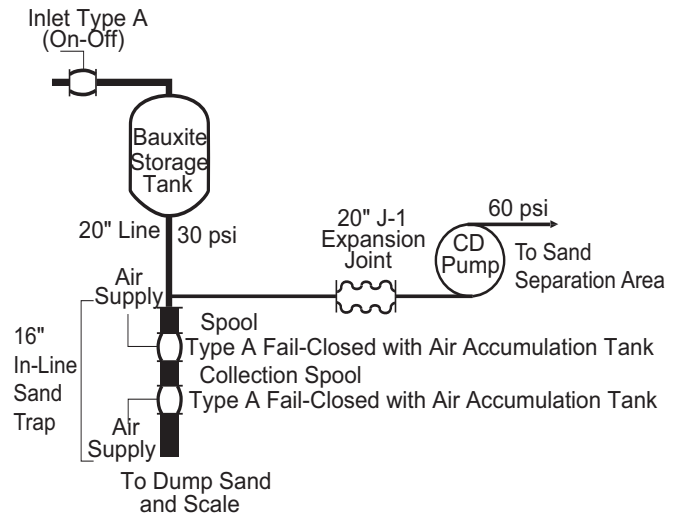
Solving Abrasion and Vibration Challenges in an Aluminum Refinery with Type A Pinch Valves and Redflex® J-1 Expansion Joints

A European aluminum refinery uses Type A Air-Actuated Pinch Valves and Redflex® J-1 Expansion joints on its primary bauxite treatment process to solve abrasion issues. The previous valve used was a diaphragm valve which caused difficulty because of its high maintenance and short valve life from diaphragm failure. Additionally, the diaphragm valves, being fail-closed, were very large and expensive with spring return actuators. In the area of the plant where the diaphragm valve was located, space was also very limited. The Type A Air-Actuated Pinch Valves are almost the same size as a piece of pipe, making them very space efficient.

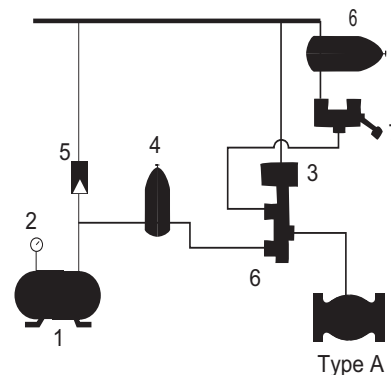
For this application, the Type A Valves are fail-safe, closed through the use of air accumulation tanks. The piping system included a solenoid valve and check valve to prevent loss of air in the accumulator tank in case of plant air failure. Wear and service life were both improved through the use of pinch valves in these 16" (400mm) lines. Also important to note is full port Type A Pinch Valves have a higher C_v and flow capacity.

See the diagram inset in the lower right corner for a piping schematic for accumulator tank fail safe operation of Red Valve Type A Pinch Valves.

The primary transmission line from the storage tank is a 20" cast iron pipe. The pump is a centrifugal discharge design with a high level of vibration. Startup of this pump causes a tremendous pipe shock both up and down stream. A Redflex® J-1 Expansion Joint was chosen to isolate the large 20" (500mm) line from pump vibration, possible breakage, maintenance problems and cracked or broken flanges. This is the primary and most exemplary usage of Redflex® Expansion Joints.



1.5-2% Bauxite Slurry with Sand Contamination



1. Air Storage Tank
2. Pressure Gauge
3. 3-Way Solenoid Valve or 3-Way Pilot Valve (Opens When Power Fails)
4. Pressure Reducing Valve with Gauge Showing Pressure Delivered to Type A
5. Check Valve on Intake Line of Air Tank
6. Necessary Piping for Unit (3 Pieces)
7. Pressure Switch and/or 3-Way Valve Can be Furnished at Additional Cost

Red Valve Fail-Safe System