

Electraulic Actuator

for HPAL Autoclave Service

CHALLENGE

Slurry isolation valves on and around a High Pressure Acid Leach (HPAL) Autoclave endure the most critical and arduous service, and as a result, scaling often occurs. Should scaling prevent the movement of a valve, the pneumatic actuator will exhaust all of its air and result in failure to close during an emergency. In this application, a spring return (fail close) is often fitted. However, if the scaling should release, the valve will slam shut. This creates the potential for damage to the actuator and valve. Additionally, a water hammer may occur that can cause severe damage and / or potential safety issues. This can lead to unexpected and costly shutdowns.

Another concern with pneumatic actuators on autoclave discharge valves is their large size and weight. This can create limits on design configurations and piping integrity.

OPERATING CONDITIONS

Typical operating conditions for this application are 500° F / 260° C at 740 psi / 5100 kPa. To maintain the effectiveness of the process, these valves must operate repeatedly at the exact design requirements.

SOLUTION

MOGAS researched different automation products that would dependably resolve these concerns. The result was MOGAS Industries and Koso REXA working together to recommend the REXA electraulic actuator for HPAL isolation valve applications. These actuators provide enough reliable power and repeatability of high pressure hydraulics over most air operated actuators. The sophisticated electronics will also allow complex diagnostics and partial stroking, which will further enhance the operation and service life of the valve. This actuation package supports both HART and Foundation Fieldbus control system protocols.

Significant added benefits of this electraulic actuator system for HPAL applications are its fast close time, compact size, low power use and very light weight on the valve and pipework. This actuator design eliminates the need for a separate HPU servicing a cluster of actuators with the potential of a failure affecting the whole cluster. The REXA approach also eliminates the hydraulic piping and associated maintenance necessary due to hydroscopic oil becoming contaminated.