

Safe Accumulator Systems for Pressure & Return Flow

The Challenge

Industry: Heavy Machinery & Automation

Problem: The need for a fast, safe, and cost-effective solution to move a large cylinder quickly and efficiently while delivering high tonnage.

- ⚠ The cylinder required extension of 12+ inches and retraction in under one second while maintaining tonnage throughout the stroke.
- ⚠ A conventional system with a massive power unit and 150 HP motor would incur high costs in electrical consumption and require a large footprint.
- ⚠ Additional challenges included mitigating system shock, electrical amp draw, and managing extreme return tank surge flow.

"Our existing setup struggled to balance speed, power, and cost-efficiency without compromising safety."

Customer Benefit

Key benefits:

- ✓ **Optimized Efficiency:** Downsized the power unit and reduced electrical amp draw for energy and cost savings.
- ✓ **Enhanced Safety:** Achieved Cat. 3 PLd hydraulic safety rating with reliable block-and-stop mechanisms and accumulator controls.
- ✓ **Smaller Footprint:** Reduced the physical size of the power unit, freeing up valuable space.
- ✓ **Custom Engineering:** Delivered a tailored solution addressing speed, safety, and cost concerns.

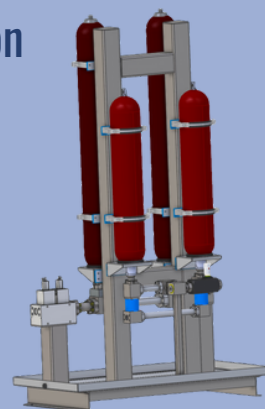
"This innovative system solved our unique challenges while meeting strict safety and performance standards."

Donald Engineering Solution

Product: Safe Accumulator System

Implementation: Designed a dual accumulator system to store energy for cylinder movement and manage return flow safely and effectively.

Key Features of the solution:



Pressure Side Accumulators:

- Energy storage during the machine's idle time allowed the use of a smaller pump, motor, and tank.
- Enabled continuous operation with reduced energy costs compared to intermittent operation of a larger system.

Return Flow Accumulator System:

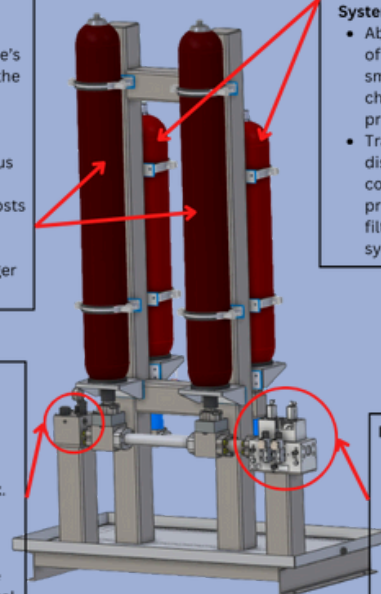
- Absorbed high surges of return line flow using smaller accumulators charged to low pressure.
- Trapped oil was discharged at a controlled pace, protecting return line filters and maintaining system stability.

Accumulator Dump Valve with Safety Features:

- Controlled energy release to avoid oil surges into the tank.
- Equipped with a pressure gauge, transducer, and manual dump valve for visual and manual energy management.

Block and Stop Safety:

- Installed a Ross Stop and Block valve to prevent unintended energy transfer downstream.
- Enhanced safety with lockout/tagout procedures and controlled accumulator dumping.



"Our accumulator system reduced power unit size, improved safety, and efficiently handled return surge flow."

Let's Solve Your Challenges!



At Donald Engineering, we design innovative, cost-effective solutions for high-demand hydraulic applications. Whether you need faster cylinder movements, safer systems, or efficient energy management, we're ready to help.

Ask Yourself:

- ❓ Could a custom accumulator system optimize your operations?
- ❓ Are you facing safety concerns with energy storage and release?

Contact us at sales@donaldengineering.com to schedule a **FREE** consultation with a Technical Sales Engineer!