



## CONSERVATION OF RESOURCES

# Optimization of Hydraulic Press Reservoir

### Technical Application Bulletin

#### PROJECT BACKGROUND

#### DISCOVER

- Fastener manufacturer.
- 12-ton hydraulic nut-staking machine with high maintenance and repair costs due to:
  - Graphite contamination.
  - Downtime caused by system component failure.
  - Replacement parts.
  - Loss production & revenue.
  - High-rate of parts rejection.



#### DIAGNOSE

- Unplanned maintenance costs: approx. \$4,500 per event, \$18,000 per year.
- Lost at least \$50,000 in product revenue due to slow cycle speed and unplanned downtime.
- Needed solution to:
  - Reduce maintenance and downtime costs.
  - Increase machine reliability and productivity.
  - Reduce number of parts rejected.

#### INDUSTRIES



#### DESIGN

**What We Did:** We demonstrated the capabilities of our OXS | OXiStop® reservoir lid system at a local technology exhibition.

The OXS utilizes elastic membrane to rest on the fluid's surface within the reservoir, completely isolating the fluid to the ambient environmental, protecting the fluid from solid particulate, air and water contamination.

Actively degasses the fluid, instead of relying on dwell time, minimizing entrained air (most hydraulic oils are capable of holding up to 10% entrained air).

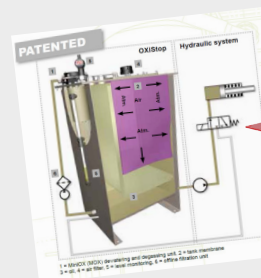
- Minimizes required fluid volume.
- Maximizes the fluid bulk modulus / minimizing compressibility.
  - Maximizes system responsiveness / maximizes system responsiveness and performance.
- Minimizes air-based contribution to oxidation and varnish.

Actively dewater the fluid, minimizing dissolved and free water.

- Maximizes life of fluid and preserves critical chemical properties.
- Minimizes water-based contribution to oxidation and varnish.

Collaborative effort with local Schroeder distributor to propose optimized, turn-key OXiStop® LID and reservoir solution tailored to the customer's machine specification.

- Estimated that the solution would:
- Increase annual production output by at least 20%.
- Minimize unplanned downtime and associated maintenance costs.





**DELIVER**

- The OXS30LID and reservoir solution were successfully implemented onto the hydraulic nut-staking press.

**Operational Revenue Analysis:**

Hydraulic Press	Without OXS	With OXS	Projected Difference
Actual Production Vol.	140 units / min.	200 units / min.	+ 60 units / min.
Consumer Price	\$0.05 / nut	\$0.05 / nut	-
Projected Total Revenue	\$2,520,000 / yr.	\$3,600,000 / yr.	+ \$1,080,000 / yr.

**Cost Savings:**

Hydraulic Press	Without OXS	With OXS	Savings
Unplanned Downtime	\$18,000 / yr.	\$0.00 / yr.	- \$17,000 / yr.



**CUSTOMER BENEFITS**

- Maximize of product output
- Extend machine and fluid life
- Conserves floor space with a smaller reservoir footprint
- Minimize rejected product
- Minimize unplanned downtime and associated maintenance costs

**FURTHER APPLICATION AREAS**

- Test benches
- Pulp and paper machines
- Power generation plants

**ROI**

**Projected Revenue Increase After 1 Year**



**Increased Production Output**



**Underlying values:**

Projected gross revenue increase after 1 year = \$3.60M (w/ OXS) - \$2.52M (w/o OXS) = \$1.08M

Increased Production Output 200 units produced per min. (w/ OXS); 140 units produced per min. (w/o OXS) = +42.9%

**PRODUCT SPECS**

**OXS | OXiStop® LID Series**

- Degassing Flow:** up to 2.3 gph
- Max. Fluid Flow:** 238 gpm
- Fluid Temp.:** 50°F to 175°F
- Viscosity:** up to 1500 SUS
- Contamination Retention:** 36 psi
- Operating Pressure:** 145 psi
- Compatibility:** All mineral-based hydraulic fluid
- Lifetime, Membrane:** 2-6 years