Customizable Tank Solution

Description

A fuel tank is a box, a hydraulic tank solution from Schroeder Industries is a complete internal filtration system with several important functions.

Our hydraulic tank packages are customizable filtration and deaeration solutions, designed uniquely-based on your machine's individual needs. Whether it be a metal fabricated or plastic roto molded tank, we optimize return lines, tank designs and suction areas to:

- Dissipate heat
- Deaerate the fluid
- Provide convenient control over the settling of components

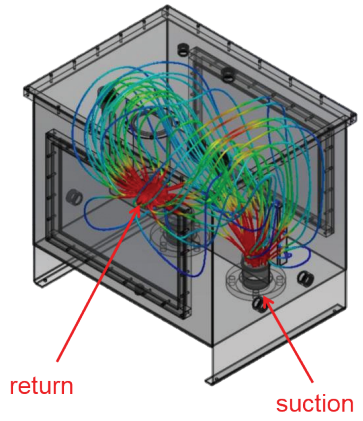
And by offering customizable hydraulic tank solutions, we are able to look at every detail that goes into the creation of the tank, above the traditional approach when designing just a standard model.

Our methods and procedures allow us to look further in depth at how the available space can best fit a tank, tank pressure contours, flow path, rate of flow, material types, system volume, and various other design approaches to better ensure a high quality product is designed for your unique machinery.

By taking a new approach per every tank order we receive, we are able to design a tank solution that optimizes static pressures, cyclic pressures, random vibrations, cooling and other faults that may be missed when not customizing a tank solution.

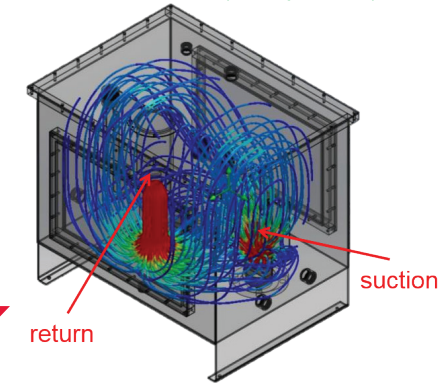
Baseline

Air Residence Time- 5.75 sec



Optimized

Reduced Fluid Velocity
Air Residence Time- 15.25 sec (63% improvement)



Tank Optimization

Optimizing Return Line	Optimizing Tank Design	Optimizing Suction Area
Filter add-ons to reduce velocity	Space-saving complete tank systems	Selection of the suction filter
Selection of return line filters	In-tank devices to reduce velocity	Selection of the suction line connections
Leak tightness of the return line filters or return line chamber	Separated suction and return line areas	Leak-tightness of the suction filter and suction connection
	Pressurized tank for pump charging	Avoiding high suction under pressure
		Avoiding cavitation

Benefits

- Increased thermal conductivity
- Lower oil temperatures
- Less oil deterioration
- Increased oil lubricity
- Minimized cavitation damage
- Lower noise levels
- Increased bulk modulus (decreased compressibility)

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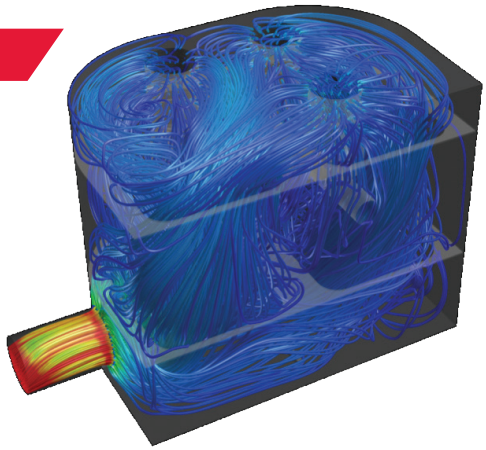
Tank Optimization - Simulation



By offering simulation based testing, we are able to truly design a hydraulic tank solution to best fit any available space you are looking to install.

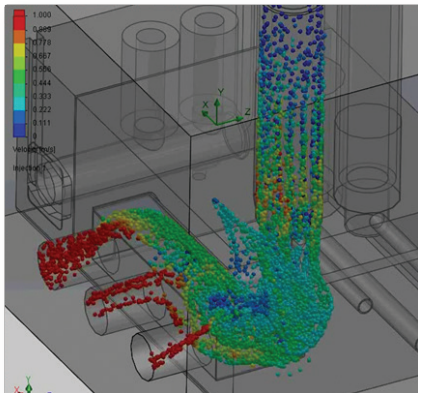
With simulation testing, the data correlates the simulation and experimental results, which shows real world improvements. The simulation then allows for better visualization of reservoir flow and fast interactive design.
Our simulations include:

- FEA - Structural Analysis
- CFD One Phase
- Flow Path, Dwell Time, Heat Transfer

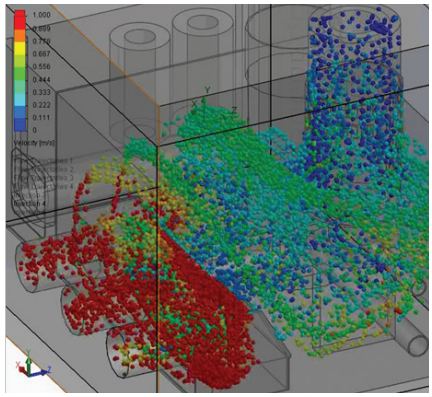
Fluid Optimization: De-Aeration

Initial Approach: Study of flow trajectories and residence time using CFD One Phase:

Baseline

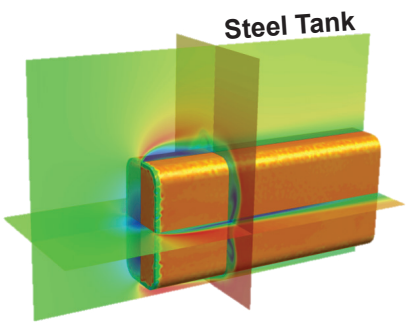


Optimized

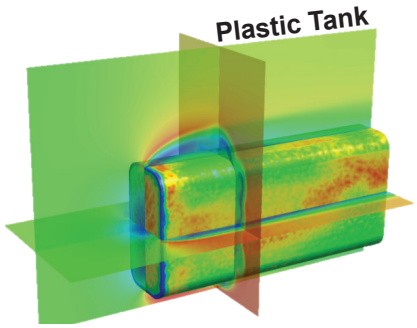


Heat Transfer Optimization

Our tank designs can be optimized for cooling, ensuring your hydraulic oil temperature does not exceed standard operating temperatures.



$Q_{STEEL} \approx 5000$ W



$Q_{PLASTIC} \approx 3000$ W

Application Success

Schroeder Industries provided a tank package solution for a customer looking to rid their current tank of weld slag migration. The revised clean tank also resolved any warranty issues in the field. **Full reference (L-4381).**