

Case Study | Bulk Purchasing and Supporting Systems

Facility Background

Salem Boys Auto is a 15,000-square-foot facility located at 1025 W. Warner Road, Tempe, Arizona, that generally has 15 to 20 active employees and performs 15 to 30 vehicle maintenance services a day. It is a family-owned business that has been in operation since 1979. Salem Boys Auto has a long history of practicing pollution prevention (P2) that started with a desire to protect the environment and workers. They continuously improve their efforts to reduce waste generated at their facility. As a result, P2 is completely integrated into their work environment from the shop to the office.



P2 Determination

A problem identified at this facility was a reliance on small form packages of oil and other automotive fluids to complete services. Staff were unpacking and pouring oil quart by quart. Packaging, pouring, and disposing of empty bottles resulted in material and time waste, which in turn posed a heightened threat for accidents to occur. A determination was made by Salem Boys Auto to install bulk oil tanks for the most commonly serviced oils at their location. Many considerations were made, including which types of oil to store, how to refill the tanks, and any other systems needed to support bulk oil tanks. The most significant consideration was the length of time it would take to complete the installation and then have staff become familiar with the new process.



Figure 1: 275-gallon tanks

P2 Activity

As part of this P2 activity completed in 1994, it was necessary to stock the most commonly used oils in bulk and consider purchasing options. The facility primarily used 5W-30 and 5W-20 semi-synthetic oil, and two 350-gallon tanks were installed to accommodate this need. However, in 2016, these tanks were replaced for five 275-gallon tanks and a 275-gallon tote for diesel exhaust fluid. The new tanks (Figure 1) were specifically created to meet the space constraints found at the facility. Other automotive fluids, such as coolant and brake cleaner,

are purchased in bulk and utilize 55-gallon drums. However, the tanks and drums alone are not enough for the effective utilization. A facility needs to have the necessary equipment, systems and processes in place to make the most out of the bulk tanks.



Figure 2: Reusable sprayer

Inventory control is the first crucial component of implementing bulk fluid tanks and drums. Deliveries of oil, coolant and cleaner need to be scheduled in advance to ensure that there is ample supply to complete services for the week. Salem Boys Auto parts department monitors usage and makes just-in-time purchases for bulk fluids. All fluids at their facility are accounted for through the parts department.

The next component of success is having the right equipment in place. Reusable sprayers (Figure 2) are used for the bulk brake cleaner fluid, which eliminates the demand for aerosol cans. Additionally, overhead reels (Figure 3) allow easy access to oils right to the station necessary in the shop. The use of overhead reels has significantly reduced accidents since technicians no longer have to move around the facility with oil in smaller containers. The overhead reel nozzles fit into the fill hole itself, so

there is minimal chance to spill from filling. Any other oil that is needed is moved through the facility with reusable jugs to get an accurate oil weight.

The final component was training and staff support. Due to Salem Boys Auto's history of sustainable culture being present at their facility, the transition was smooth. Staff were trained on the use of the equipment and processes in place. The owners, managers, and staff were also in communication early about the changes to be implemented. The actual installation of the tanks was seamless, with staff working on the weekend to avoid delays during normal business hours.

The implementation of this activity did not come without challenges. The selection of oils to be used in the bulk tanks and overhead reels required a careful and meticulous approach due to the diverse range of oils used in auto repair and maintenance. Other oils are stocked and purchased in bulk at a smaller size that is appropriate for the facility. The size of other oil containers may range from a six-gallon pit pack to a 55-gallon drum depending on the frequency of use. In addition, careful communication between the oil vendor and the facility was made so that deliveries are timely and do not need staff from the shop to be completed. Installation of the 275-gallon tanks took about two weeks, which required staff to work on weekends. However, the planning and building of the tanks took about eight months to complete.

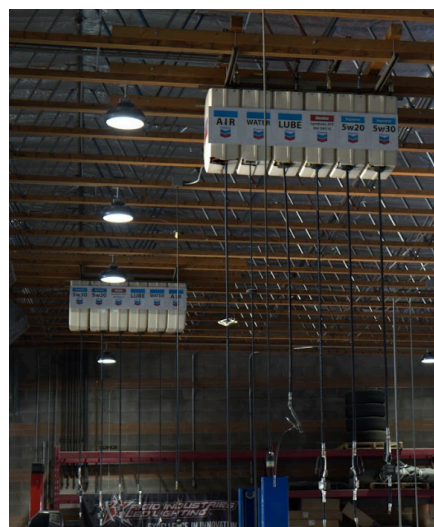


Figure 3: Overhead reels

Results

The total cost of the oil tanks, diesel exhaust fluid tote and three overhead reels was about \$15,000. The yearly savings based on usage of fluids at Salem Boys Auto is around \$11,600, based on the following:



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Fluid	Comparison	Usage (gal)	Bulk Price (\$/gal)	Conventional (\$/gal)
Engine Oil (5w20)	Refilling bulk tanks versus drums of oil	3600	\$13.64	\$15.20
Coolant	Drums of coolant vs. gallon jugs	2100	\$12.71	\$13.51
Brake Cleaner	Drum of brake cleaner vs. aerosol cans	330	\$9.62	\$22.87

Tanks and equipment were bought independent of oil vendors, although there may be an option for other facilities to work with vendors and reduce cost with use of a specific oil. The oil tanks installed with overhead reels had a significant impact on the amount of solid waste being generated at the site and spills from pouring. The estimated solid waste reduction on bulk coolant purchasing is around 2,100 one-gallon bottles. 14,400 quart bottles of oil are eliminated each year. The replacement tanks are completely reusable, and the oil wastes that can occur are now restricted to leaks or spills associated with tank filling or overhead reels.

The bulk purchasing of brake cleaner resulted in the reduction of between 1,400 and 2,000 cans of aerosol cleaner used each year. This is a substantial reduction in the amount of hazardous waste generated and managed. If aerosol cans are not punctured, the whole can and residuals within are treated as a universal waste, which is a significant amount of weight. Due to the reusable sprayers and bulk fluids, the aerosol can and residue waste stream is eliminated.

These changes in purchasing and equipment significantly reduce the amount of solid and hazardous waste being generated. It also works to prevent workplace accidents that release harmful fluids that can contaminate soil and groundwater.