

If You Don't Have Time to Do it Right, How Will You Find Time to Do it Over?

In the business world today—and it doesn't matter what your business is—some equipment operators, maintenance personnel, and factory workforce still cut corners and work hard at doing as little as possible. It doesn't matter the size of the company; inevitably there is equipment that suffers from a lack of maintenance and customers that suffer from a lack of service. After spending over 25 years in the industrial filtration market, this issue was particularly apparent to me. I don't mean to step on toes, but I don't see this being addressed. Why not? Is it taboo? Too sensitive? Regardless, it needs to be dealt with. This is an issue that can cause companies thousands of dollars if left unattended.

Equipment operators, maintenance, and factory workforce can be some of the most valuable employees a company has. They shouldn't be on the job merely collecting a paycheck—granted, that paycheck should be respectable given the work they do and its importance to the company. But the context is important. The amount of time they spend attending to emergencies or critical repairs can be reduced or even eliminated if the job is done correctly in the first place and proper preventive maintenance is adhered to.

First of all, let's consider hydraulic fluid. Hydraulic fluid has four functions: to lubricate internal moving parts, to act as a coolant, to seal clearances between close-fitting moving parts, and—perhaps most importantly—to transmit power. Therefore, hydraulic fluid plays an important role in the manufacture of parts. To be appropriately effective, the hydraulic fluid must be kept clean. This involves a delicate balance between how clean the fluid can be and how dirty it can get before it fails to do the job effectively. Components like pumps, cylinders, valves, etc., are manufactured to take a beating—some more than others—so it is extremely important to know the specs of each hydraulic system and components in the facility.

New hydraulic fluid is never completely clean. Even from the supplier, there are potential problems with the purity of the fluid. New fluid should never be introduced into a system without first being run through a portable transfer unit. This could be a portable filter cart, a permanently installed unit, or some other off-line, kidney loop system. Using this practice will greatly improve system efficiency and cleanliness as opposed to doing nothing. There are no shortcuts to proper equipment maintenance. When I was out in the field, maintenance personnel would tell me they don't have time

MRO MAINTENANCE
 REPAIR PLUMBING
 OPERATIONS OVERHAUL ORGANIZATION
 SCHEDULED SERVICE DEVICE
 MECHANICAL ACTIONS ELECTRICAL PREVENTIVE FUNCTION EQUIPMENT SUPPLY
 CORRECTIVE

to “babysit” the equipment. I would always respond, “If you don’t have time to do it right, how will you find the time to do it over?” The investment is not theirs; they are merely custodians of the interests of others.

If it’s important to attend to new fluid being introduced into the system, it’s even more important to clean and maintain the fluid already in use. This can take time—but remember: equipment with expensive components involved in the manufacture of parts is constantly working; contamination build-up is occurring through ingress at the very least. What would be best practices for portable oil transfer systems? How long would it take to completely clean and refresh the system? Using off-line filtration, the fluid will need to pass through the system approximately seven times to achieve maximum filtration efficiency. Use the following formula to calculate the amount of time needed to achieve single pass filtration:

Reservoir Size (Gallons) x 7 / Flow Rate (GPM) = Time (Minutes)

For example, if you have a 50-gallon reservoir and the flow rate of the pump is 10 gpm, it will take approximately 35 minutes to achieve single pass filtration efficiency. Times will vary depending on initial cleanliness of oil, system ingress, choice of media grades, and other variables. Knowing that tells me the time spent on introducing and using “clean” oil is worth so much more than ignoring what could possibly go wrong and shut the system down because of contamination failure.

Determining the level of filtration to use on the portable filtration unit is another factor. Usually, the finest filtration is in the pressure line, between the pump and the actuation. When it comes to the portable filtration unit it isn’t necessary to filter down to a lower level of filtration than what is in the pressure line. However, I would recommend filtering off-line with two levels of filters. For example, if the pressure line has a 5 micron filter, the off-line filtration should have a 5 micron filter as the final filter with the first filter in the series a 20-25 micron filter. That way, the 5 micron filter isn’t doing the extra work of filtering out all the contamination larger than 5 microns. This is a cost-effective measure. Moreover, if the environment is humid, there is a chance of moisture creeping into the system. With water being the second most destructive contaminant, consider placing a third water removal filter at the end of the series. Using this example, we would have a 20-25, 5, and 3 micron water removal series—3 filters in series. This would be most effective at

keeping the system in prime condition and most efficient. There’s no point trying to save money on maintenance when downtime from contamination would be much more expensive in the long run. Up to 90% of all downtime is caused by contamination; if equipment isn’t running, you’re not making money.

If you have a system that requires use of a specific ISO Code hydraulic oil, then without question, there should be a particle counter mounted in the system to monitor that. Some portable filtration units can be expensive. Price ranges can generally be anywhere from \$2,000 to over \$6,000, possibly higher. For small shops, the cost might be too high to purchase one of these units, but there’s hope: it’s possible to rent these, along with a small supply of filters. Check with a local distributor.

The question always comes up and is asked, “How often should we do this type of filtering?” That depends on several factors:

1. What are the locations of other filters in the system?
2. What micron level are they?
3. When was the last time any of them were serviced or replaced?
4. How often does the hydraulic system operate (continuous, intermittent, infrequent)?
5. Is the system indoors or outdoors?

The hydraulic oil in any system should be serviced with an off-line filtration unit no less than twice a year. This may seem excessive, but remember: If you don’t have time to do it right, you’ll never have the time to do it over. I have visited factories that adhere to this philosophy, and they look like the industrial equivalent of a Better Homes and Gardens spread. Everything is in order. I have also visited factories that do not adhere to this philosophy, and they make me wonder if I should be wearing a HAZMAT suit before I go in. They’re more like an episode of Hoarders. I recommend servicing all components in an operating system the best that they can be serviced. Keeping machinery running smoothly is top priority. You will feel better about your job. It will be more rewarding. You will have a more positive attitude. Your employer will also feel better knowing they have personnel taking the best care of their equipment and machinery because they had time and resources to do it right—which is much better than having to do it over.