
Recycle
Refuse
Reduce
Reuse
Reform
5R

Turn Your Waste oil into Savings because

We bring oil back to LIFE

USP *UltraCare* can reclaim almost any industrial "waste oil" and bring it back to like-new condition. This purification and refurbishment can be done if the oil is collected without coming into contact with non-compatible oils.

Oils we can purify

- Hydraulic oils
- Gear oils
- Quench oils
- Heat-treating oils
- Heat-transfer oils
- Way lubricants
- Stamping oils
- Drawing oils
- Process oils
- Cutting oils (straight oil, not water soluble)
- Phosphate ester fire resistant fluids
- Polyol ester fire resistant fluids
- Poly-glycol fire resistant fluids
- Water-glycol fire resistant fluids

WHAT OILS CANNOT BE PURIFIED?

Engine oils, crankcase oils and other automotive products cannot be reclaimed. A "re-refining" process is best suited to treating these products.

At present, we do not reclaim soluble oils or cutting and grinding solutions — but we are currently investigating potential methods for doing this.

Why Purify?

- Save thousands on your original investment of oil/lubricants
- Reduce your new oil purchases.
- Reduce your used oil disposal costs
- Cut down on operational downtime
- It's an environmental-friendly option
- Projecting to your stakeholders about reducing carbon foot print initiative promoted by your organization.

205, Samruddhi Building, Opp. Sakar III, Nr. Income-Tax Circle, Ahmedabad-380014.
Phone: 079-30080035, 31, 32 Mob: +91 9727707997, 9824393547 E-mail: info@usplubes.in
www.usplubes.in

What Is Oil Purification?

Operating machinery becomes contaminated with fine dirt, wear particles and broken-down additives, as well as moisture and atmospheric dust. Leaking oil coolers can add significant amounts of water. Once contaminated with water or very fine dirt, the filters installed on most equipment cannot deal with either, and allow the contaminants to re-circulate in the machines, causing further damage. Few OEM machine filter systems are able to remove the very small particles generated during this "degradation process."

Good preventive maintenance requires that oil samples be taken periodically, and that oil quality be maintained to ISO cleanliness specifications.

The basic purification process at **USP** *UltraCare* consists of drying a batch of industrial oil (i.e. removing water to very low levels) and filtering it through extremely fine filters to remove dirt and other contaminants. The oil is then analyzed, any missing additives are replaced. Also cleaned oil is fortified with an advanced additive package for performance equivalent to new oil.

While the process might sound simple, in practice, there are many complications, and we have developed a number of techniques that enable us to clean and dry very dirty oils economically and efficiently.

Our oil dehydration system is specially designed for faster removal of water. Our filters are custom-built to our own demanding specifications, and provide close to absolute-one-micron filtration at high flow-rates.

We follow the best way to treat oils while maintaining the original additives at high levels. As the additives are the most expensive components in any oil.

How Oil Degrades

When exposed to normal conditions in a plant, any oil will start to pick up moisture as soon as it comes in contact with the air. Oil is very hygroscopic (meaning it picks up moisture easily). Moisture levels in oil will normally increase to a maximum of about 300ppm and then stabilize. These levels are normal, and will cause no damage.

If oil is used in a total loss application — such as a drip-feed — pick-up of moisture and dirt is not a factor, as the oil is used once then discarded. **(Drip-feed "waste oil" is an ideal candidate for our purification service).**

PARTICLES

Most oils are used in enclosed reservoirs, however, where they re-circulate through the operating system. As the oil re-circulates, it lubricates, cools and flushes away debris from normal wear particles. This debris, depending on the size of the particles, may settle in the oil reservoir, be removed by the filters, or simply be re-circulated, if it is too small to be removed.

These re-circulated particles cause damage through abrasive wear each time they circulate through the operating system. Research conducted over the past few years demonstrates that particles as small as 5 microns, when present in large quantities, will cause severe pump and valve wear by acting as a lapping compound (it is an abrasive compound that is placed between two surfaces. the surfaces are ground together and the compound will polish each surface).

DIRT

Generally the factory area ambience is full of fine dust particles and other contaminants. A lot of dirt is introduced into the oil reservoir through the air. Very few

oil reservoirs have efficient air filters. Dirt particles light enough to float in the air are drawn into the reservoir every time the oil level in the tank goes down. When this happens, some of the dust particles settle out into the oil.

Oil reservoirs with levels that change frequently can pump many times their volume of air every hour. This exposes the oil in the tank to potentially very large amounts of dirt. This is how new oil delivered from most oil companies becomes contaminated with dirt.

ADDITIVES

The additives present in most oils contain chemicals that work to extend the life of the oil. These consist mainly of antioxidants, rust preventives, anti-foam agents, de-emulsifiers, detergents, VI improvers, etc.

Water, oxygen and heat will individually or combined, cause damage to both the base oil and the additive system. Water will react with many oil additives and hydrolyze them. These reaction products may or may not be oil-soluble — and they may act as catalysts for the further decomposition of the oil or additives.

Oxygen will react with the additives and the oil to form oxidation by-products. These by-products will generally be acidic in nature at first, and may act as catalysts for further oxidation.

ANTIOXIDANTS

Antioxidants protect against oxidation only if they are present in sufficient quantities. When an antioxidant falls below a certain level it will become less effective. As it is further reduced, it will become completely ineffective.

Antioxidants are used up slowly under normal conditions. They protect by being consumed as they react with and neutralize oxidation products. Both heat and moisture will accelerate consumption of an antioxidant.

As and when the additive quantity falls below critical level (which is different for each oil), the rate of oxidation will increase. Oxidation byproducts will catalyze more oxidation — meaning that the more byproducts are present, the faster oxidation will occur.

Eventually, the level of oxidation will reach a point where the lubricant must be removed and replaced with new oil. Purification is not recommended at this stage.

How We Purify

The explanation above demonstrates what happens if oil is restored properly at regular intervals. Purification is not an effective solution once oil has severely degraded — but done properly on a preventive maintenance schedule, purification offers remarkable benefits.

As additive levels gradually drop due to consumption, a very small amount of oxidation will take place. But rather than allowing the oil to degrade to a point where it becomes unusable, it can be purified and refurbished so that **the additives can be restored to their original levels.**

The fresh additives begin the next "life cycle" of the oil, and the same scenario can take place again and again and again: a very small amount of oxidation occurs, the oil is purified and refurbished, and the additives are restored.

The net effect is that oxidation is controlled at very low levels, water and contaminants never build up to troublesome levels, and **oil life can be extended continuously.**

USP Associates senior partners who are personally involved in this project, we would like to assist & bring your cost structure meet the annual target cost reduction in lubricant consumption. Address your lubricant related hurdles up front to us on contact details below.

Mr Ujjval Patel Mobile: 9824393547

Partner: Business Development & New Initiatives

USP Associates