

Re-refining of Base Oils

Go for it!

Re-refining of used base oils was conceptualised nearly 30 years ago as an ambitious, new project wherein used motor oil could be put to a better use than simply dumping it in the nearest landfill and invariably polluting the immediate environment. The idea was to subject the used oil to a series of treatments and refining techniques known then, try and take out as many impurities as possible, and, end up with a product that has some semblance of the lubricant it once was.

Looking at all these re-refineries across the globe today, to say that the idea worked well would be, undisputedly, the biggest understatement in the volatile history of base oils!

What started as a cautious, small scale greening project, with little expectation of monetary returns, is today a billion dollar industry, comfortably affecting lubricant demand-supply dynamics everywhere. Driven by the pressing need for sustainable development, depleting natural resources, spiking crude prices, increasing Government regulations regarding environment protection, and some smart planning and investments, the oil re-refining concept has taken the world by storm well and truly.

This article takes a high level overview of the various trends related to oil re-refining, why and how investing in refineries is a wise option with both strategic and financial benefits, and what the future holds for this rising industry.

Introduction – what is all this about anyway?

A lubricant is basically anything that reduces friction between two substances. It should not be difficult to imagine, the plethora of applications lubricants find themselves in today, and the sheer diversity and the number of industries in which they are used in. The global lubricants demand per year is nearly 40 million metric tons, and increasing. Growth rates for the next few years have been estimated at anywhere between 5% and 10%, driven

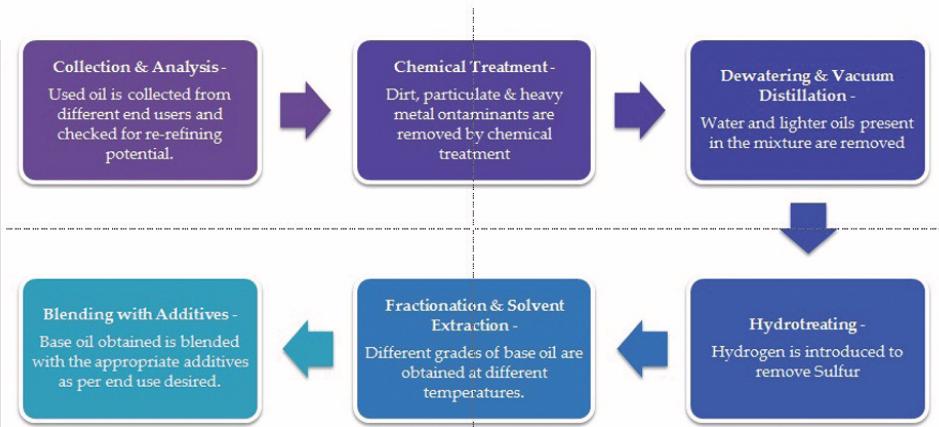


Fig 1.1. The Re-refining Process

by appreciable growth in automobiles, construction and heavy machinery industries. And considering that a typical industrial/automotive lubricant consists of about 90% base oil and less than 10% additives (specific to the intended end use), one can get an idea of the importance of base oils in today's world.

The only problem is, base oils are typically mineral based – they're derived from crude oil. And we all know that they are not going to last forever.

What brings us to the concept of re-refining?

Re-refining is the process in which the lubricant, after it has been used completely and to its full worth, is, instead of being discarded, collected back in a facility where it is treated and refined to remove all the contaminants, so that a usable, substantial amount of parent base oil is recovered. This can now again be blended back into the lubricant, and sold.

Used oil re-refining is a multi-step process, and different refiners adopt different routes, specifications and technicalities in their processes. By and large, however, one can summarise the whole re-refining activity in 6 steps as shown in Fig. 1.1.

While this is not exactly a recent innovation, the fact remains that over 80-90% of the world base oil demand is still being met only by your conventional crude oil refining processes. To be more precise, world consumption of base oil today is nearly 40 billion litres a year, out of which only around 70% is reclaimed, the rest lost to evaporation and spills.

Now, out of this total volume of reclaimed used oil, nearly 80% is burned for fuel, leaving a small 20% available for re-refining and reuse. This works out to about 14%, or 5.6 billion litres of oil for re-refining across the globe, by no means a small number by itself, but still way below what can be achieved.

World Used Disposal 2011

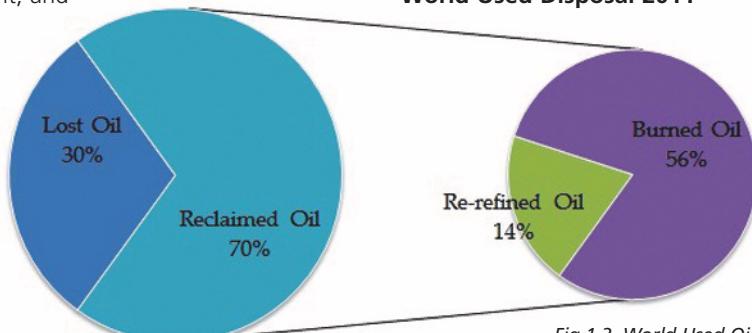


Fig 1.2. World Used Oil Disposal