# *Distillation Process Proposal*

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# Summary

With the rise of environmental protection awareness, the concept of 3RS (Reduce, reuse, and recycle) has been promoted actively all over the world. People then started to realize the importance of the idea of energy recycling and reusing in their daily lives. This proposal presents the process of waste oil regeneration plant using distillation technology to produce base oil and diesel products.


# Introduction

In the past few years, used oil obtained no attention when the oil price was low. There was no any proper treatment for used oil. From the earliest to the present, used oil is either recycled or improperly dumped onto the ground or into rivers and lakes. In fact, these ways of disposing used oil not only harm the environment but also wastes recyclable energy.

Countries like China and Brazil are having economic boom in decade. The used amount of oil has reached to the critical peak that it never has. Many economists called on people to warn the arrival of high oil prices, because of lack of oil.

Recently the political issues occurred in Middle East and Africa strongly impacts the oil prices. Consequently, a steep rise in the price of oil is predictable. Many experts are announcing the oil prices will soon exceed USD 200 per barrel, which will be a disaster on human economy. On the other hand, this is also an era of redistribution of wealth. People with insight are still capable to get prepared ahead and reap profits from the shortage of oil and high oil prices.

From the changes of oil prices in recent years, it clearly reveals that it is not possible the oil price could drop back to where it was. Plus, the more recourse we use the less it will be, which eventually people will need to pay a lot more for those resources in the future. As the result, resources recycling and reusing are becoming an imperative solution to this circumstance.

# Used Oil Industry

Because lubricating oils must be replaced on a regular basis in vehicles and machinery, how to recycle that large amount of used oil is becoming a significant challenge.

In fact, many European governments eagerly encourage oil manufacturers combining a certain proportion of recycled used oil with pure lubricating oil to produce their products. Some of the manufacturers even raise the proportion to 20% to 40% to lower their costs.

Technologies that allow used oils to be upgraded to valuable products might be able to fill this demand. With appropriate refining methods, recycling used oils not only creates no further pollution issue, but also brings good economic returns.

# Oil Refining Technologies

Historically, most of processes selected for treating used oil are clay-filtering process, because this process requires low cost for setting up plants and also no sophisticated requirement. However, this process is not good at extracting impurities effectively, the most important issue is the massive clay sludge produced from this process required proper management and treatment for disposal. Consequently, the high cost for handling clay sludge is making this method unbeneficial.

# Distillation Process

The used oil industry needs an effective treatment technology to refine used oil to a better quality and usable oils. This distillation process presented in this proposal is able to fill this demand by producing large amount of fine base oil and diesel constantly from used oil without any pollutant emission. Table 1 presents differences between these clay filtering processes and distillation process.

| | Oil Color | Quality | Products |
|---|---|---|---|
| Distillation process | Clean and Bright, 1~2 in color scale | The oil quality is clean without impurities | Base oil, diesel, and water. |
| Clay filtering process | Close to yellow or brown | Still contains impurities that are indivisible to the naked eye, which severely effects the quality | Base oil, diesel, heavy oil, water, clay sludge |

Although this process asks for more complicated equipments compared to clay-filtering process, the high capacity of the plants and producing better quality base oil

are two strong advantages that clay-filtering process could not compete. In addition, THRIVING TECHNOLOGY CO., LTD has dedicated years of efforts and resources in developing the specialized cutting edge technology and catalyst to properly separate every component in used oil. The final product base oil presents a bright and clean condition itself without adding any addictive.
The catalyst is not only being used for the reason of hasting attribute, but also for the oil bleaching and deodorizing functions.

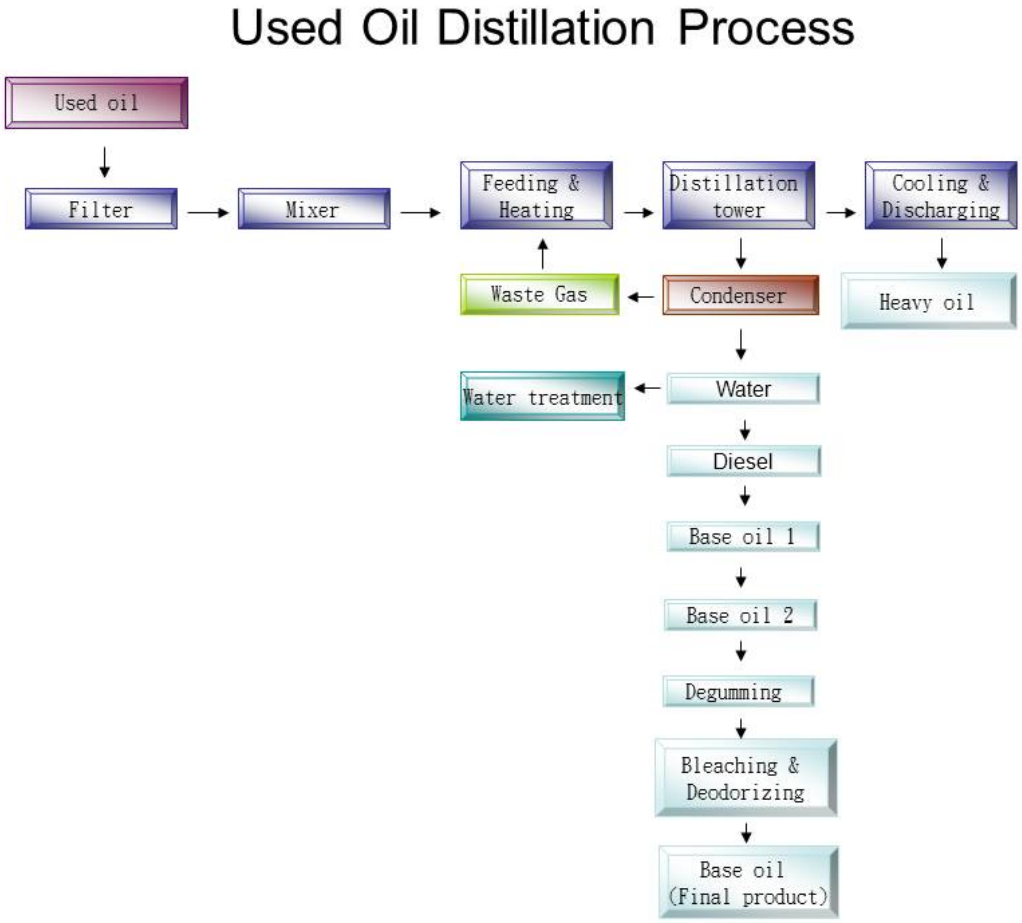


Figure. 1 above presents a simplified flow process diagram. First used oil is fed into tank and blended with catalyst then be transported to heater and distillation tower. In the distillation tower, used oil starts to be turned into different types of oil in vapor and eventually be separated to different tanks for different kinds of prodcut.

# Product

This distillation treatment technology is capable of producing valuable oil products like base oil, diesel, heavy oil, and water from used oil without releasing additional contaminants within the process. Figure 2 presents the sample of our base oil. Figure 3 presents the yield of all products from distillation process.


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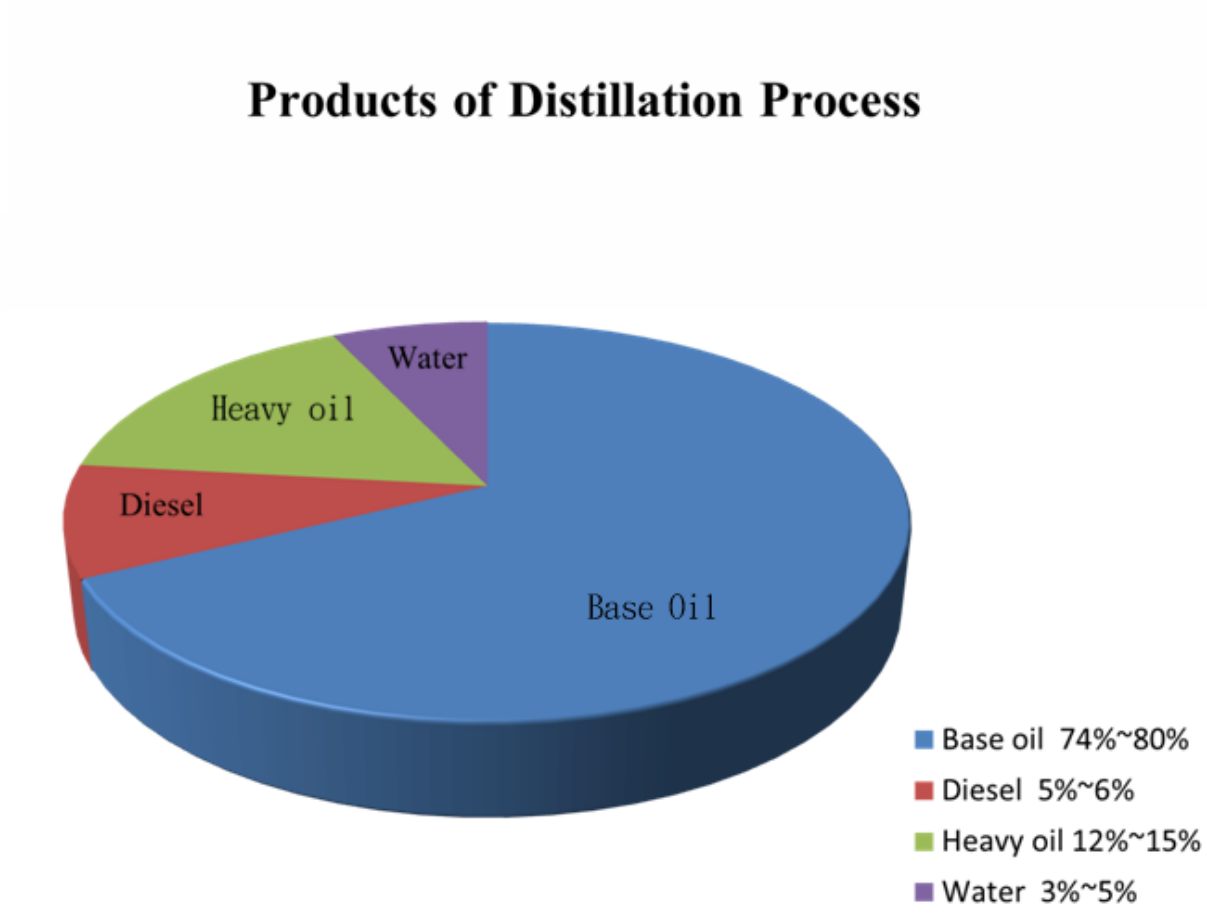
Products of Distillation Process
Water
Heavy oil
Diesel
Base Oil
Base oil 74%~80%
Diesel 5%~6%
Heavy oil 12%~15%
Water 3%~5%