

# TECHNO-ECONOMIC EVALUATION OF WASTE LUBE OIL RE-REFINING IN SAUDI ARABIA

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## INTRODUCTION

About 80 million gallons of automotive lubricating oils are sold in Saudi Arabia. Much of this oil, after use, is actually contributing to the increased pollution of land because of indiscriminate dumping. Any scheme of secondary use of the waste lube oils would be of interest both for conservation of energy resources and for protection of environment. This paper discusses the secondary use for the used automotive lubricating oils. Process technology of Meinken, Mohawk and KTI were selected for the techno-economic feasibility study for re-refining used oil. Profitability analysis of each process is worked out and the results are compared.

In many countries the re-refining of the used oils has become an important industry. The objective of recovering high quality raffinates is attained through the use of widely differing techniques.

The processes concerned can be classified according to the chemical or physical method of used-oil pretreatment selected. Meinken process is based on chemical pretreatment whereas, both Mohawk and KTI processes employ physical methods involving distillation and eliminates the use of sulfuric acid thus providing a facility for safer operation than Meinken.

The plant capacity of two existing units in Jeddah are 10,000 TPA and 80,000 TPA re-refining of waste oil. We selected a plant of 50,000 TPA waste oil re-refining for economic study of these three processes.

Both Mohawk and KTI have been running full range plants in different parts of the world and appear to be efficient and viable. Meinken have successfully implemented more than 60 used oil re-refining plants world wide including Kuwait Lube Oil Company, Iran Motor Oil Company, Saudi Lube Oil Company Limited, Jeddah, and Lube Oil Co. Ltd., Jeddah.