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MODELLING OF CRUDE OIL IMPORT SCHEDULE IN ORDER TO MINIMIZE REFINERY LOSSES

By

A.S.PREMAKANTHI

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Supervisor

.....

Dr. A.D.U.S. Amarasinghe

Senior Lecturer
Department of Chemical and Process Engineering
University of Moratuwa.
February 2009

Co-Supervisor

UOM Verified Signature

Eng. E.A.S. Edirisinghe
Chartered Engineer

Acting Operation Manager
C.P.C Oil Refinery
Sapugaskanda - Kelaniya

ABSTRACT

In a refinery the choice of a suitable crude oil slate is probably one of the most difficult problem that refiners have to resolve. The process of making the best choice includes the whole series of successive decisions to purchase different crud oils that refinery will process and globally which will generate the best economic results.

There are mainly three types of crude oil which are being imported to the country. They are Iranian light (from Iran), Arabian light (from Saudi Arabia) and Miri light (from Malaysia). Two types of crude were considered in this study for estimation of the product key properties and the refinery margin (Economical evaluation). Estimation of the yield and key properties were done using standard data and actual data used in the Refinery. Also the standard assay data from crude assay books were used.

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This study was carried out in two types of analysis first an economic evaluation which was done by comparing value of selected crude mixes against the value of the products and Crude. Average product prices were obtained from daily Platt's Singapore price data available in the refinery and Crude prices were actual. Crude mix having Iranian Light crude oil and Miri Light crude in different wt % were analyzed. The study showed that with the increase of Miri Light crude, net profit or the margin decreases. As the second part of the study, the evaluation of the properties of the products which were obtained from same crude mixes were

analyzed and checked for the standard specifications. However with this study, it was found out that some specifications are going off while increasing the Miri crude percentage over 27 percent.

The study carried out indicated that it would be able to produce required quality products by blending Miri light crude up to 27 percent in the mixture meeting the required specifications but never profitable. It was concluded that Miri crude oil should not be processed in the refinery due to high price and also limiting the specification at certain percentage. Finally the methodology was developed to a model which can be used to evaluate any crude oil for properties and profit provided the assay data given. The evaluation model should be developed to a Linear Programming model (LP Model) or simulation module for evaluating crude oil as in world Refineries.

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