How to meet shortage of motor gasoline in Iran

For Presentation to 1st Iran Oil Refinery Forum, 17-18 Feb, 2007
By H.A. Hajarizadeh and A. Mahboub.

Abstract

The paper titled "How to Meet Shortage of Motor Gasoline in Iran" describes the type of fuels commonly used in road vehicles worldwide. These fuels include: liquefied petroleum gas (LPG), motor gasoline (MG), gas oil/diesel (GO) and also compressed natural gas (CNG).

Part of this paper covers history and background of the refining schemes and need of petroleum products in Iran. Another section of the paper will discuss the current consumption and projection of growth for demand of the vehicle fuels in Iran consistent with vehicle population, varieties and fuel efficiency and energy management.

The paper also deals with potential supply of the different types of vehicle fuels namely: LPG, MG, GO and CNG in Iran. Costs of production of these fuels, compliant with the international specifications and standards, and also the related costs to transport them to the filling stations are estimated.

Based on the above findings, costs to utilize the four vehicle fuels (LPG, MG, GO and CNG) in Iran vis-à-vis benefits to be generated by exporting them will be compared and thus the priorities will be determined.

In conclusion the paper renders a rough illustration of the projects to be planned and implemented to meet the demand of vehicle fuels in Iran in the foreseeable future.

1. Introduction

Motor gasoline, once an extra and inferior commodity in the spectrum of the refined petroleum products in Iran, nowadays plays a key role in consumption of the motor vehicles.

Unprecedented growth and limited supply of motor gasoline in Iran has resulted in import in excess of 30 million liters of this petroleum refined product per day.

Four hydrocarbon derived products in oil and gas refineries are being utilized extensively as vehicle fuels world-wide. These vehicle fuels are: motor gasoline (MG), diesel or gas oil (GO), liquefied petroleum gas (LPG) and compressed natural gas (CNG). All these four basic hydrocarbon products utilized as vehicle fuels are abundantly available in Iran and at the same time, they are replaceable by each other. Moreover, the fact is that the production costs of MG, GO, L.P.G. and CNG are not the same and more importantly the national income generated wherefrom, if exported, are significantly different.

The ensuing studies cover the subjects related to: potential resources, production costs and projected consumption of vehicle fuels in Iran, and based on a preliminary techno/economic evaluation, recommendations are made for an optimized alternative to ameliorate the prevailing shortage of motor gasoline and meet, as a whole, the foreseeable demand of the vehicle fuels in Iran.

2. Type of vehicle fuels

Fuels commonly used in the varieties of vehicles for land transport differ widely in different countries. For example, in the United States of America the predominant fuel used in transport is motor gasoline whereas in Europe gas oil consumption exceeds motor gasoline. In general, vehicle fuels in order of consumption are: motor gasoline (MG), diesel fuel (or in many countries referred to as gas oil and abbreviated GO in this paper), liquefied petroleum gas (LPG) and compressed natural gas (CNG). Other types of vehicle fuels such as ethanol and biodiesel are gaining momentum.

Number of different types of vehicles running in the year 2005 in USA and their average daily consumption of four types of the vehicle fuels and their expected growth rates are given in Table 2.1.[1]

As seen in Table 2.1, the sum of the three liquid fuels consumed in transport vehicles in USA in 2005 amount to an average of 2117×10^3 cmd of which 68.95% is MG, 30.93 % GO and only 0.12% LPG with corresponding growth rate of, 7.4%, 1.1% and 5 % respectively. CNG represents less than 0.1% of transportation fuel on equivalent heat basis.

Out of about 200×10^6 transport vehicles only 0.19×10^6 and 0.13×10^6 of them use LPG & CNG respectively.

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