

Overview on Iran CNG Industry Status, Opportunities and Threats

By: Keyvan Sharifi, H.A. Gougerdchian
Petro Taam Tech / Iran Gas Khodro (NIGC) Co.

Date: 06-june 2012
sharifi@petrotaam.com



Patron



Host



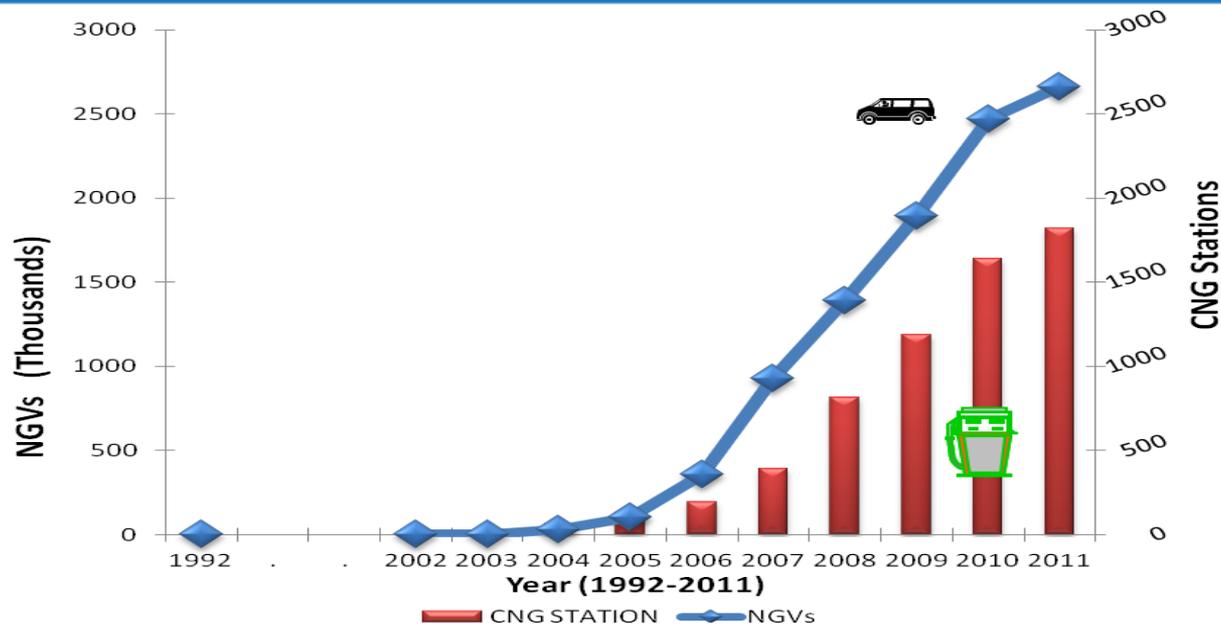
Host Sponsor



Background

- ❖ Iran started using CNG as fuel vehicles in 1975 with conversion of 1200 Taxis. There were two CNG refueling stations at that time.
 - ❖ The serious attention to NGVs were done after Iran Council Assembly (parliament) issued related laws in **2001** and allowing the government to payment huge subsidies for promotion CNG via:
 - Supporting local car manufacturers for production NGVs
 - Establishment required infrastructures and subsidies payments for conversion public transportations and especially taxis to CNG
 - Making infrastructures and construction refueling stations
 - Supporting for Localization of CNG equipments
 - ❖ The essential reasons for these serious plans, in general, are economical, energy security and environmental concern:
 - Very rapid growth of gasoline consumption in transportation caused mainly by
 - Growth of cars quantity
 - Aged cars
 - Gasoline low price
- that caused huge share spending in annual government budget. (Gasoline consumption growth rate in Iran during 1996-2006 was 8.35 % in contrary to 1.75 % averagely in the world).
- Country Massive Natural gas reservoirs and widespread pipeline network in country-wide

Figures (current country CNG statistical)



Year	NGVs				Refueling Stations			
	By OEMs	Converted	Total year	Annually growth rate	Private	Public	Total Year	Annually growth rate
2004	155	28,111	28,266		0	63	63	
...
2011	109,845	85,464	195,309	8%	37	143	180	11%
Total 2004-2011	1,827,978	835,193	2,663,171	9422%	149	1672	1821	2890%
Share in the world								
18.6%					8.8%			

Investments and Subsidized

	NGVs	Refueling stations
Investment (Approximate)	2.4 Billion USD	3.4 Billion USD *
Total Investment (subsidies included)	5.8 Billion USD	
Subsidies paid (Approximate)	600 Million USD	700 Million USD
Total Subsidies	1.3 Billion USD	

* The Investment figures are include 1821 constructed and 450 under-construction stations

Current main policies on NGVs and refueling stations

- Focus on CNG based designed engines and vehicles in local car manufacturers and decreasing and even stopping the conversion of petrol based engines
- Making more necessary incentives for private investors to increasing private sector share for construction and operation CNG stations.
- Support of local CNG equipments manufacturers via some necessary legislation.
- Attention to safety concern especially on quality of imported commodities and required NGVs and stations periodic inspections.

Opportunities

1- Natural Gas Reservoirs

- Iran with **29.6 trillion cubic meters** natural gas resources has more than **16%** of world natural gas reservoirs.
- The country almost fully covered by **190,000 kilometers** pipeline networks spread in **872** cities, 10186 villages.
- More than **95%** of cities and **47%** villages' population and totally **83%** of country population covered by NG pipeline network.
- Daily averaged country NG consumption in 2011 achieved to **445 million M3** (162.2 Billion Cubic meter in year) .
- Also with execution and developing huge **South Pars gas fields** , Iran become the second gas producer in the world.

2- CNG refueling stations in country-wide

With widespread NG network pipeline, in short ten years duration from starting the CNG project in country till now:

- More than **1820** big and medium CNG refueling stations with **10546** nozzles dispensing and **1.9 million M3** delivering capacity per hour (17 million cubic meters per day are delivered to NGVs in stations now) constructed and have come to service in all big and small cities that have gas pipelines. It's planned in next 6 months these stations increased to 2269 and almost **2530** stations come to operation till 2013.

This capacity can feed more than 3 million NGVs.



Opportunities

3- OEMs and workshops capabilities for production NGVs or conversion

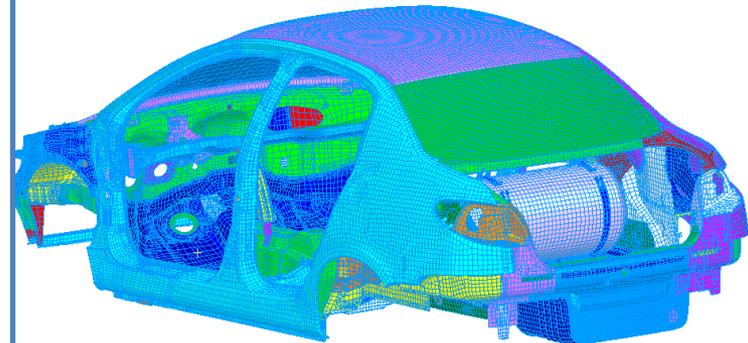
- Car manufacturers (OEMs) supported financially by government (petroleum ministry) and also enforced by making related legislation to contribute the big plans of country to promotion NGVs and also designing **CNG based engines**. In 2007 till now approximately the **25%** of production capacity are allocated to NGVs .

Since 2004 till now more than **1.8 million bi-fuel CNG OEM cars / light pickups** produced by local manufacturers.

- Conversion the existing fleets with high fuel consumption especially in public transportation sectors. So by financially support more than 90% costs of CNG kit equipments, storage cylinder and conversion as subsidies, almost **835 thousands** cars / light pickups converted to CNG system in **220** certified and qualified workshops in country.

4- CNG components and equipments localization

- In following to base policies, now major parts of CNG kits that installed on NGVs, are produced inside the country and more than **8** producers are active in this field with approximately 500 thousands kit capacity production annually. Local CNG storage cylinders production line have come to service since 2007 and at present the several local manufacturers have full ability for production of CNG cylinders and equipped with complete test facilities, totally capacity is higher than 400 thousands pieces in different sizes per year. Also main CNG compressors equipment and whole compressor package now are made inside the country by several local manufacturers.



Opportunities

5- Fuels in transportation and Plans

- According to government approvals, the share of NGVs should be raised and kept on **25%** where gasoline and diesel cars share specified as 70% and 5% for hybrid, electrical and other energy systems.

6- Environmental view

- At least the 60% reduction on CO (carbon monoxide) ,95% reduction on non methane UHC (unburned hydrocarbons) and aromatic cyclic hydrocarbons (that are one of main factors causing serious diseases and cancers) and 25% reduction on CO₂ (Carbone dioxide) emissions are seen in laboratory tests on NGVs in comparison with the engines consume gasoline.
- As one simple calculation the 2.6 million NGVs caused at least **4 million tones** reduction in green house CO₂ annually

7- Economical and energy supplying security

- Today's figures show daily delivering of **17 million** M³ of NG in CNG stations. It means saving approximately 17 million liters gasoline daily and consequently the saving of **4.6 billion USD** which required for importing gasoline from abroad annually (or can be export if exceed from internal consumption) where the gasoline current world average price is 2.8 USD/Gallon.
- Another main advantages of using CNG as fuel for transportation is **energy supplying security**. In other words, using CNG as transportation fuel, makes country needless to importing gasoline or focus on increasing the high octane gasoline production capacities in refineries via doing huge investment or using special technology refining that hardly can be supplied and exclusively patent of giant companies.



Threats

1- Safety

The safety concerns are main threats against promotion of NGVs in Iran. These concerns rise from 4 essential points:

- Keeping the conformity with standards in production of high pressure equipments especially CNG cylinders.
- Keeping the safety operation instructions in CNG stations.
- CNG Cylinders Periodic Inspection.
- Increasing NGVs users awareness.



2- Refueling Stations operation

- Economy of stations
- Maintenance and spare parts
- Management and operation



Results

- ❖ Iran NGVs growth is the highest in the world starting seriously since 2002 till now. Regarding to fully-developed wide natural gas pipeline networks and huge gas reservoirs and recently prepared infrastructures for using CNG as transportation fuel, Iran has **strategic and unique conditions and advantages** for using NGVs.
- ❖ Although the considerable investments have done for NGVs promotion (totally 5.8 billion USD from beginning until now including all related costs and land values), but it has resulted more than **4.6 billion USD annually saving** in gasoline consumption and almost **4 million tones reduction annually in CO2** green house gases and considerable reduction in hazards CO and Non-Methane UHC gases and particulate matters.
- ❖ CNG applying have increased **fuel supplying security** and country dependency reduction to gasoline importing from abroad or huge investments for increasing current gasoline capacity production in the refineries.
- ❖ The trustable infrastructures have been made for using sustainable and reliable CNG using as vehicle fuels but the **safety concerns** and **CNG stations reliable operations** are main obstacles against NGVs that should be resolved by authorized organisations.

Thank you



Thank You