

Chapter - 5

COMPRESSED NATURAL GAS (CNG)

1. **Specifications of CNG Constituent** - The Broad range of the various Normal Gas compositions of C1, C2 and C3 is 82.43 to 99.10, 7.27 to 0.90 and 3.47 to 0.000 respectively. The average C.V (Kcal/SCM) is 8950 to 8150.

2. Advantages of CNG:

- I. **Safety:** Lighter than air hence, in case of leakage no dangerous accumulation of gas as it disperses in the air. It is unlikely to ignite due to 1) High ignition temperature and 2) Narrow range of ignition. It has lowest injury and death rate per vehicle mile. CNG cylinders structurally most sound and have passed the severest of tests.
- II. **Environmental Protection:** The burning of CNG do not leaves behind any impurities. Sulphur (S), lead (Pb), and Aromatic Polycyclic Hydrocarbons. It leaves Very low levels of polluting gaseous emissions without smell and dust. In comparison to other fossil fuels, CNG prevents the reactive processes which lead to the formation of Ozone (O₃) in the troposphere.
- III. **Economical:** It is cheaper than conventional fossil fuels. Its pay back period is short.
- IV. **Technical:** CNG is very high antiknock index (more than 120 ON) allows greater performance compared to petrol. It does not require refining plant or any additive dosing and can be used immediately after it is produced. It has no evaporation leaks and spills as that of other fuels, both during re-fuelling and feeding of the car. Its combustion produces a very low quantity of carbon deposits (permits a longer life of lubricant oil).

3. CNG for Automobiles :

- IOCL along with other Oil PSUs had taken initiatives to introduce Compressed Natural Gas (CNG) as clean burning fuel to curb the vehicular emission.
- All types of vehicles can be run on CNG by installing CNG kit. Kit is an assembly of many components required to run existing vehicle on CNG. There are few basic components, which are common in all type of kits, irrespective of the vehicles such as CNG storage cylinder, high pressure tube, pressure regulator, pressure gauge, change over switch, high pressure tube fittings, refuelling receptacle and air fuel mixer.
- Major components of CNG kit for carburettor fitted petrol vehicle are Pressure Regulator; Petrol Solenoid Valve with manual override switch (Stops petrol flow when operating on CNG); On-Off valve and refuelling connector (Opens or stops gas flow to the regulator and includes a refuelling device); Control Module / Change-over Switch (Electronic control component with fuel selection switch); CNG level indicator (LED Indicator); Gas Air Mixer; CNG cylinder with valve, vapour bag & bracket; Petrol hose; Low-pressure gas hose; Ignition advance processor; High pressure gas tube; Wire harness; NRV in petrol return line; Pressure gauge.

4. Safety:

- Safe Refilling instructions followed for all CNG Vehicles at CNG Station.
- Safety symbols & cautionary instructions displayed all around.
- Safety films screened at CNG Stations frequently to educate consumers.
- Safety leaflets / Stickers developed for awareness on specific occasions.
- Free Compliance Plate given to all public transport fleet running on CNG through transport department.
- Safety clinics conducted for customers.
- Safety leaflets / Stickers developed and distributed.
- 24 hr. Toll free assistance. (Tel no. 1800 11 2535)**

5. Precautions to be taken during servicing and repairing of CNG vehicles:

- Always refer to the supplier's kit manual for the trouble-shooting guide and do not do it yourself.
- In case of vehicles undergoing repairs involving welding, or heat application to any part (within 1.5 m) of the cylinder, the cylinder should be emptied first.
- Do not install a LPG, Propane or any other cylinder in place of a CNG cylinder. It is illegal and unsafe.
- For emergency handling of any CNG leak, users must be aware of the location and operation of cylinder valve, master shut-off valve and burst disc in the CNG system. Study the system and ask your mechanic to identify these parts for you.
- Workshop doing the kit fitment should be able to demonstrate these operations to your satisfaction. It is advisable to operate the vehicle occasionally on petrol to ensure that the petrol system remains in good working conditions.

Other Precautions:

- In case of leakage in fuel system, vehicles shall not be parked within 6 m of any source of ignition or fire.
- In case of vehicles undergoing repairs involving welding, or heat application to any part (within 1.5 m) of the cylinder, the cylinder should be emptied first.
- The CNG kit installed in the vehicle should be insured along with vehicle accessories. The motorist should notify the insurance company to provide insurance on the CNG system, for which additional premium may be charged by the insurance company.
- Motorists should take the insurance cover for the additional CNG kit system.
- Installation of CNG in the vehicle is required to be endorsed in the Vehicle Registration Certificate.

6. For more information log on to any of the following websites of companies selling CNG/PNG:

www.mahanagargas.com
www.iglonline.com
www.sabarmatigas.com
www.aglonline.net/Aavantika
www.bgigas.com
www.tngcl.com
www.gglonline.net