WELCOME

RUPANTARITA PRAKRITIK GAS COMPANY LIMITED
(RPGCL)
(A Company of Petrobangla)

Meeting on
Experience sharing Dialogue on Improving Quality and Performance of Natural Gas Vehicles Program in South Asia
20 January, 2011
Dhaka
How do we ensure good conversion of old vehicles and the prospects of getting dedicated vehicles.
CNG Background

- CNG was first familiarized through a project under Petrobangla in early eighties.
- Company’s name was changed to “Rupantarita Prakritik Gas Company Limited” (RPGCL) in 1991.
Activities of RPGCL

- CNG expansion program
  - Issuing permission to private entrepreneurs
  - Providing hands on training on CNG
  - Launching awareness programs regarding safe use of CNG.
- Producing LPG, MS & Diesel from bi-products (NGL/Condensate) of gas fields in the Sylhet Region.
- Operating CNG Station & Workshop in Dhaka
- Handling condensate at Ashugang.
CNG Activities at a glance
(up to Dec’ 10)

- Station under operation : 587 nos.
- Conversion workshop u/o : 177 nos.
- Districts under CNG network : 23 nos.
- Gas for CNG : 109 mmcmd
- Monthly Oil replacement value : 858 crore
- Employment Generation : 18000 persons
- Contribution to GDP : ---- crore
Challenges to implement NGV programs

- Pessimistic views
- Scarcity of CNG Refueling Stations
- Extra Investment for Conversion
- International Oil price
- Insufficient Gas Pipeline Network
- Lack of Awareness
Government Initiatives & Policy:

Government Initiatives:
- CNG Extension project (2000-2005)
Government Initiatives & Policy:

Government Policies:

- Private Sectors Participation
- Separate Tariff
- Duty Free Import of Equipment
- Priority in installation of Refueling Stations
- Development of Gas Pipeline Network
- Allocation of Government Land
Government Initiatives & Policy:

- Phasing out of two strokes three wheelers vehicles
- Introducing NGVs
- One Stop Approval Services
- Economic benefit of CNG
# CNG Conversion Workshops in Bangladesh

(December 2010)

<table>
<thead>
<tr>
<th>Location</th>
<th>No. of Workshops</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bogra</td>
<td>12 nos.</td>
</tr>
<tr>
<td>2. Dhaka</td>
<td>79 nos.</td>
</tr>
<tr>
<td>3. Savar</td>
<td>8 nos.</td>
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<tr>
<td>4. Gazipur</td>
<td>10 nos.</td>
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<td>5. Narayanganj</td>
<td>6 nos.</td>
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<tr>
<td>6. Comilla</td>
<td>6 nos.</td>
</tr>
<tr>
<td>7. Feni</td>
<td>3 nos.</td>
</tr>
<tr>
<td>8. Chittagong</td>
<td>23 nos.</td>
</tr>
</tbody>
</table>
CNG Conversion Workshops in Bangladesh

(December 2010)

10. Manikganj :  3 nos.
15. Noakhalai :  1 nos.

Total :  177 nos.
Chronological Development:

Growth of CNG Stations

<table>
<thead>
<tr>
<th>YEAR</th>
<th>CNG Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto 2004-2005</td>
<td>51</td>
</tr>
<tr>
<td>2005-2006</td>
<td>29</td>
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<tr>
<td>2006-2007</td>
<td>28</td>
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<td>2007-2008</td>
<td>13</td>
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<tr>
<td>2008-2009</td>
<td>17</td>
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<tr>
<td>2009-2010</td>
<td>29</td>
</tr>
<tr>
<td>2010-2011 (Dec)</td>
<td>10</td>
</tr>
</tbody>
</table>

Cummulative NOS:

- 2004-2005: 51
- 2005-2006: 80
- 2006-2007: 108
- 2007-2008: 121
- 2008-2009: 138
- 2009-2010: 167
- 2010-2011 (Dec): 177
Chronological Development

Growth of Natural Gas Vehicles

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Cumulative Nos.</th>
<th>NGVs</th>
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<tbody>
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<td>Upto 2004-2005</td>
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<td>-</td>
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<tr>
<td>2005-2006</td>
<td>75491</td>
<td>38353</td>
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<td>2009-2010</td>
<td>193702</td>
<td>29574</td>
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<td>2010-2011(Dec)</td>
<td>201467</td>
<td>7765</td>
</tr>
</tbody>
</table>
NGV Status of Bangladesh

(December 2010)

- **NGV in Bangladesh**: 2,01,467 nos.
- **World Ranking**: 10
  - Locally converted: 158570 nos.
  - Imported: 42897 nos.
    - Bus: 5124 nos.
    - Taxi: 12,000 nos.
    - 3-Wheeler: 25,773 nos.
Contribution of CNG in air quality improvement

- Before using CNG, the uncontrolled emission from two-stroke three-wheeler baby taxi and diesel bus were major cause of air pollution in Dhaka City.
- It had poor visibility due to air pollution in many areas of Dhaka City.
- Eye irritation, respiratory illness cardio vascular diseases were common phenomenon to City dwellers.
- Natural gas of Bangladesh practically contains no sulfur.
- By raising the use of CNG substantial improvement in air quality is observed in urban areas.
- Govt. has also banned the two-stroke baby taxi from Dhaka City in 2003.
- Now approximately 13000 four-stroke CNG baby taxis are running in Dhaka City.
Economic Benefits of Using CNG

- Approximately 3.0 MMCMD gas is required for CNG which is approximately 6% of daily production.
- The following highlights are updated up December 2010:
  - Monthly average CNG usage (approx.) 92.88 MMCM, which is equivalent to 112 million liters Octane.
  - The market price of this octane is approximately Tk.858.00 crore
  - Yearly savings in foreign exchange for using CNG is approximately ≅ US$ 1471.00 Million (Tk. 10298.00 crore)

Note:
1 CM ≅ 1.24 Liter Octane; Octane Price : Tk. 77.00 per Liter & 1 US$ ≅ Tk. 70.00
Standard Codes of Practices

• Presently all workshops are installed and converted as per New Zealand / European Union / USA / Canadian Standards.

• RPGCL has prepared Bangladesh CNG Codes and Standards, which are under approval process.
Types of CNG Conversion

• All old vehicles are Converted in following ways :
  • Bi fuel Conversion
  • Dual Fuel Conversion
  • Dedicated Conversion
  • Others
Types of CNG Conversion

Bi fuel Conversion

- Bi fuel Conversion is done mainly for Spark Ignition (SI) engines, i.e. petrol/Octane engines.
- SI engines starting from carburetor engine, Electronic Fuel Ignition (EFI) engines and variable-valve-timing-intelligent (VVTi) engines can be converted in CNG.
- Due to technological development conversion techniques are changing from generation to generation.
Types of CNG Conversion

Dual Fuel Conversion

- Dual fuel Conversion is done mainly for Compression Ignition (CI) engines, i.e. diesel engines.
- For this conversion no engine modification is required.
- This conversion is suitable for the engines, which run in a constant rpm.
- Various electronics controller devices are built for this conversion.
- Still research is going on for the development of Duel fuel conversion.
Types of CNG Conversion

Dedicated Conversion

- Dedicated Conversion is also done mainly for CI engines.
- In this systems engine modification or rebuild of engines are required.
- In the other word CI engines are converted to SI engines first before converting them to CNG.
- The engine head is rebuilt or modified in such a way that the compression ratio is properly maintained.
- For this conversion proper gasket and lube oil should used for maintaining engine temperature.
- The cooling systems may be needed to changed or redesigned for this conversion.
Types of CNG Conversion

Others Conversion

- In some cases, diesel engine of vehicle is replaced by other SI engines of same ratings. Then the new installed engine is converted to CNG systems.
Ensure good conversion of old vehicles

Conditions of getting Conversion Workshop:

- The site of workshop to be fixed, well equipped and permitted.
- Machinery & Equipment should be as per prescribed standard.
- Machinery & Equipment should be imported as per prescribed Rules and Regulations of GOB.
- CNG Conversion Workshop must be set up and operated in accordance with prescribed standard.
- License under the Gas Cylinder Rules, 1991 has to be obtained from the Department of Explosives.
Ensure good conversion of old vehicles

Conditions of getting Conversion Workshop (Contd) :

- Cylinder should be installed in accordance with standard specifications recognized under Rule 4 of the Gas Cylinder Rules, 1991.
- NGV Cylinders should be tested periodically.
- You have to follow Law, Rules and Policies/ Guidelines formulated by the Government of Bangladesh time to time in this respect.
- Have to ensure the proper quality of tailpipe emission as per emission standard of Bangladesh.
- CNG Conversion Workshop to be operated by the persons who are trained from RPGCL
Ensure good conversion of old vehicles

• After fulfilling the conditions by the workshops, RPGCL issues formal clearance and listed for BRTA listing.

• Vehicles converted from these listed workshops are supposed to avail annual fitness certificate accorded by BRTA.

• All Conversion Workshops must take license from BERC.

• Conversion Workshops are updated with newer conversion technologies by RPGCL, Importers of kits & Cylinder, Manufacturers regularly through training programs, workshops & seminars.
Prospects of getting dedicated vehicles.

- Approximately fifty percent areas of country are covered with pipeline gas network as well as CNG activities.
- Government has also plan to expand more areas under gas pipeline network.
- More areas can be covered with daughter or mobile CNG stations.
- So, dedicated CNG vehicles could run major areas of country.
- We have dense populated urban areas.
- Small air pollution can affect a large number of people.
- We should emphasis on CNG as alternative & clean fuel.
Prospects of getting dedicated vehicles.

- All over the world Gas is comparatively cheap fuel for vehicles.
  - 1 cubic meter CNG is approximately 1.3 liter of octane.
  - For a particular vehicle CNG of Tk. 16.75 is required for particular mileage.
  - On the other hand octane of Tk. \((1.3 \times 77.00 = 100.00)\) is required to get the same mileage for that vehicle.
  - The economic benefit for using CNG for a vehicle is approximately 500%.
  - So, we have good prospect of getting dedicated vehicles.
THANKS