

Communication & Training

Clean Cities Transportation

March 30-31, 2011

Workshop for Almaty

Gert-Jan Rap

Revision : 3

Date : March 30-31, 2011

RAP Clean Vehicle Technology

➤ **Over 25 years experience in vehicle fuels**

- ✓ LPG, CNG, Biogas, LNG, Hydrogen
- ✓ Worldwide active

➤ **Training**

- ✓ Technical
- ✓ Safety
- ✓ Commercial

➤ **Consultancy**

- ✓ Technical
- ✓ Safety
- ✓ Commercial

➤ **Sales**

- ✓ **x**perion Transportunits for CNG & Biomethane

➤ **Co-founder of Clean Vehicles Training Institute**

➤ **Export Manager Eurogas Autogas Systems**



NGV & H₂V Training for Fire Brigades



Tractor converted to Dual-Fuel Biogas

x- STORE ADR/TPED Trailer





CNG is SAFE,



***CNG is SAFE, if you
handle it SAFELY !!***



Agenda

- ***CNG Availability***
- ***CNG Production***
- ***CNG Fueling Technology***
- ***CNG Fueling Standards & Regulations***
- ***CNG Vehicle Technology***
- ***CNG Vehicle Standards & Regulations***
- ***CNG Safety Standards***

- ***CNG seen from outside the CNG Industry***



Agenda

- ~~➤ ***CNG Availability***~~
- ~~➤ ***CNG Production***~~
- ~~➤ ***CNG Fueling Technology***~~
- ~~➤ ***CNG Fueling Standards & Regulations***~~
- ~~➤ ***CNG Vehicle Technology***~~
- ~~➤ ***CNG Vehicle Standards & Regulations***~~
- ~~➤ ***CNG Safety Standards***~~

- ***CNG seen from OUTSIDE the CNG Industry***
 - ✓ ***Vehicle Drivers***
 - ✓ ***Vehicle Repair Workshops***
 - ✓ ***Fire Departments***
 - ✓ ***Etcetera***

CNG vehicles in Traffic

Who are in **daily contact** with CNG vehicles ?

- ***Bus-, Truck- and other vehicle drivers***
- ***Vehicle repair workshop***
- ***Refueling staff***

- ***Public***

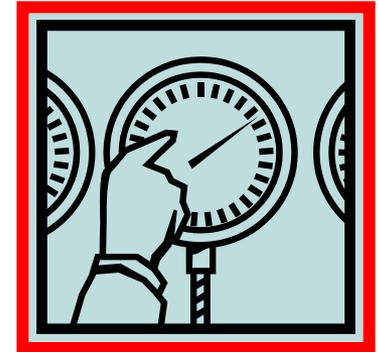


Bus-, Truck- and other vehicle drivers

- ***Should understand **BASICS** of :***
 - ✓ ***CNG as fuel***
 - ✓ ***CNG vehicle technology***
 - ✓ ***CNG refueling technology***
 - ***Safety aspects in handling***
 - ✓ ***Handling accidents with CNG***

- 🤩 ***Make drivers enthusiastic***

- ***Take away “**DANGER**”-perception***



200 bar / 3000 psi



Training / Information exchange required !

Vehicle Repair Workshop

- ***Who is allowed to work on a CNG vehicle ?***
 - ✓ ***Different per country***
 - ✓ ***Do mechanics need a certification ?***
 - ✓ ***What about all the repairs other than CNG ?***

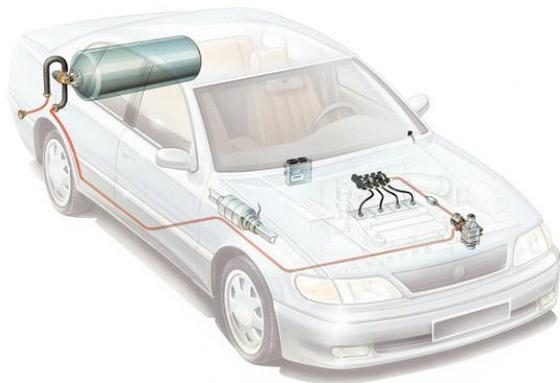


Questions to be answered!

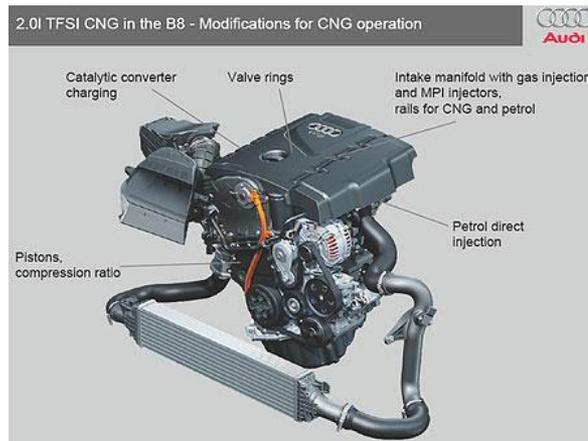


Vehicle Repair Workshop

- Staff should understand **BASICS** of :
 - ✓ **CNG as fuel**
 - ✓ **CNG vehicle technology**
 - ✓ Working **safely** on **CNG vehicles**



Source : Landi Renzo



TRAINING REQUIRED !

Refueling CNG vehicles

- ***Is self-service allowed?***
- ***Do we need specialized refueling staff ?***



source : Chart

- ***A CNG filling station within the public domain?***



Check local regulations!

Staff at the refueling station

- ***Should understand **BASICS** of :***
 - ✓ ***CNG as fuel***
 - ✓ ***Differences to LPG***
 - ✓ ***Prohibitions against fueling adaptors !!***
 - ✓ ***CNG refueling technology***
 - ✓ ***CNG vehicle technology***
 - ***Safety aspects in handling***
 - ***Different receptacles available***
 - ✓ ***Handling Accidents with CNG***

TRAINING REQUIRED !





CNG vehicles in Traffic

Who are **occasionally** in contact with CNG vehicles?

- ***Fire Departments / Rescue Services***
- ***Policy makers (legislators and regulators)***
- ***Traffic authorities***

Fire Department / Rescue Services

➤ ***CNG is **NOT** the same as other fuels***

- ✓ ***How to identify a CNG vehicle ?***
- ✓ ***How to approach leakage ?***
- ✓ ***How to fight CNG fire (vehicle / filling station)?***
- ✓ ***How to salvage a CNG vehicle ?***



TRAINING REQUIRED !



Policy makers

- ***Federal & local policy makers decide about :***
 - ✓ ***Environment (emissions)***
 - ✓ ***Vehicle technology (emission limits)***
 - ✓ ***Vehicle (and cylinder) periodic inspection***
 - ✓ ***Infrastructure (filling stations)***

Policy makers and regulators typically have limited knowledge about :

- ✓ ***CNG Advantages & Disadvantages***
- ✓ ***CNG Safety***
- ✓ ***CNG Codes & Regulations (if available)***

Information exchange required !

Traffic Authorities

➤ **Inspection of vehicles**

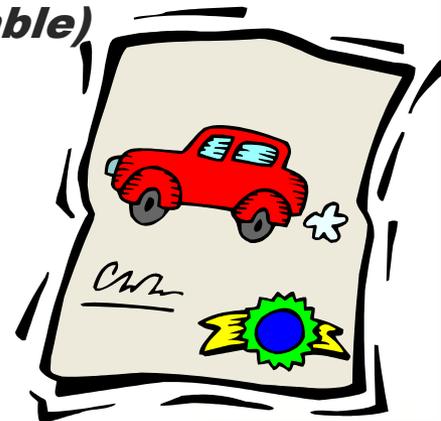
- ✓ **After conversion to CNG**
- ✓ **Periodic inspection of the vehicles and cylinders**

Knowledge is required about:

- ✓ **Technical aspects of CNG vehicle**
- ✓ **Safety aspects of CNG vehicles**
- ✓ **CNG Vehicle Codes & Regulations (if available)**



TECHNICAL TRAINING REQUIRED !



Others

- **General Public, media**
 - ✓ Take away **PERCEPTION** “CNG is dangerous”
 - ✓ The word **GAS** is considered as **EXPLOSIVE**



Information exchange & communication required !

Communication & Training

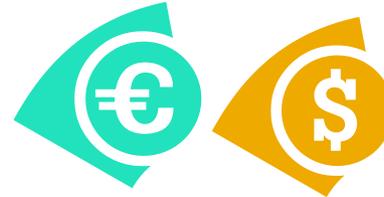


➤ **Who will communicate ?**

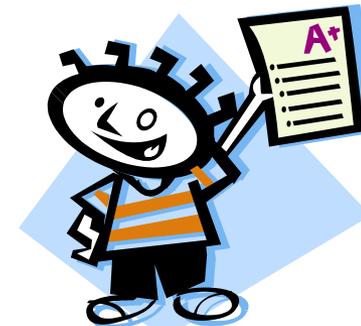
- ✓ **NGV Industry ?**
- ✓ **NGV Associations ?**
- ✓ **Independent Communication Institutes ?**

➤ **Who will execute (and pay for) training ?**

- ✓ **CNG Industry ?**
- ✓ **Vehicle Industry ?**
- ✓ **CNG Associations ?**
- ✓ **Government ?**



➤ **Is certification needed ?**



??

Conclusions & Recommendations

➤ ***Information exchange*** recommended for :

- ✓ ***General Public***
- ✓ ***Policy makers and regulators***

➤ ***Training*** is required for :

- ✓ ***Staff of the NGV conversion centers***
 - ✓ ***NGV repair & maintenance workshops***
 - ✓ ***Refueling station staff***
 - ✓ ***Fire departments & rescue services***
-
- ✓ ***Drivers of commercial NGVs (bus & truck)***



Conclusions & Recommendations *cont'd*

- **Decisions must be made *how* we communicate**
- **Decisions must be made *how* & *who* will be trained**
 - ✓ **Individual training**
 - ✓ **Train-the-trainer philosophy**



Deciding who takes responsibility for funding and organizing the training & communication!!

CNG training & information exchange

Available from :



www.cleanvehiclettraining.com



Thank you for your attention !



For further information :

www.rap.ac

RAP Clean Vehicle Technology

Beekstraat 8-A

NL - 7227 NC Toldijk

Tel. : +31 (0)575 45 15 13

E-mail : info@rap.ac

Disclaimer



This presentation is prepared by ***RAP Clean Air Products*** for information exchange in the project : **Clean Cities Transport workshop in Kazakhstan. March 2011**

Although the author of this document strived to give complete and correct information, neither the principal nor ***RAP Clean Vehicle Technology*** can be held liable if the provided information is mis-used, mis-interpreted, incomplete or failing in any other way.

It is not allowed to copy information and/or pictures, graphs or other illustrations from this presentation without the written approval of ***RAP Clean Vehicle Technology***

RAP Clean Vehicle Technology strived to find and mention the source of illustrations. If you nevertheless have the impression that material is used inequitable, please contact

www.rap.ac