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Emission testing

Presentation

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**Traditional
EFI petrol / EFI Diesel**



**Lean burn
Petrol**

**Common Rail
Diesel**

**(assisted)
Electric**



How long do you think before the NZ car fleet has been converted to Full Electric / Assisted Electric?

The average age of NZ vehicles is 12.1
Years old.....

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Till such time, and maybe even after (hybrids), we will still have petrol, Diesel or gas vehicles.

This is happening now



Combustion engines produce emissions.

I do NOT know of any *fail safe* emission system yet.
(where for example the check engine light alerts the driver that there is something wrong with the emissions under all circumstances)

Should we have mandatory **emission testing** in NZ???

Yes / No

Or should we just keep talking about it?

Okay Lets talk about it:

Q1) Is emission testing viable for even small businesses?

Yes. We from ETNZ have calculated that doing 10 emission inspections (e.g. with WoF) per week @ \$25 each makes it perfectly viable.

Lets talk about it:

Q2) Is it Expensive for car owners?

No, the \$25 extra per year is easily saved with

- reduced fuel consumption,
- reduced engine wear and
- a reduction on the strain to NZ's health system.

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Lets talk about it:

Q3) Is it hard to introduce?

No. We from ETNZ have a nation wide system running perfectly, and its all built in night time hours.

Lets talk about it:

Q4) Are vehicle emissions really such a big problem?

Yes. It has been estimated by various sources that vehicle emissions are responsible for 25% to 45% of all carbon emissions. An *inefficient* running vehicle will produce *more carbon emissions* (higher fuel consumption) plus it will produce *harmful emissions* from incomplete combustion, straining the health system.

All of this can be picked up by simply checking vehicle emissions regularly.

Lets talk about it:

Q5) What will happen if we don't get organised now?

Well, ask what is easier for government?

a) Get emission testing introduced (as part of WoF's) available at independent garages, or

b) Get emission testing introduced through the bigger players like VTNZ, AA, Onroad, etc. and take WoF work away from our workshops.

Lets talk about it:

Q6) What is happening in the rest of the world?

Almost all developed countries and a good number of lower socio-economic countries have mandatory emission testing.

They are at least trying to do something about emissions!

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Lets talk about it:

Some countries are even trying to help reduce pollution problems in other countries.

A real nice example is a project from an Automotive college in Apeldoorn Holland (HAN).

As a competition a financial viable modification had to be made to India's badly polluting two stroke Rickshaw taxis, called the Tuktuk's.

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Lets talk about it:

The Piaggio copy two stroke cylinder head got equipped with a liquid LPG injector.

In an LPG tank a GDI high pressure fuel pump got fitted, in combination with some sensors, all for the kit price of NZ\$400 (source AMT).

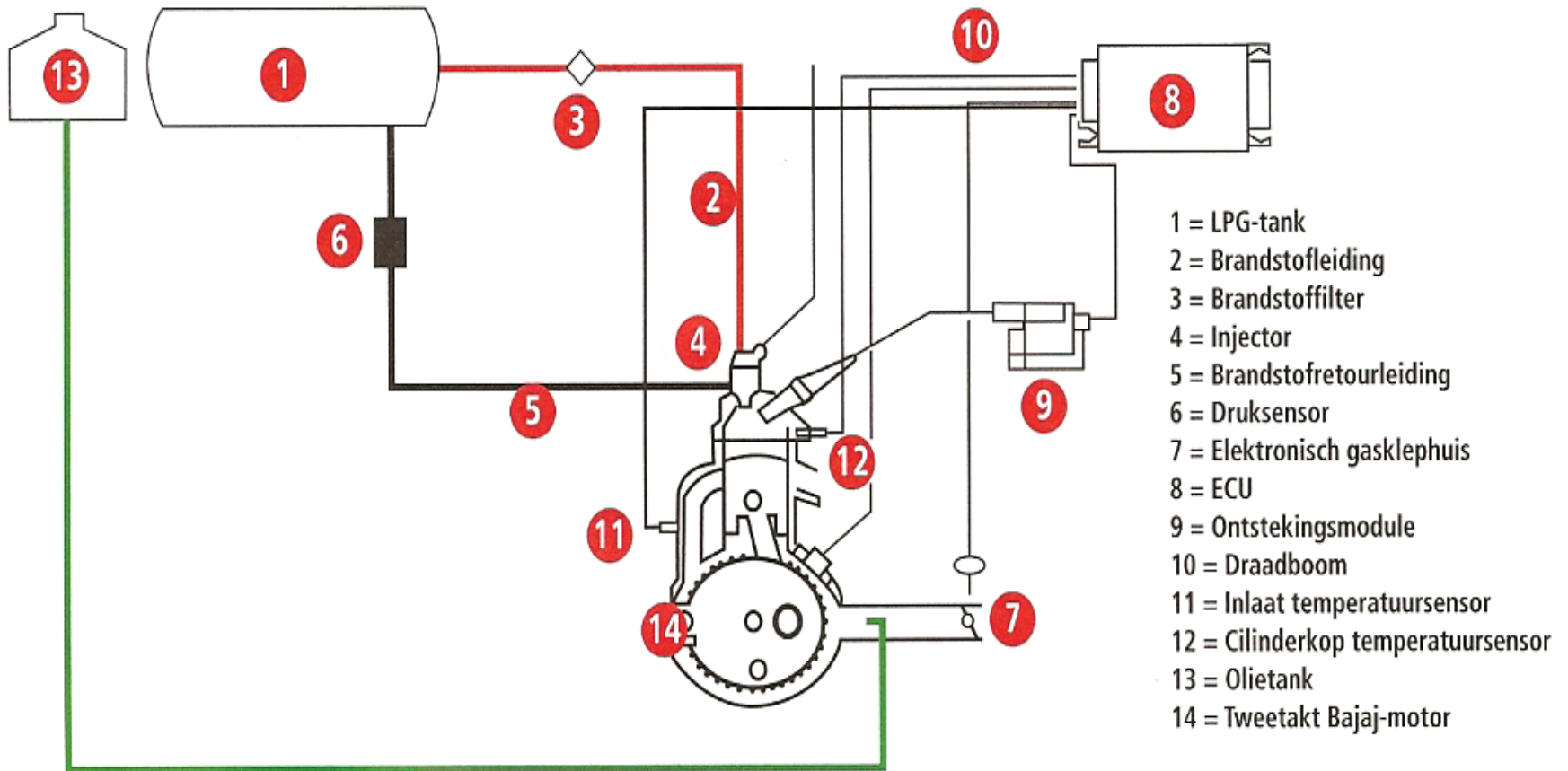
Machining can be done locally, to keep costs down.

These guy's do something about emissions!

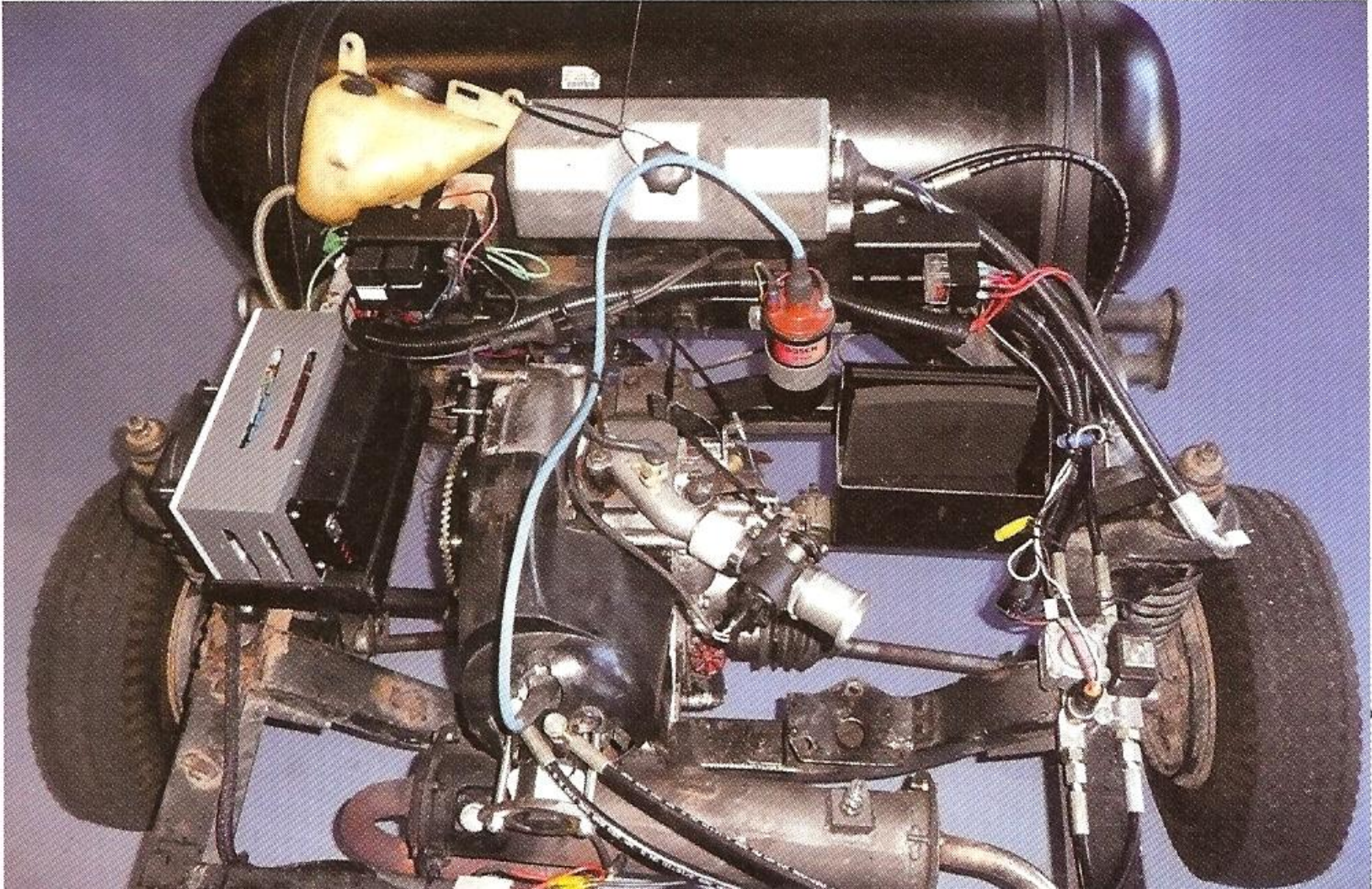
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Should we perhaps wait till some wealthy country comes here and 'helps' us clean up our act?

Or can we get organised ourselves?

Mandatory Emission testing: we are still talking about it.....

Emission testing

- is viable for you repairers,
- good for the environment,
- good for the economy,
- good for our green image and
- politically sits well in the world.

Think about it.... Get on with it.
Lets send a message to government that
we are ready !

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This presentation was made with the assistance of ETNZ Ltd.
(established 2006)



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Thank you for your attention!

I hope to see you again in future seminars.

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**AECS Ltd
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New Zealand**

Emission test results 10 Nov 2009.

Following are numbers which will show you where the automotive industry is, at the moment.

Method of working.

Testing has been done with calibrated emission testers of various brands.

The testing method is standardised for petrol and Diesel vehicles.

Petrol numbers.

Number of Vehicles tested: 1459

Percentage passed (**ETNZ standard**): 85 %

Times repair advice has been given: 246

Not one vehicle's results is included with the check engine light or emissions check light illuminated (!).

Petrol numbers.

High Idle test

- CO when 5.0% of all vehicles fail: **4.50 %CO**
- Average CO: 0.40 %CO

- HC when 5.0% of all Vehicles fail: **96.00 PPM**
- Average HC: 41.78 PPM

- Upper λ when 5.0% of all Vehicles fail: **1.101**
- Lower λ when 5.0% of all Vehicles fail : **0.89**
- Average lambda Petrol: 1.004

Petrol numbers.

Idle test

- CO when 5.0% of all vehicles fail: **5.56 %CO**
- Average CO: 0.37 %CO

- HC when 5.0% of all Vehicles fail: **95.00 PPM**
- Average HC: 83.10 PPM

Petrol numbers.

2 cars older than 1988 where included in the test results, newest 2009. Average age **1999**

- Toyota 280 x
- Nissan 226 x
- Mazda 134 x
- Mitsubishi 133 x
- Ford/Honda 117 x
- Subaru 100 x
- Holden 94 x

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Diesel numbers.

Number of Vehicles tested 36

Percentage passed (**ETNZ standard**): 78 %

Times repair advice has been given: 4

Not one vehicle's results is included with the check engine light or emissions check light illuminated (!).

Diesel numbers.

Average age: **1997**

Opacity when 5.0% of all vehicles fail: **K 6.30**

Average opacity Diesel: **K 2.79**

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\$\$ numbers.

Total number of vehicles tested **1492** under test new protocol.

Approx. charge out rate **\$25** per test (+gst).

Average time per test +/- **9 minutes.**

Total **\$37,300** earned by 26 (a progressive number) shops in around 9 months.

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