

Christchurch City Council Biogas Vehicle Fuel Experience

Biogas Vehicle Fuel Conference
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I will cover.....

- Biogas use since 1962
- Why CCC got into biogas vehicle fuelling
- Set up grants and the equipment
- Scrubbing out the CO₂ and H₂S
- Scrubbing and compressing issues
- Vehicle performance issues
- Financial issues
- Why CCC got out of biogas vehicle fuelling
- What the plant was subsequently used for.

History and why vehicle fuelling

- Biogas used in stationary engines
- Used for power generation
- Still had excess gas
- No sizeable industrial takers
- No strong interest in the CO₂ either
- Public concern at flaring excess gas
- Petrol prices.

Grants and equipment

- CNG grants available
 - For CNG station development and
 - For car conversion kits

- Equipment

Compressor, scrubbing tower, water pump, moisture traps, storage bank, refuelling equipment

Later added a refrigerated dryer

CO₂ Scrubber

- Scrubber performance
 - Better than 99% methane, < 5ppm H₂S
 - Used random packed media tower (10m) with water spray at 4.2 m³/hr
 - Level control at base
 - 250mm API line pipe internally coated

Scrubber and Compressing Issues

- Final gas fully saturated
- Hydrate formation in small bore pipe
 - Resolved with refrigerated drier and methanol injection
- Corrosion and odour from discharge water
- Compressor component corrosion
 - No copper or brass
- Safety – pressure rather than gas

Vehicle performance

- Some loss of power – about 20 %
 - Need for good tuning
 - Space – 50 l to 180 l gas storage
 - Frequency of refuelling
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- Vehicle size range (70 vehicles)
 - 1000cc to 5000cc

Financial

- Capital cost in 1982 - \$300,000
- Operating cost - \$10,000 / year
- 18 cents / litre equivalent
- Plus RUC – total cost 23c/l (cf 71c/l)
- Saving of approx \$100,000







CUTION NOTICE
THE WORKING
UNWARRANTED STATE
AND THE

FLAMMABLE GAS
NO SMOKING OR OPEN FLAMES
PERMITTED WITHIN
6m OF THIS BUILDING

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Questions