




The Carbon Tax and Refrigeration – What You Need To Know


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HFC's

1. What are they?
2. Where are they used?
3. The Proposed Special HFC levy
4. Impact on business?

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Future HFC costs?


Period	Carbon Price (per tonne)
1 July 2012 – 30 June 2013	\$23.00
1 July 2013 – 30 June 2014	\$24.15
1 July 2014 – 30 June 2015	\$25.40

HFC	GWP	HFC	Jul '12-Jun '13	Jul '13-Jun '14	Jul '14-Jun '15
R134a	1410	R134a	\$32.43	\$34.05	\$35.81
R404A	3862	R404A	\$88.83	\$93.27	\$98.09
R410A	2060	R410A	\$47.38	\$49.75	\$52.32
R407C	1750	R407C	\$40.25	\$42.26	\$44.45

R134a levy: $1.41 * 23 = \underline{\$32.43/kg}$

A-GAS™
Source: Refrigerant Gas & Carbon Pricing Summary – 18th July 2011

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Can you escape the levy?

Yes! **How?**


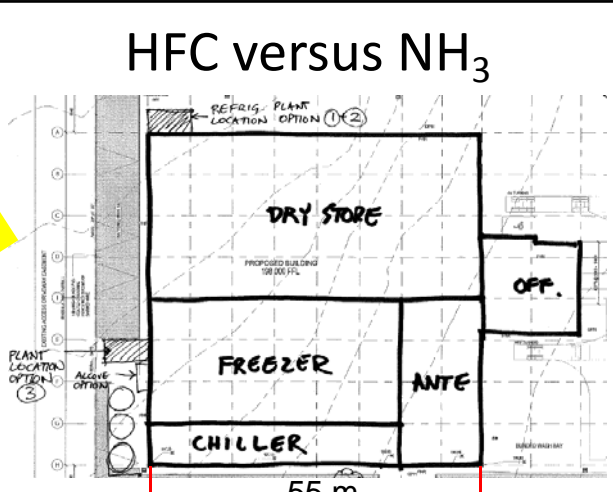

Natural Refrigerants

Benefits:

- no levy	- GWP<1
- low gas cost	- ODP=0
- better efficiency	- longer life

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HFC versus NH₃


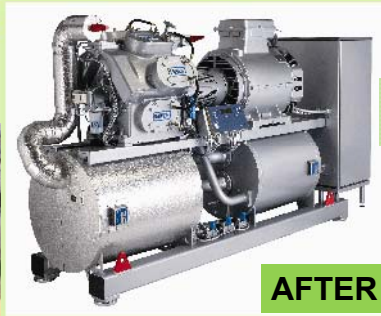





EXAMPLE 1

	NH ₃	HFC
Total engine room shaft power, kW	114.2	264.2
Total annual operating costs excl. maintenance	\$133,120	\$212,369
Approx. refrigeration plant capital cost, k\$	775	500
Simple pay-back for Δ investment, years	4.7	-
Technical plant life, years	20-25	10-15

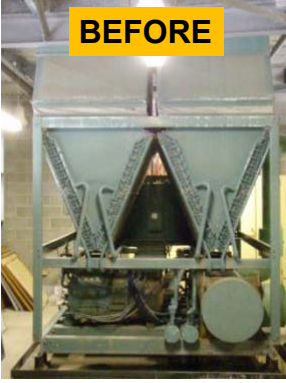
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HFC versus NH₃

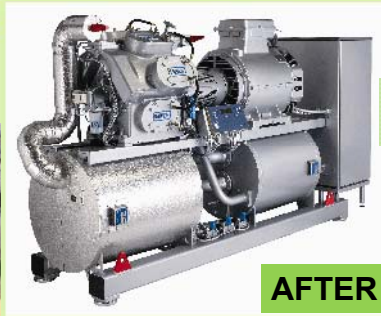
EXAMPLE 2

BEFORE



Two Air Cooled R22 Water Chillers for Office Air Conditioning, 1200 kW

AFTER




Two Water Cooled R717 Water Chillers, 1200 kW

Annual Energy Saving 500 MWh



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HFC versus NH₃




EXAMPLE 3

NH₃ WAREHOUSE AIR CONDITIONING

HFC ALTERNATIVE

Air cooled chiller/heat pump



Standard unit

Annual energy consumption:

NH₃: 175 MWh


HFC: 300 MWh

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HFC versus NH₃




EXAMPLE 4



BEFORE

Annual reduction from 40% to 25%

Central R717 Water Ethanol Cooling Plant, 6000 kW



AFTER



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Four Water Cooled R134A Ethanol Chillers for Process Cooling, 6000 kW

Why an HFC levy?

Global HFC emissions by 2050 are ~9-19% (CO₂e basis) of projected global CO₂ emissions in the BAU scenario.

This rises to 28-45% in a 450 ppm CO₂ stabilization scenario.

A CFC and HCFC consumption

B HFC consumption

C HFC radiative forcing

Source: Velders et al

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QUESTIONS?

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