www.hychill.com.au

High Performance, High Efficiency Natural Hydrocarbon Refrigerants for Air Conditioning and Refrigeration


High Performance, High Efficiency
Natural Hydrocarbon Refrigerants for
Air Conditioning and Refrigeration
HyChill
Minus 30
AUSTRALIAN MADE
ENVIRONMENTAL CHOICE
AUSTRALIA

Outline

- About HyChill
- Spotlight on automotive AC
- Beyond Australia
- Technical barriers
- Practical barriers

HyChill

About HyChill

- **Founders of HyChill have been producing HC's for approximately 16 years**
- **HyChill's founders have >40 years experience with hydrocarbons**
- **The HyChill brand is well recognised in Australia and in South East Asia/South Pacific**

About HyChill

- **HyChill is primarily a supplier of various pure and blended HC refrigerants comprising:**
  - **R290 (propane)**
  - **R600a (isobutane)**
  - **R170 (ethane)**
- **Also: lubricants and f-gas free refrigerant circuit flushing/cleaning agents**

HyChill

About HyChill

- **HyChill supplies the following OEM's:**

Thinking of you
Electrolux

OKA®
MADE IN AUSTRALIA

arneg® NEW ZEALAND
LEADERS IN NATURAL REFRIGERATION AND POWER SAVING SOLUTIONS

HyChill

OKA – first OEM using HC’s

Spotlight on Automotive AC

- **HyChill has been selling into the Australian automotive AC sector since the mid 1990's**
- **Considering the initial regulatory barriers, intense "FUD" campaigns by f-gas industry monopolists and the challenges associated with breaking into a monopolised market, the project has been a considerable success**

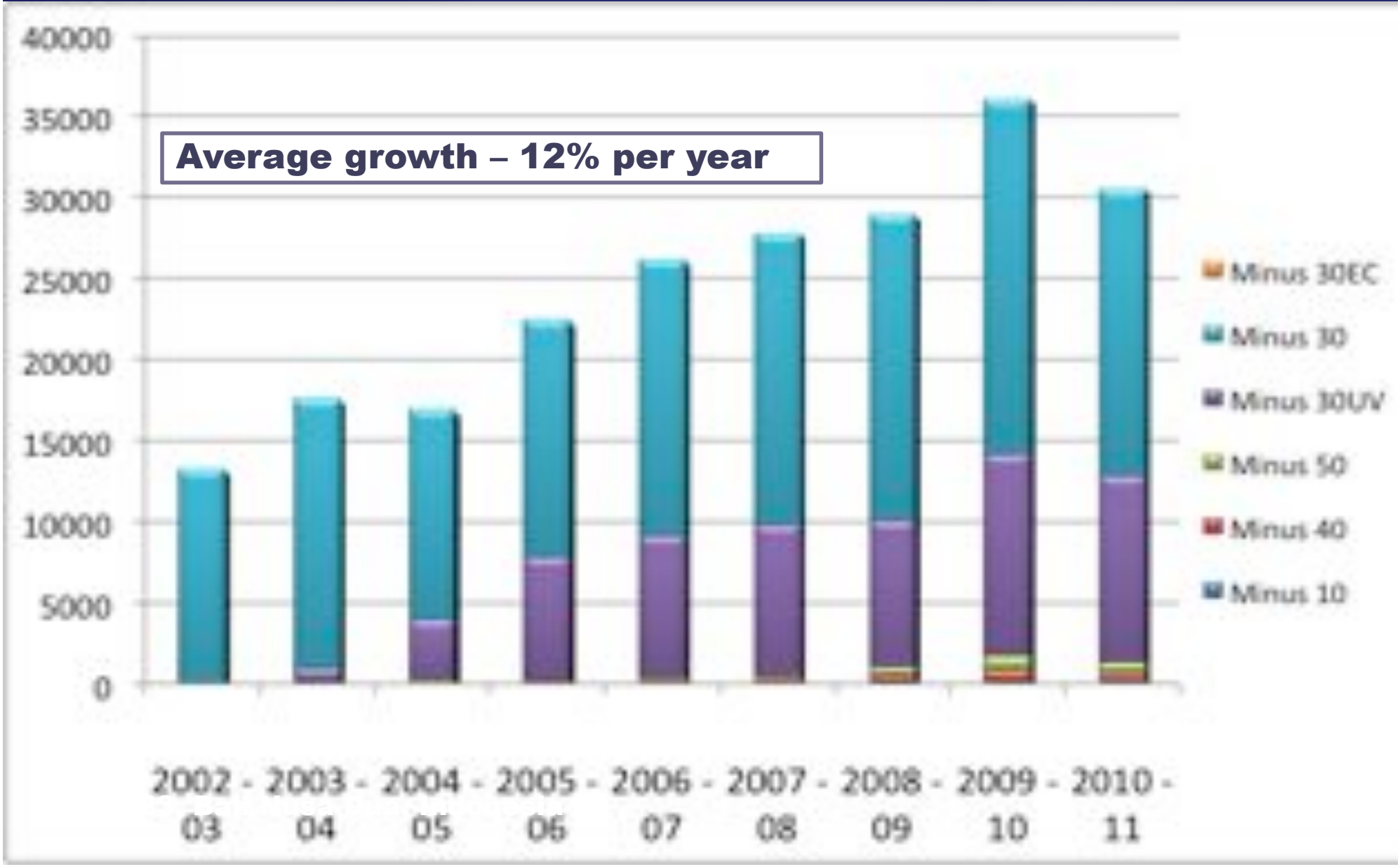
HyChill

Spotlight on Automotive AC

- **HyChill has been selling into the Australian automotive AC sector since the mid 1990's**
- **Considering the initial regulatory barriers, intense "FUD" campaigns by f-gas industry monopolists and the challenges associated with breaking into a monopolised market, the project has been a considerable success**

HyChill

HyChill Australian Sales



Market share analysis

Based on: 2008 “Energy Strategies” report for Australian Government (2006 data)

- **Energy Strategies – in 2006:**
  - **Service consumption: 557 MT HFC-134a**
  - **Crash consumption: 310 MT HFC-134a**
  - **SERVICE MARKET SUBTOTAL:**
    867 MT HFC-134a in 2006
  - **New vehicle consumption: 229 MT HFC-134a**
  - **GRAND TOTAL:**
    1096 MT HFC-134a in 2006

HyChill

Market share analysis

Based on: 2008 "Energy Strategies" report for Australian Government (2006 data)

- **HyChill – in 2006:**
  - **Total sales into Australian automotive sector: 25.8 MT**
  - **Equivalent quantity of HFC-134a avoided: 25.8 x 3 = 77.4 MT equivalent**
- **In other words:**
  - **77.4 / 867 = 8.9% of auto service market in 2006**
  - **77.4 / 1096 = 7.1% of total auto market in 2006**

HyChill

Market share analysis

Extrapolating to 2010 based on Australian Bureau of Statistics data

- **ABS 2006 Passenger vehicles: 11,215,555**
  ABS 2010 Passenger vehicles: 12,269,305 (+9.39%)
- **Therefore, extrapolated HFC-134a consumption:**
  Service: 948 MT Total: 1199 MT HFC-134a in 2010
- **HyChill sales in 2010: 34.3 MT hydrocarbon**
  (equivalent of 34.3 x 3 = 102.9 MT HFC-134a)
- **Therefore, 2010 market share:**
  10.9% of service market, 8.5% of total consumption

HyChill

Market share analysis
Additional notes

- **The figures just provided are conservative because:**
  - **Have not accounted for vehicles manufactured for export**
  - **Have not accounted for other HC suppliers in Australian market**

Spotlight on Automotive AC - Safety Studies

- **Safety of retrofitting HC's to R134a and R12 MAC's was proven back in 2004 via peer reviewed data published in the International Journal of Refrigeration**
  - **Approx 20 million car-user-years without a single cabin fire**

Maclaine-cross, I. L., Usage and Risk of Hydrocarbon Refrigerants in Motor Cars for Australia and the United States,
International Journal of Refrigeration, Vol. 27 No. 4, pp. 339-345, June 2004.

HyChill

Spotlight on Automotive AC

- **Interestingly, the main selling point of HC's in MAC's in Australia is performance:**
  - **Significantly faster "pull down"**
  - **Superior cooling capacity**
  - **Excels in extremely hot climates/conditions**
- **Many end users and installers are unaware of the climate benefits of their choice of refrigerant**

HyChill

Spotlight on Automotive AC - Climate benefits

- **HyChill's contribution to climate via MAC's:**
  - **Total sales in excess of ~260 tonnes**
  - **This represents in excess of 1,000,000 (1 Million) MAC system charges (average 240gram per vehicle)**
  - **Resulting in avoidance of use of ~780 tonnes of f-gases**
- **In other words, the use of our MAC refrigerant in Australia has avoided over 1,000,000,000 kilograms (1 million tonnes) of CO2-e emissions (conservatively)**

HyChill

Beyond Australia

- **Relevance of HyChill's MAC success to Article 5 countries:**
  - **It has already been done – you can do it too!**
  - **It works**
  - **It is proven safe**
  - **It creates massive climate savings and improves vehicle fuel economy and passenger comfort simultaneously**

HyChill

Beyond Australia

- **Retrofitting larger f-gas systems**
  - **HyChill not directly involved**
  - **Retrofitting f-gas systems is technically feasible but requires specific skills and training (particularly for systems with larger charges)**
  - **A large number of retrofits have been conducted by third parties across Asia (see Greenpeace "Cool Technologies: Working without HFC's" 2010 edition)**
  - **The "real" future is new systems designed specifically for HC's**

HyChill

Technical barriers

- **No technical barriers to natural refrigerants for basically any application**
- **HC's (or other natural refrigerants) can be applied to virtually any application to produce superior efficiency and ROI than any HFC/HFO system.**
- **Natural refrigerants industry consensus that moving beyond HFC's by 2020 is feasible**

HyChill

Practical barriers

- Breaking in to a monopolised industry is difficult
- Commercial “break in” challenges: Volume vs. Price
- Access to information
- Access to training
- Access to markets:
  - F-gas industry currently dominates RAC safety standards and creates arbitrary trade barriers to HC’s
- Reach/resources:
  - F-gas industry commits more time to spreading “FUD” about natural refrigerants than NR industry has resources to counter.

HyChill

Conclusion

- **It's only a matter of time**
  - **Technical superiority of naturals is already demonstrated and quite well recognised**
  - **As the historical record of HC usage across various applications grows, it will become obvious to more and more people that HC's can be applied safely – the only remaining significant barrier to adoption by the mass markets.**

HyChill