



Earthcare Products

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Opportunities and Applications for Hydrocarbons in the Refrigeration Sector

Presented to:

The F Gas/ODS Stakeholders' Meeting

BERR

London SW1H 0ET

Greenfreeze 1992



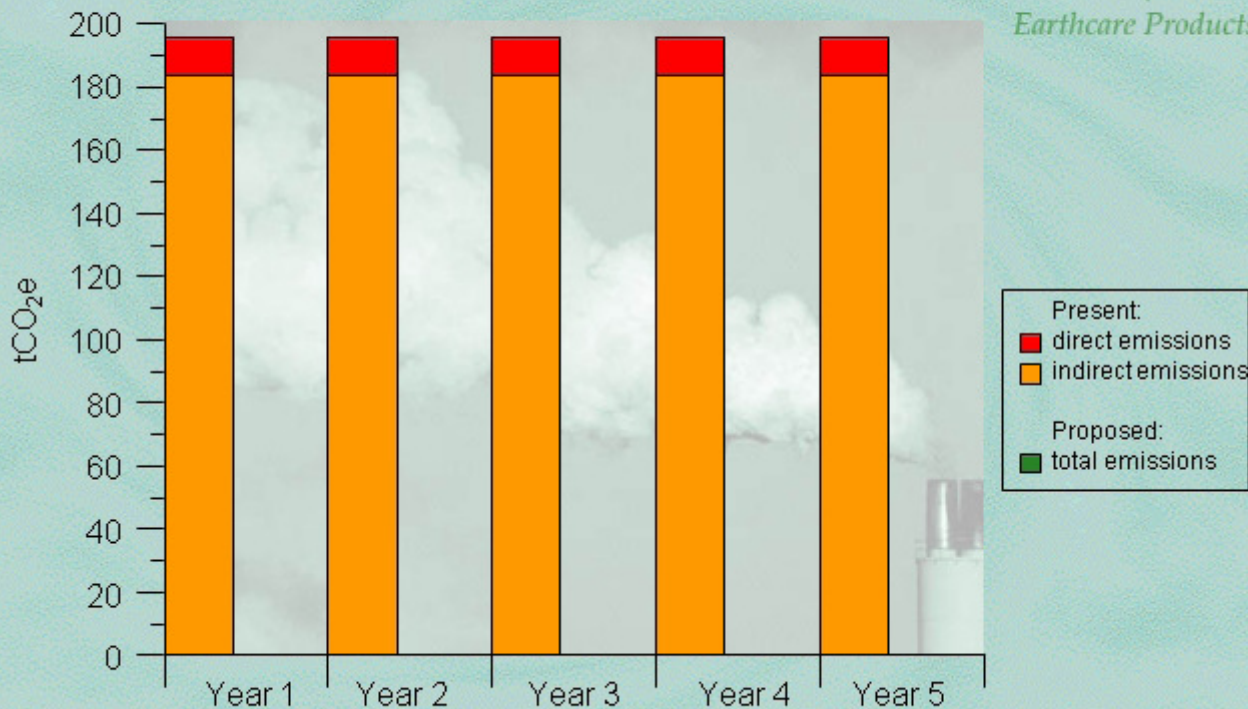
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GHG Emissions



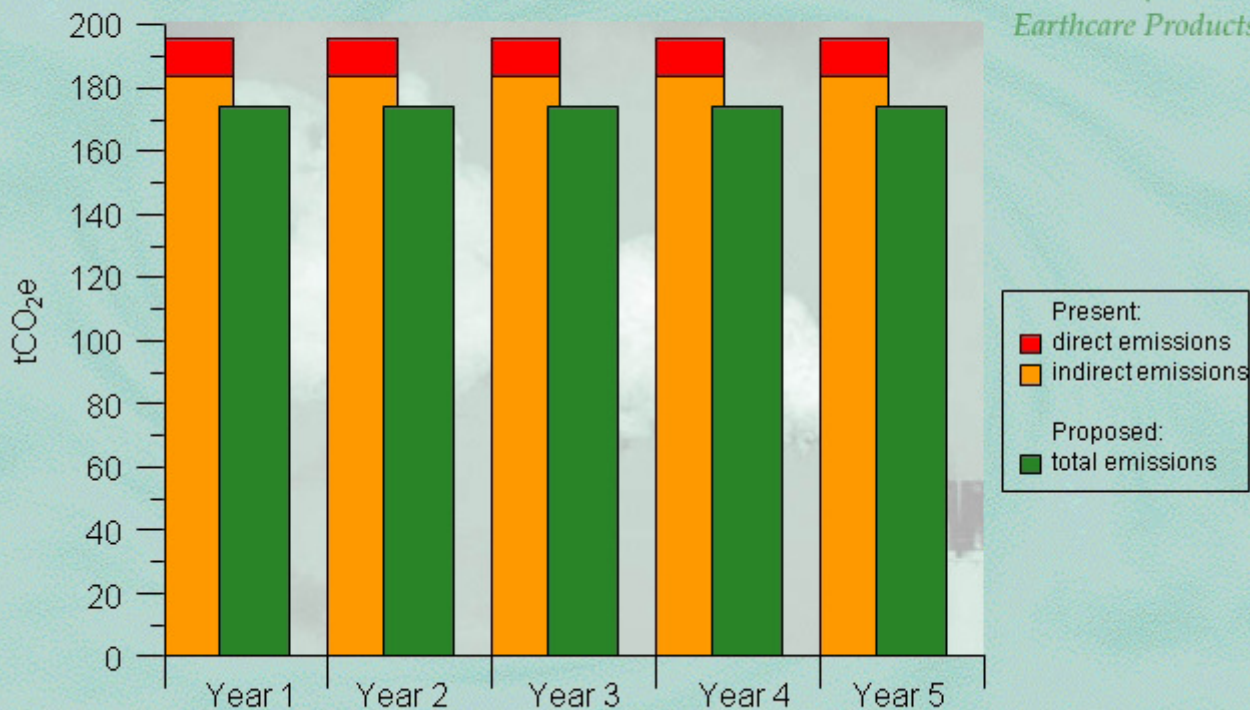
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GHG Emissions



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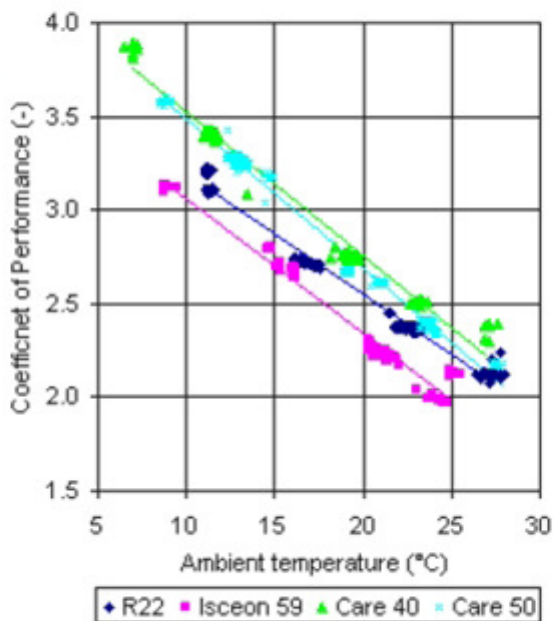


BITZER

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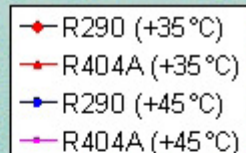
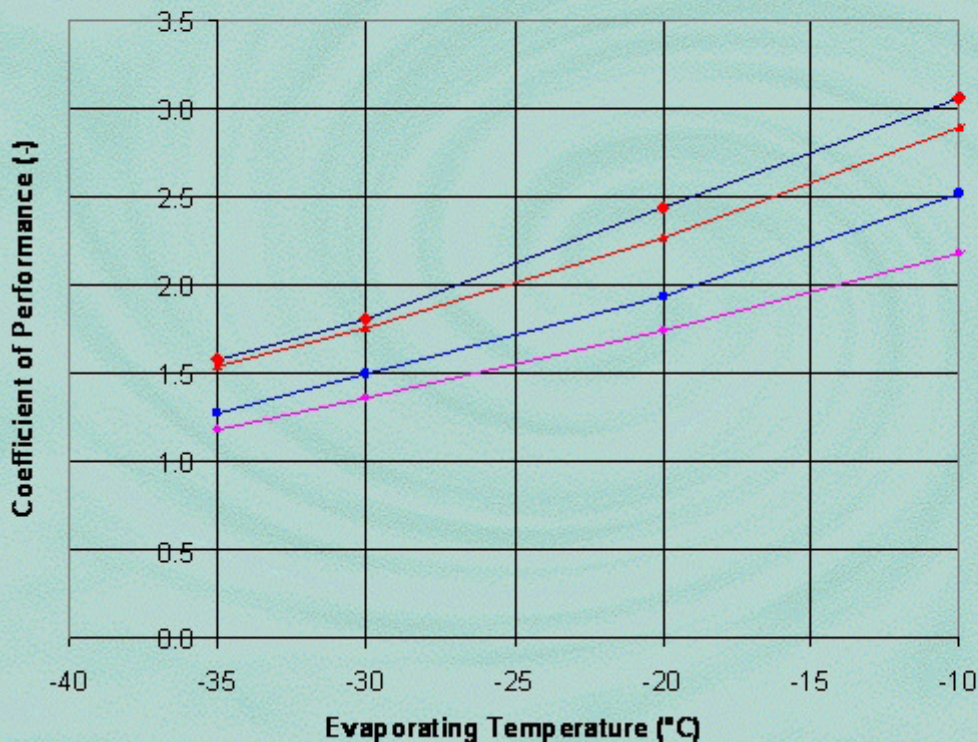


Tests by the Building Research Establishment in Watford

BORIN



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Tests by the ILK
Institute of
Dresden in
Germany



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Established 1997





marstair



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Very Environmentally Friendly split systems



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Danfoss



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Largest Chiller to date:
Church House, Westminster,
650kW Cooling,
2 x 20Kg R290



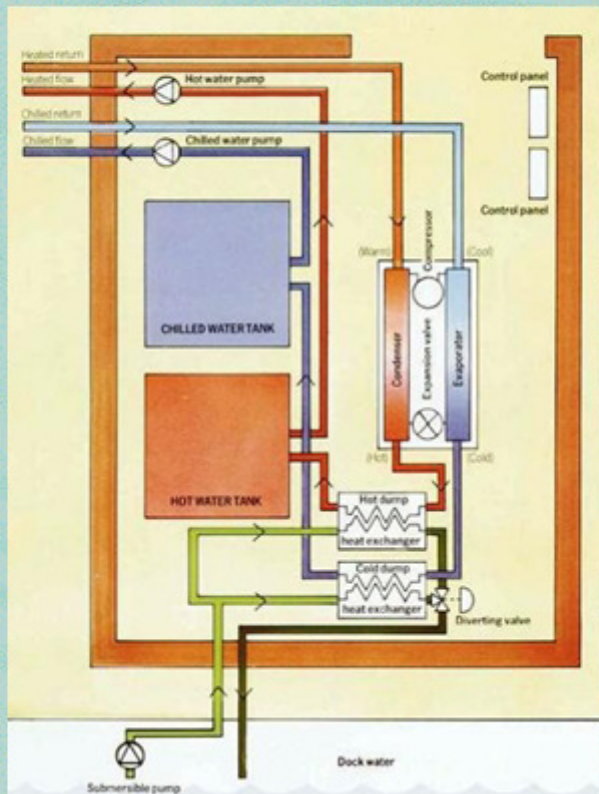
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Ground Source Heat Pumps



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Water-Cooled Integral Refrigeration Cabinets



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THE DEVELOPMENT OF LOW ENERGY INTEGRATED COMMERCIAL REFRIGERATION

LEAD ORGANISATION

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COST AND DURATION

The Carbon Trust contribution towards this project is £60,000. The project started in March 2006 and is due for completion in October 2006.

PROJECT REFERENCE

000-4-3



It features a typical commercial refrigeration unit which is cooled using water instead of environmentally damaging ammonia.

OBJECTIVES

To design and prove the water-cooled refrigeration system concept to the stage where commercial demonstration can commence.

SUMMARY

In many food retailers, commercial refrigeration constitutes the largest single source of electricity use. At present, most supermarket refrigeration systems are cooled by the direct expansion of a refrigerant gas, which flows around isolated pipework within the store. Not only are such systems inefficient, they also leak, and in the process emit large quantities of global warming refrigerant into the atmosphere. As a more environmentally sound alternative, this project is developing a system for the removal of rejected heat to the exterior of

the store using water as a secondary heat transfer medium.

The project involves the design and development of all elements of the system to allow integrated operation. Examples of all items of equipment that would be required for a supermarket installation of this technology will be listed. This trial version of the system can then be analysed, refined and optimised in order to achieve the lowest energy consumption, at its lifetime, this project should achieve a system design suitable for commercial demonstration prior to wider market adoption.



Beyond R410A



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3 Patented new Refrigerants



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- 1. ECP410A hydrocarbon blend
- 2. ECP717 ammonia blend
- 3. ECP744 carbon dioxide blend

EU F – Gas Directive



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HFC phase out from MACs
commencing 2011

The PED...



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... & the Great Chinese Takeaway



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KALI General Equipment Company Limited

27A, Ruzhua Plaza, 267, Wushan Road, Guangzhou, China.

PED Declaration

We declare under our sole responsibility that the following product:

Air cold chiller

Model Designations:

LACW500S PASRW200S

LACW1000SB PASRW4500B3

Are classified for fluid Group 1 and covered as Category 2 in the PRESSURE EQUIPMENT DIRECTIVE 97/23/EC. With the following requirements:

The products are designed in conformity with Essential Safety Requirements of the PED

The products are to carry CE Mark as they fulfil the following directives:

Electromagnetic Compatibility EMC
Low Voltage Electrical Products
Machinery Safety

89/336/EEC
73/23/EEC(93/68/EEC amended)
89/392/EEC

Date: 30 Aug 2006

Date: 30 Aug 2006

Zhou Ke
General Manager

Zhu Senlin
Technical Director

EC Regulation No 842/2006 on Certain Fluorinated Greenhouse Gases



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- 1. Leakage Checking/Repairing
- 2. Leakage Detection Systems
- 3. Record Keeping
- 4. Recovery
- 5. Training And Certification
- 6. Reporting
- 7. Labelling
- 8. Promotion Of Alternatives

Kyoto Protocol - \$4.7 billion ODS Subsidy



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Thank You