



CO₂ Information 2010





Project First Engineering

In today's evolving refrigeration market **Project First** recognise the need to move with the times. It has become clear that **natural refrigerants** are now a **genuine alternative** to **conventional HFC systems** and many customers are looking for a **long term permanent solution** to their refrigerant choice.

In order to ensure that we can offer a **long term solution** that can be **installed and maintained** by the current supply base, we have searched the **world market** to find a provider who can help us **meet our ambitions**.

Following **extensive research** we have an exclusive supply agreement with **Green & Cool of Sweden**.

Green & Cool are **Europe's largest independent CO2 plant manufacturer**, having supplied in excess of 200 systems across Europe, many of which have been operating for up to five years.

This now means Project First are in a position to supply a high volume, high quality commercially priced CO2 products which give a **genuine HFC alternative** to our customers.



Project First Engineering

A key reason for the current move towards CO2 technologies is principally due to the basic properties of the fluid. This will mean that a change to CO2 will bring an end to the 10 year legislation cycle that CFC, HCFC and now HFC refrigerants have suffered in recent times.

- Zero Ozone Depletion Potential (ODP)
- Low Global Warming Potential (GWP)

e.g. GWP for

R404A:	3,260
R22:	1,700
R134a:	1,300
R744 (CO ₂):	1

- Chemically inert
- Non flammable
- Low cost refrigerant fluid

Project First Engineering

The system operates in **exactly the same direct expansion cycle** as any of the conventional HFC systems in use today. The key components are again the same as today's current installations the only main characteristic which differs to the equipment installed today is the **operating pressure**.

All CO2 systems must be designed to withstand their maximum static pressure, in this case the system is designed to **80 Bar** to maintain system integrity at stand still. The high efficiency of CO2 as a refrigerant however results in the distribution pipe work sizes being significantly reduced in comparison to HFC systems and thus helps simplify the installation process.

All **refrigerant plant** is assembled in a controlled factory environment and tested to a bursting pressure of **120 Bar**. The system manifolds are also supplied from the factory in **prefabricated Stainless Steel** to ensure all large diameter fabrication is factory produced and tested and therefore only the **small bore system services** are built on site.

This system is now the **standard style of installation** for most retailers. Our plant supplier has in excess of 100 systems operating dating from 2003.

Project First Engineering

All projects are designed using the latest CO2 plant and system engineering design philosophies.

Project First have worked together with Green & Cool to standardise a design that meets the latest UK standards and have a combined experience of over 100 projects completed using CO2 technology.

We continue to work with our customers and the industry to find ways to improve our systems.



Project First Engineering

Our plant has been developed using the **highest quality components** designed specifically for use with **high pressure systems** to suit the **maximum system design conditions**.

The plant is designed to ensure **ease of maintenance** and ensure that there is **minimal risk of leakage**.

All projects that would be certified to **PED Category 4 level** working in conjunction with our notified body **Royal Sun Alliance**.

We have established a **spares support network** through a national component wholesaler to provide **24 hour parts support**.



Project First Engineering

Project First have installed a number of CO2 projects in the UK for **several major retailers**.

We are experienced in CO2 and undertook the design and installation of an environmental store for **Tesco** at Wick in Scotland, utilising two **transcritical systems**.

We also have five **Marks & Spencer** sub-critical installations which have been operating for up to 2 years.

Our latest projects are two transcritical sites for **J Sainsbury** at Durham and West Houghton.

Over the next 12 months we will be undertaking in excess of **35 projects**, utilizing CO2. By 2011/12 we see this being the norm for refrigeration installations.

We have significant experience in this field and are working with the **British Refrigeration Association** to define new training standards and practices for the future of CO2 installations in the UK.



Project First Engineering

Project First Engineering, as part of their project delivery, are not tied to any **one supplier base** and have delivered plant from other plant manufacturers (apart from **Green & Cool**) as requested by our customers.

We have recently been working with **Star**, **Advansor** and others on multiple **Tesco** and **Sainsbury** projects delivered in the UK.

