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neXt R290

Why you should opt for R290 over CO2

R290 Propane is a gas, it is flammable, but it's a great refrigerant which has a extremely low climate impact (Global Warming Potential) R290 GWP= 3 (Compared to GWP 675 for R32) used in a compression cycle, rather than burnt. R290 Propane is a natural hydrocarbon refrigerant, *(CO2 has a GWP 1)*

As part of the natural refrigerant classification, it is, not subject to regulatory restrictions and widely available at low cost.

As a pure refrigerant rather than a blend such as an HFO there are two advantages. Firstly, there is no glide which makes for an efficient heat pump. Secondly, the system can be topped up without affecting the refrigerant balance and therefore operationally similar to CO2.

Unlike CO2, R290 operates at different temperatures which allows more options for system design. It has a maximum flow temperature of 75° but is usually *(in the real world)* operated at max 70°, It's true that R290 is unable to reach the marginally higher temperatures achieved by CO2, but 70-75° is more than adequate for most applications including retro-fit, in place of Gas or Oil Boiler.

Appliance efficiency, measured by COP is sensitive to flow temperature & not so sensitive to return temperatures. The opposite of a CO2 appliance. In practice R290 heat pumps are mainly used with 65° or below flow where realistic COPs are around 3.0. Note: much higher COPs are achieved at lower flow temperatures.

The flexibility of return temperatures, between 30 and 50°, makes R290 much more suitable than CO2 which require consistent low temperature IRO 30° return water to remain efficient in central heating systems, or low Delta-T systems.

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Unlike CO2, R290 is flammable. This means it requires a consideration to risk when selecting an appropriate appliance location. propane is denser than air, so if a leak did occur it will displace air and drop to the lowest point so just like Gas bottles HPs should not be sited near drains or vents.

Whilst R290 propane may appear hazardous compared to inert refrigerants it should be considered in context to other flammable gas installations such as household natural gas supplies and LPG storage bottles.

A domestic R290 Heat pump typically contains about 1 Kg +/- of Propane That's just 12% of the volume in a barbeque cylinder.

Widely used in refrigeration and in large commercial scale heating applications and is well proven over many years of use. It is widely cited as the refrigerant of choice for domestic use because it works exceptionally well in small scale applications. *(Retro fitted to existing systems, there may well be a requirement for some modification of, controls valves and logic. This is true of any heat pump that is replacing a fossil gas boiler.)*

In conclusion.

- **If your system does not need the marginally higher temperatures achievable by CO2 appliances.**
- **And there is any possibility the system attached may not have the control stability to guarantee the particular low return temperatures required for CO2 appliances to run efficiently.**

Then R290 is most certainly the better option for you.

We don't just sell products we are genuine central heating experts focussed on providing great products and customer support. Our aim is to give sound information to assist our customers with their heating requirements.