

Port Talbot Justice Centre Replacement of VRF

Overview

- **Programme:** 9 Weeks (On- site)
- **Estimated start** Mid April
- **Estimated finish** Start of July
- **Contractor:** Sub Cool
- **Project Value:** £650K
- New units will be more efficient and quieter
- Lower carbon emissions and reduced running costs saving estimated 13.534 tonnes of carbon. Over 15yrs this will be estimated at a saving 203 tonnes over its lifetime
- Reposition of units for safer maintenance
- Utilise new R32 refrigerant with much lower GWPs and replace DHW with air source heat pump
- Design & build agreed with client so we can attempt to offset some projects costs this FY



Port Talbot Justice Centre Replacement of VRF

Our client permitted us to go down the design and build process so we can achieve some spend this financial year.

The current system is not fit for purpose. It does need feed any of the two open plan offices nor does it feed the new court five.

As the building is of 2001 construction, the system installed is greatly outdated and what is working is running 24 hrs a day.

The new system will be programmed to run when needed (around 8 to 10 hrs a day).

Two of the system condensers will be positioned at the rear inside a secure compound to negate the current close proximity of the units on the roof. Maintenance will be achieved easier.

DHW unit will also be replaced with an air sourced heat pump outside the plantroom.

As this project will be running during spring and early summer, provision for temp cooling has been allowed if needed to support staff.



Port Talbot Justice Centre Replacement of VRF

There is currently 4 systems

- System 1 – Ground Floor Open Plan Office (Central Fines)
- System 2 – Ground Floor Areas (Offices, Meeting Rooms, Consultation Rooms, Courtrooms, Tribunal/Hearing Rooms)
- System 3 – First Floor Open Plan Office (Central Fines)
- System 4 – First Floor Areas (Offices, Meeting Rooms, Consultation Rooms, Courtrooms, Tribunal/Hearing Rooms)

The existing condensers utilise R410A refrigerant which has a GWP of 2,088.

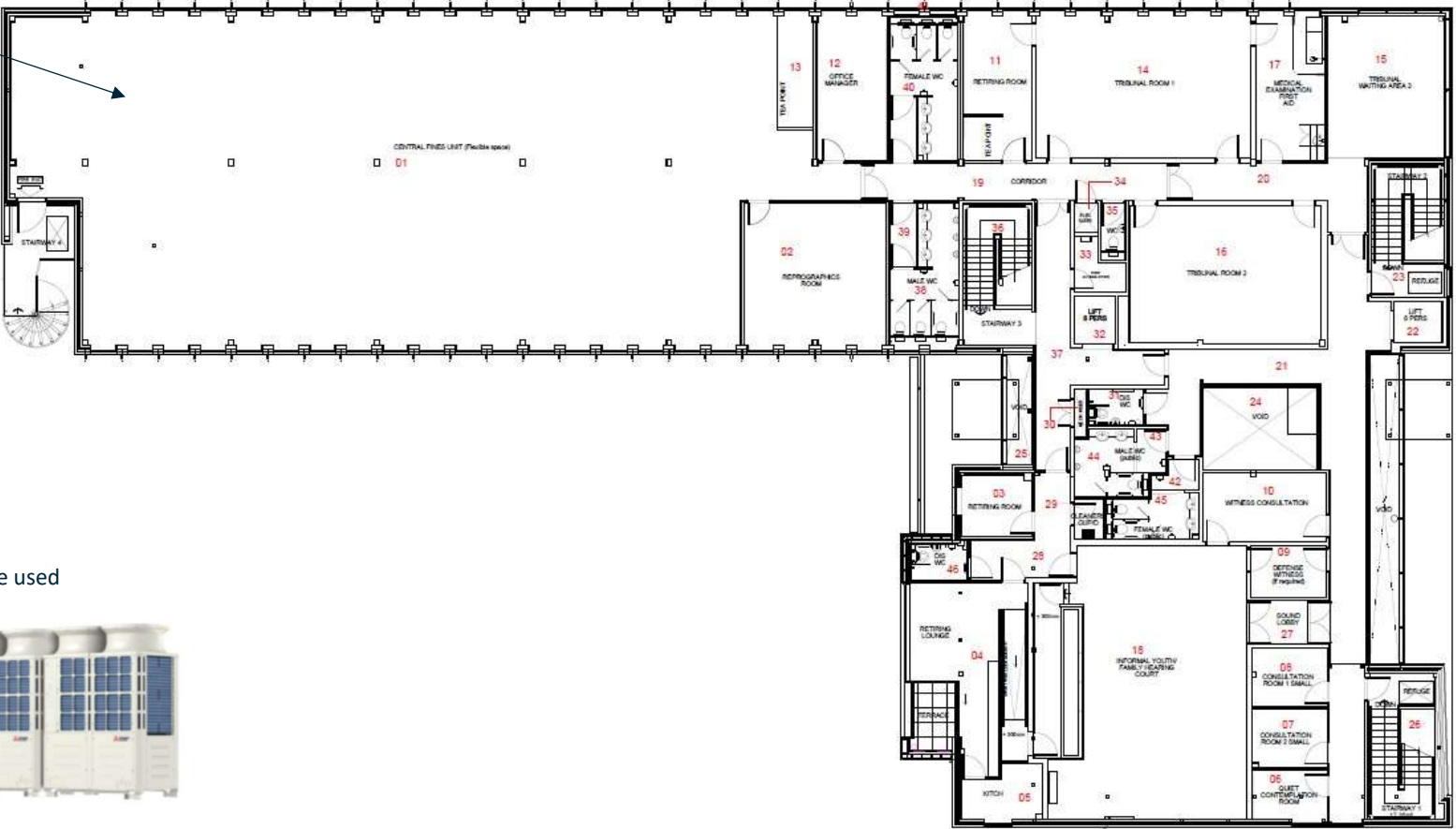
The new proposed system is R32 refrigerant which has a GWP of 675



Estimated savings per year

	New R32	New R410a	Existing	
Operating Hours Per Day	8	8	16	Current system is running inefficiently with no controls, new system will be regulated to 8 hrs a day
No of Days Cooling	72	72	72	
No of Days Heating	193	193	193	
Cost of Electricity (£ per kWh)	0.245	0.245	0.245	From 1st April 2024 to 30th June 2024 as Ofgem website
CO2 Grid Emission Factor 2023 (SAP 10.2)	0.226	0.226	0.226	Government electrical emissions factor table
Climate Change Levy Cost Factor 2021-2023	0.00775	0.00775	0.00775	
Total Power Used kWh - Electricity	48,998	54,442	108,884	Assume R32 is 10% more efficient than R410a
Total Emmission kgCo2	11,074	12,304	24608	
Total Climate Change Levy Cost	£379.73	£421.93	£843.85	0.775p/kWh charged as a Climate change levy cost
Total Annual Running Cost	£12,384.24	£13,760.27	£27,520.54	
Cost Saving R32 vs Existing per year	£15,136.30			
Saving in power kWh/yr	59,886			
Carbon Emission difference	13,534			

Current open plan office solely relies on open windows



Example of units to be used



Contractors availability

Our winning contractor availability is as follows:

Currently they have 13 employed AC installers and 4 service engineers
They have a network of 20+ subcontractors.

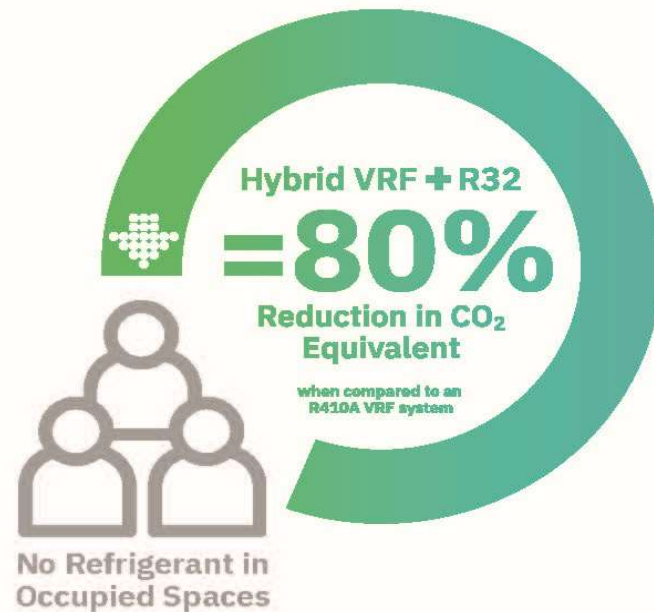
They are completing Isle of Wight shortly at snagging stage
They have one team half way through Chelmsford
IOW team moves to Leicester in a fortnights time.
They have one team due at Caernarfon between April-July.

R32 | HybridVRF

HVRF provides the ideal solution for customers looking to future-proof their air conditioning in line with the next stage of the F-Gas Regulations and the phase down of high Global Warming Potential (GWP) refrigerants.

By combining R32 with the merits of a Hybrid system, more than an 80% reduction in CO₂ equivalent can be achieved as it uses up to 40% less refrigerant, when compared to an R410A VRF system.

A comfortable and stable air temperature control is provided with no refrigerant in occupied spaces, meaning simple compliance with BS EN378 and removing the need for leak detection.



This makes City Multi HVRF ideal for:



Hotels



Offices



Hospitals



Schools & Universities



Mixed Use Buildings



High Rise Buildings

Reduction in Carbon Footprint

- The F-gas phase down was put in place to reduce the direct emission from HFC refrigerants
- Hybrid Branch Controllers use R32, the lowest GWP refrigerant in the VRF market
- R32 refrigerant has a GWP that is 66 % lower than the traditional R410A refrigerant

R32

F-Gas - HFC Phase Down Programme*



It is the requirement of manufactures to reduce the CO₂ equivalent with options of:

- Decreased kW on the market
- Use of lower GWP refrigerant
- Reduced amount of refrigerant in the system

Hybrid VRF provides the perfect solution for both reducing refrigerant volume and utilising the lowest GWP refrigerant available now and in the future.

* F-Gas 2016 phase down programme: http://ec.europa.eu/clima/policies/f-gas/legislation/index_en.htm

PUZ-WZ80VAA(-BS)

Ecodan R290
Monobloc Air Source Heat Pump

R290

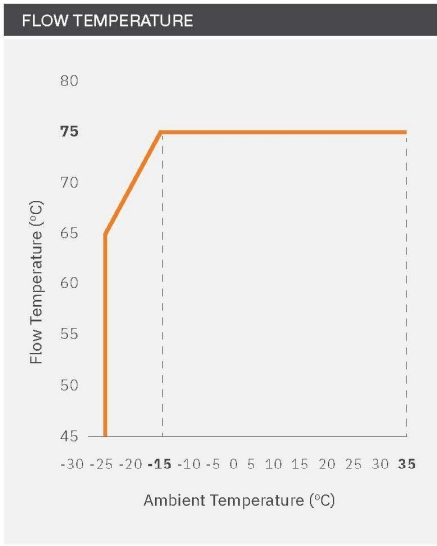
Key Features:	Key Benefits:
- A+++ heating efficiency - Ultra quiet noise levels - MELCloud enabled - High water temperature of up to 75°C - Fully electric source of heating and hot water	- Minimised energy consumption - Flexible product placement - Remote control, monitoring, maintenance and technical support - Ideal for energy storage - Zero carbon ready



OUTDOOR UNIT		PUZ-WZ80VAA(-BS)
HEAT PUMP SPACE HEATER - 55°C	ErP Rating	A++
	η _s	140%
	SCoP (MCS)	3.56
HEAT PUMP SPACE HEATER - 35°C	ErP Rating	A+++
	η _s	176%
	SCoP (MCS)	4.49
HEAT PUMP COMBINATION HEATER - Large Profile ^{*1}	ErP Rating	A+
	η _{wh}	134%
	Capacity (kW)	8.2
HEATING ^{*2} (A-7/W35)	Power Input (kW)	3.51
	COP	2.28
OPERATING AMBIENT TEMPERATURE (°C DB)		-25 ~ +46
MAXIMUM WATER OUTLET TEMPERATURE (°C)		75
SOUND DATA ^{*3}	Pressure Level at 1m (dBA)	40
	Power Level (dBA) ^{*4}	58
WATER DATA	Pipework Size (mm)	28
	Flow Rate (l/min)	23
	Water Pressure Drop (kPa)	32.22
	Width	1050
DIMENSIONS (mm)	Depth	480
	Height	1020
WEIGHT (kg)		117
ELECTRICAL DATA	Electrical Supply	220-240v 50Hz
	Phase	Single
	Nominal Running Current [MAX] (A) ^{*5}	22
	Fuse Rating - MCB Sizes (A) ^{*6}	25
	REFRIGERANT CHARGE (kg) / CO ₂ EQUIVALENT (t)	R290 (GWP 3)
		1.0 / 0.009

NOTES:
^{*1} Combination with EHPT20X-MEHEW Cylinder
^{*2} Under normal heating conditions at outdoor temp: -7°CDB / -8°CWB, outlet water temp 35°C, inlet water temp 30°C.
^{*3} Under normal heating conditions at outdoor temp: 7°CDB / 6°CWB, outlet water temp 55°C, inlet water temp 47°C as tested to BS EN14511.
^{*4} Sound power level tested to BS EN12102.
^{*5} Under nominal heating conditions at outdoor temp: 7°C, outlet water temp: 35°C.
^{*6} MCB Sizes BS EN60898-2 & BS-EN60947-2.
η_s is the seasonal space heating energy efficiency (SSHEE) η_{wh} is the water heating energy efficiency

PUZ-WZ80VAA(-BS)
Ecodan R290
Monobloc Air Source Heat Pump



Heating Product Information

PUZ-WZ80VAA(-BS) Ecodan R290 Monobloc Air Source Heat Pump

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