

FORANE® 427A: THE RETROFIT FROM R-22 TO FORANE® 427A IN A CONSERVATION CHAMBER AT A FISH FACTORY



In September 2009, Solquimia operated a retrofit with Forane[®] 427A in a conservation chamber at a fish factory BACALAMOS PLEAMAR in Saragossa, Spain.

Unit description

The installation is equipped with two Copeland semi-hermetic compressors and two evaporators. The installation was made operational in 1989. Refrigerant charge of the installation is 16 kg.



Retrofit procedure:

Arkema's Forane® 427A refrigerant has positioned itself as an excellent replacement candidate in low and medium temperature refrigeration applications. Forane® 427A is an easy-to-use, non-toxic, non-flammable, and non-ozone depleting HFC refrigerant. In addition to having comparable performance to R-22, Forane® 427A refrigerant has one of the lowest global warming potentials of any R-22 refrigerant retrofits available on the market today.

Retrofits to Forane® 427A require no change out of expansion valves or other major components.

The retrofit was performed by Solquimia. The oil change and the detection of leaks was first operated.

On changing the oil, it was found to be very acid; therefore, the replacement of the mineral oil with POE oil avoided damage to the compressor.

When pressurizing with dry nitrogen, a small leak was found close to the expansion valve in the low-pressure section and the leak was repaired.

The expansion valve was adjusted.



Comparative Data

	Units	R22	Forane® 427A
Installation load	kg	16	16
Evaporation temperature/Boiling, low points temperatures	°C	10,3	11,5/ -5,2
Condensation temperature/boiling temperature	°C	34,9	40,1/35,3
Compressor entry temp	°C	13,4	0,7
Liquid sub cooling	°C	3,2	6,1
Condensation Pressure	Bar	13,5	14,6
Evaporation Pressure	Bar	3,5	3,6
Average amperage	A	7,7	7,7
condenser air change	°C	6	6
evaporator air change	°C	3	3
Discharge temperature	°C	80,8	65,8
Cooling capacity	KJ/m ³	2440	2406
COP		4,77	4,75

From this results we can tell that :

- The discharge temperature is lower with Forane® 427A=> protects and extent compressor's lifetime
- The cooling capacity is equivalent for both products=> performances are equivalent
- the electrical consumption is equivalent with Forane® 427A and R-22=> the product is energy efficient

As a conclusion, installation runs with Forane® 427A and R-22 in the same conditions.

Forane® 427A consequently fully satisfies the requirements of the European regulations while enabling existing equipment to continue to perform well without the need for any long and costly unit modifications. The versatility of Forane® 427A is also appreciated as it can be used to retrofit low temperature refrigeration equipment as well as air-conditioning installations, resulting in only one retrofit refrigerant for all R-22 units.

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