



# PPORTUNITY



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*Focused On The Engineered Environment*

June, 2008

Welcome to PPORTUNITY, a monthly newsletter provided by Jacco & Associates. Jacco's focus on engineering and design concepts will improve your HVAC system while significantly reducing design time, making you more productive for your clients.

## June Feature:



## R410a Refrigerant: Replacing R-22 For a Better Future

As of Jan. 1, 2010 no new HVAC equipment may be produced with R-22 refrigerant. At that same time manufacturers of R-22 can only produce 35% of their capacity rate in 1989. Flat out R-22 is being replaced worldwide. Why? Because it is an HCFC (hydrochlorofluorocarbon) refrigerant that produces chlorine which depletes the ozone. The replacement refrigerants are known as HFC's (hydrofluorocarbons) which contain no ozone depleting chlorine atoms. There are several replacement options available today, and we'll cover the basics in this newsletter.

**R-410a:** R410a is a nearly azeotropic 50/50 refrigerant blend of R-32 and R-125. This means it has a low temperature glide (variation of refrigerant saturation temperatures) of less than 0.3°F. In essence this blend acts similar to refrigerants of single molecular composition. R410a also boasts approximately 5% greater capacity than R-22, translating into higher efficiencies, smaller heat exchangers and compressors, all promoting a more environmentally friendly product.

**R-407c:** R407c is a zeotrope, meaning it's blend of refrigerants (23% R-32, 25% R-125 and 52% R-134a) experiences fractionation across a large temperature glide (9°F). So when a leak develops the entire system must be evacuated and re-charged with new cylinders. It is considered a "drop in" replacement for R-22 systems, however you must be cautious. The refrigerant and oil must be completely removed as R-407c requires a synthetic lubricant which is not present in R-22 systems. Then after replacement there will be a 5% reduction in efficiency and capacity of the equipment.

**R-134a:** R-134a is a single molecular refrigerant, meaning it's temperature glide is 0°F. The letdown of R134a is it has a 40% lower refrigeration capacity than R-22. This means larger heat exchangers, bigger compressors and higher purchase and operating costs when compared to other systems.

**Results:** R-410a is the best replacement on the market today for R-22 systems in new equipment. The temperature glide is minimal and the efficiencies are greater than R-22. Most of the equipment specified today will be around for 20+ years, so it just makes sense to specify a refrigerant for your clients that will be around for the entire life cycle of the equipment.

**Read this month's edition of HPAC Engineering magazine to see how Aaon products improved the energy efficiency and comfort of Park Elementary School in Columbia, PA.**

[http://hpac.com/columns/design-solutions/package\\_rooftop\\_solution/index.html](http://hpac.com/columns/design-solutions/package_rooftop_solution/index.html)

## June Question & Answer:

**Question:** Per the Montreal Protocol, production levels of R-22 will be limited to 0.5% of their 1989 capacity in what year?  
a.) 2020    b.) 2025    c.) 2030    d.) 2035

**Prize:** Skil cordless drill/driver!

Respond by July 1<sup>st</sup> with the correct answer to be entered in the raffle for this month's prize!

## Last Month's Question & Answer Winner!

**Question:** Which one of the following systems would not require modulating hot gas reheat?

**Answer:** VAV with reheat. Congratulation to Dominic Cacolici for winning (4) Indians Tickets!

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