Refrigerant Costs, Shortfalls to Spur More R-22 Reclaim - Cover Story - Air Conditioning, Heating & Refrigeration NEWS
by Peter Powell March 10, 2008

The most important tool for today's HVACR contractor is not being used all that much. It is a complex tool and is not carried on a technician's tool belt. To use it, the technician needs to get recovered refrigerant from the jobsite to a reclamation facility. It is that getting from Point A to Point B that is causing the concern in the industry today.

COMING BACK
Reclaim facilities — of which close to 50 are Environmental Protection Agency (EPA)-certified — offer sophisticated chemical processes that bring refrigerant back to an acceptable purity level so the refrigerant can be safely reused.

While reclamation facilities deal with a wide range of refrigerants, the main issue currently is the amount of HCFC-22 that should be coming back for reclamation — in order for adequate supplies of the refrigerant to remain for aftermarket use for the life of R-22 equipment — versus the amount that is actually coming back.

It is quite possible that contractors consider their own on-site recovery and recycling of R-22 as well as their own cache of the refrigerant as adequate to meet their needs without having to deal with reclaim logistics. But industry observers also see more virgin R-22 being used than originally anticipated.

"Today's demand for R-22 is higher than what was expected in 1998 when the phaseout of R-22 started," according to a statement issued by Honeywell. "While a number of non-ozone depleting compounds have been available for many years, R-22 equipment is still the best seller. New equipment and an ever-growing installed base are driving market demand for R-22 to historically high levels."

The Honeywell statement said causes include a strong economy driving sales of familiar R-22 air conditioning equipment, the 13 SEER mandate "which has increased refrigerant charge size by 30 percent on average," a slower transition to HFC-410A than anticipated, and "uncertainty around the Environmental Protection Agency's 2010 decision on how much R-22 to allow for (aftermarket) a/c and refrigeration applications."

THE ISSUE
For contractors and technicians, the issue is getting refrigerant they recover to a reclamation facility in a cost-effective way. In other words, is what it is costing to plug into the reclamation chain as cost effective as just buying virgin R-22? At this point, the answer appears to be no.

And in fact, many industry officials don't see that answer changing until the cost of virgin R-22 is more than reclamation costs. Or to look at the issue from a slightly different

perspective, when the cost of any R-22 — virgin, recycled, or reclaimed — is high enough, reclamation will become more worthwhile.

“The value of HCFCs (like R-22) will increase,” said DuPont’s O’Shea. “This is a market-driven issue.”

National Refrigerants’ James Lavelle said, “As costs increase, reclamation will increase. Plus, there will be more rebates and more monetary incentives for contractors to reclaim. It is just a question of time.”

Hudson Technologies’ Kevin Zugibee said, “This is a matter of pure economics. When a contractor sees more value in reclamation, more refrigerant will come back.”

POLITICAL CONSIDERATIONS

Many in the industry believe that a free market will drive a rapid speed up in reclamation efforts — and that that acceleration will come before a shortfall of R-22. The unknown element in the equation, however, is possible government regulations in the form of legislation that could result in taxes or surcharges added to HCFC refrigerants with part of that revenue put into a bank as a financial incentive — or perhaps even impose curbs on HFC production.

In fact, that HFC situation could be coming to a head. A Feb.15 correspondence from Ted Gartland, director of Refrigerants and Regulatory Compliance for Verisae, “In the latest version of the proposed Warner Lieberman Americas Climate Security Act, there is an HFC cap.”

Gartland said, “This is not yet law, but is currently the leading climate change bill in Congress. The bill puts in place declining caps on the consumption and importation of HFCs into the U.S. The (proposed) cap starts in 2010 and is calculated using a multi-step method. Initially the production and importation rights will be allocated to U.S. producers and importers of record. Over time an increasing portion of these rights will be put up for auction.”

Gartland said, “My initial thoughts are that the prices of HFC gases could increase dramatically.” To combat that he said, “Reducing leak rates and refrigerant charge are the things to do now.”

It is just such volatility on the legislative front that is causing so many in the industry to promote reclaim.

THE PROCESS

Reclamation is a far more complex process than recycling and was originally created to ensure the purity of refrigerant being used in retrofit applications. In recent years, it has become a more significant element in maintaining adequate supplies of R-22.

According to the EPA, “Reclamation is the reprocessing and upgrading of a recovered controlled substance through such mechanisms as filtering, drying, distillation and chemical treatment in order to restore a substance to a specific standard of performance. To be properly reclaimed, used refrigerant must be processed to at least the purity level specified” to ARI Standard 700.

The EPA Website (www.epa.gov) lists close to 50 companies it identifies as EPA-certified refrigerant reclaimers. The processes each uses may vary somewhat but the main intention of each is to bring returned refrigerant back to ARI 700 standards so that it can be safely reused in any system designed for that refrigerant.

NEED FOR RECLAIM

Recent EPA regulations regarding the phaseout of virgin R-22 caused the HVACR industry to do number crunching to see how much reclaimed R-22 would be needed to keep the pipeline filled with the refrigerant—and the end result was not encouraging.

The September 2006 revised draft report from the Environmental Protection Agency titled, “The U.S. Phase-out of HCFC Projected Servicing Needs in the U.S. Air-Conditioning and Refrigeration Sector,” outlined several assumptions about the amount of reclaimed R-22 needed to satisfy U.S. demand after 2010.

According to a statement from DuPont interpreting the draft report, “EPA’s assumptions were based on a 10 percent and 50 percent HCFC recovery rate from retired and retrofitted equipment. Based on industry numbers, DuPont estimates the amount of R-22 reclaimed by EPA-certified reclaimers has been less than 10 percent.”

According to this report, the original 2010 HCFC consumption cap was 96,980 metric tons (MT). Under the newly revised Montreal Protocol, the new U.S. HCFC consumption cap in 2010 will be no higher than 69,270 MT. The report evaluated a scenario in which 90 percent of the HCFC cap would be allocated to R-22, which would represent a supply of 62,345 MT, or 91 percent of the total cap. The report also estimated that R-22 demand for servicing existing equipment in 2010 would be 68,600 MT.

Based on a scenario that assumes 10 percent of R-22 is recovered, only 5 percent of the market demand would be met by this recovered refrigerant. The 62,345 MT of virgin R-22 would cover only 91 percent of market need, leaving a 4 percent (2,555 MT) shortfall.

Based on a 50 percent recovery scenario, 27 percent of the market demand would be met with recovered refrigerants. Enough virgin R-22 would be necessary to cover the remaining 73 percent.

The EPA anticipates a 10 percent reduction in demand between 2010 and 2015. Therefore, estimates for 2015, the next target phaseout date, will remain unchanged from previous calculations.

In 2015 the industry will have an estimated servicing demand of 43,400 MT, which exceeds the 24,938 MT manufacturing cap (based on 90 percent of cap allocated to R-22) by 57 percent. Based on a 10 percent recovery scenario, only 10 percent of market demand would be met with recovered refrigerants. Virgin R-22 would meet approximately 57 percent of demand, leaving a 33 percent supply shortfall. Based on a 50 percent recovery scenario, recovered refrigerant would satisfy 52 percent of the market need, which is enough to mitigate an industry-wide supply shortage of R-22. Virgin refrigerant would meet the remainder of market need, approximately 48 percent.

Limited virgin manufacture will be allowed for servicing existing equipment through 2020. At that time, the projected servicing demand will be approximately 20,500 MT. Based on a 10 percent recovery scenario, recovered refrigerant would satisfy 21 percent of the market need, leaving a 79 percent shortfall. Based on a 50 percent recovery scenario, recovered refrigerant would satisfy 100 percent of the market need.

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