A Fresh Perspective: What's in Your Fridge?

Today, most U.S. refrigerator manufacturers insulate the doors and side panels of their refrigerators with a hydro-fluorocarbon (HFC)-based foam-blowing agent, known as HFC-134a or HFC-245fa, which happens to be powerful greenhouse gases (GHG) that partially escapes during the manufacturing process. While this is how it's "always been done," GE led the way in April 2011 as the first full-line appliance manufacturer in the United States[1] to adopt a foam-blowing agent, called cyclopentane, which significantly reduces GHG emissions during the foaming process.

GE is now transitioning to cyclopentane at its Appliance Park manufacturing facility in Louisville, Ky., where new GE bottom-freezer refrigerators will be manufactured using the cyclopentane foam-blowing agent.

GE replaces foam-blowing agent in top- and bottom-freezer refrigerators to reduce greenhouse gas emissions during the foam-blowing process.

This process reduces greenhouse gas emissions by 99 percent.

WHAT IS CYCLOPENTANE?

Cyclopentane is a "blowing agent" used to propel polyurethane foam insulation into the doors and cases of refrigerators and freezers.

A LOWER GLOBAL WARMING POTENTIAL

Industry-standard insulations can have a global warming potential (GWP) as high as 1,430 (HFC-134a) and 1,030 (HFC-245fa). Cyclopentane has a GWP of less than 25.[2] When it comes to GWPs, the lower the number, the lower the quantity of GHGs emitted when converted to CO_2 equivalents (CO_2e).

CYCLOPENTANE MAKES POSITIVE IMPACT IN DECATUR, ALA., AND LOUISVILLE, KY.

Louisville, Ky.

The use of cyclopentane as a foam-blowing agent in the manufacturing of new bottom-freezer refrigerators will reduce average annual CO_2e emissions from the foam-insulating process by more than 99 percent, or 117,781 metric tons of CO_2e annually, compared to the foam-blowing agent used previously at Appliance Park in the assembly of top-freezer refrigerators.

Decatur, Ala.

Using cyclopentane is reducing the GHG emissions from the foam-blowing process by 400,000 metric tons of CO_2e in Decatur. This represents a 99-percent reduction in GHG emissions compared to the foam-blowing agent that cyclopentane replaced. By using cyclopentane, GE has reduced the GHG emissions of the entire Decatur manufacturing facility by more than 80 percent.

In Louisville and Decatur combined, the reduction is equal to:

- The annual emissions of 101,185 cars on U.S. roads
- The annual CO_2 absorbed by 132,093 acres of Southeastern U.S. forest[3]

GE MAINTAINS LEADERSHIP ROLE IN THE U.S.

GE became the first full-line appliance manufacturer in April 2011 to insulate refrigerators with a foam-blowing agent known as cyclopentane, which has been used in Europe since the early 1990s.

The cost of retrofitting existing facilities has delayed implementation of cyclopentane during the manufacturing process in the United States. GE has opted to take this step as a proactive measure for reducing GHG emissions.

In the spirit of GE's ecomagination℠ initiative, GE Appliances also plans to use the lower-emitting foam-blowing agent at its side-by-side refrigerator Center of Excellence in Bloomington, Ind., by 2014.

1 Based on GE's competitive product analysis.
2 Environmental Protection Agency. "Transitioning to Low GWP Alternatives in Domestic Refrigeration." www.epa.gov/ozone/downloads/EPA_HFC_DomRef.pdf October 2010.
3 Sums of Louisville and Decatur emissions reductions. Conversions are from EPA estimates.