



# HCFC-Refrigerant Phase-Out in Russia ... and what to do?



**Pascal Faidy**

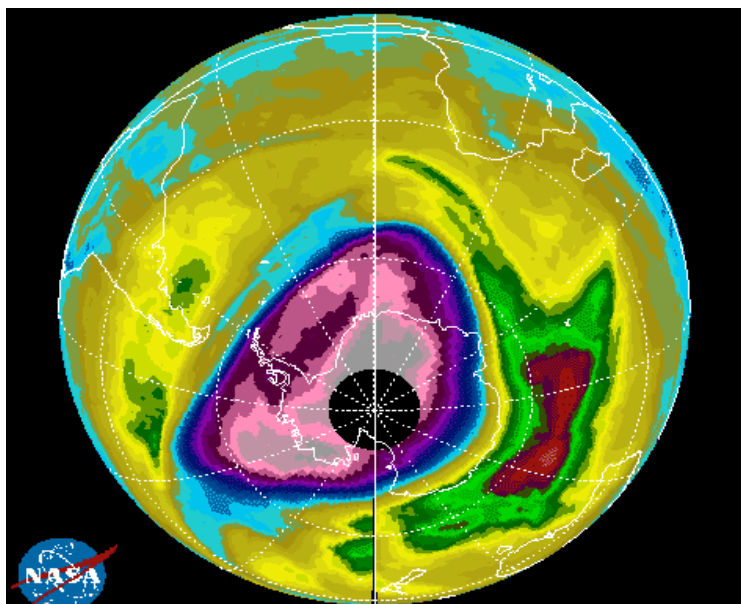
**DuPont de Nemours**

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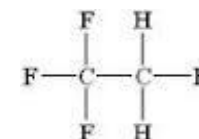
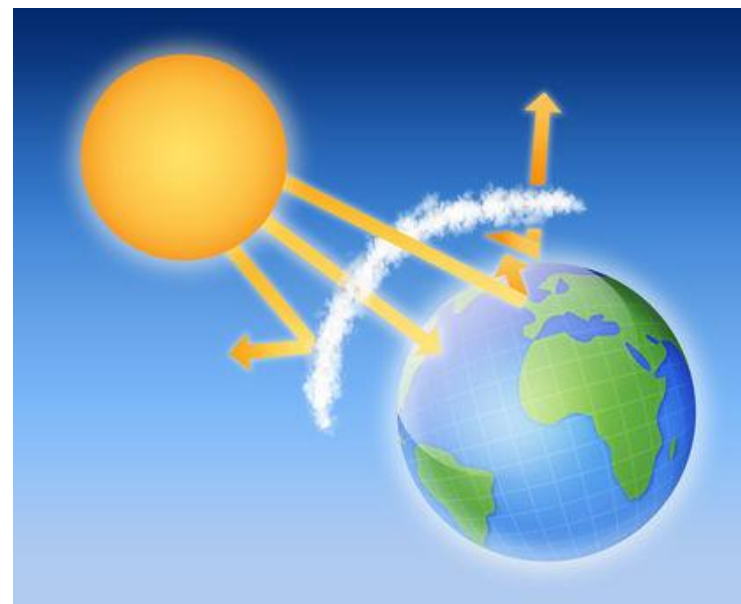
- 1. Basis for the HCFC-Phase-out**
- 2. Comparison of Retrofit Solutions**
- 3. Retrofit Experience of ISCEON® Solution**
- 4. Conclusion**

# Two Environmental Issues

## Ozone Depletion



## Climate Change (GWP)



# EU Regulation (EC) No 1005/2009

31.10.2009

EN

Official Journal of the European Union

L 286/9

## REGULATIONS

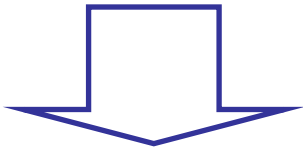
REGULATION

THE COUNCIL

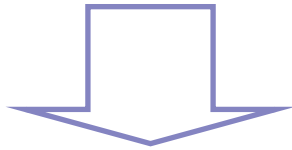
**1. Jan. 2010**  
**Stop of R22-Sales**  
**Stop of R22-Service**

# R22-Phase-Out -- Options for Retrofit

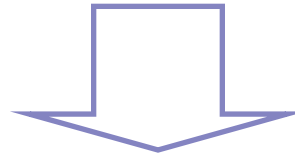
## Four Options



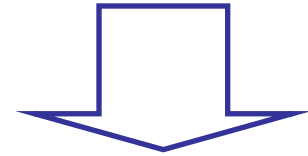
- **Maintain operation using recycled R-22 = Risk!**



- **Replace with new equipment running on:**
  - ammonia
  - hydrocarbons
  - CO<sub>2</sub>
  - HFC, e.g. Suva®



- **Keep running existing equipment - change of oil and further technical modifications are required:**
  - HFCs of the Suva® range, e.g. R404A or R407C



- **Keep running existing equipment – only moderate modifications are necessary:**
  - **retrofit with DuPont™ ISCEON® 9 Series Refrigerants**



# The Lowest Cost Option for Retrofits and new Installations

Select an HFC refrigerant that...

- Based on R-22 Technology
- Minimizes component changes
- Eliminates need for oil change

# ISCEON® MO99 refrigerant: THE BASICS

- **ASHRAE #:** R-438A
- **HFC blend:** Zero ozone depletion
- **GWP:** 1890 (SAR)
- **ASHRAE safety:** A1 non-flammable
- **UL:** Certified
- **Glide:** 3-4K
- **Can be topped off while servicing (do not mix with R-22)**
- **Compatible with MO, AB, and POE lubricants**
- **Approved by Bitzer and Emerson (Copeland® Discus® LT/MT supermarket)**



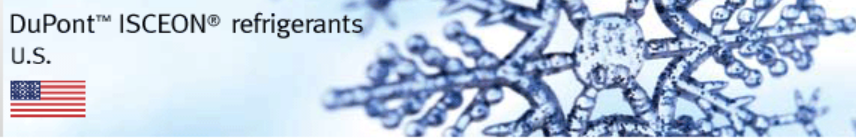
## Tools available to you







Select Industry - Select -



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- Applications
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- Sales & Support
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- Refrigerant Recovery & Reclaim Program
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- DuPont Brands & Trademarks

## Innovative Refrigerants from the Makers of Freon® 22

**R-22 is Going Away**  
 ISCEON® refrigerants help you manage through the R-22 phaseout by enabling continued use of existing equipment with minimal downtime for retrofit and avoiding costly equipment replacement for the equipment owner.

**R-22 Price May Be Volatile**  
 Since January of 2003, the price of R-22 in the U.S. market has increased by more than 500%, and the supply reductions created by ongoing regulations are likely to continue to influence R-22 price in the future.  
 » R-22 UPDATE «

**Replace R-22 with ISCEON® Refrigerants**  
 Retrofitting to ISCEON® refrigerants and away from Freon® 22 puts your business in a position to avoid expected R-22 supply shortages, pricing volatility and labor shortages, and can even provide you with a low-cost supply of R-22 by including retrofit, recovery and reclaim in your refrigerant management plan.

- » First-Hand Experience: Convert from HCFC-22 to ISCEON® MO99™
- » Owners of R-22 A/C Systems: What You Need to Know
- » Business Opportunity for Contractors: Retrofit During Service Calls
- » Business Opportunity for Contractors: AC Value Prop

GET THE FREE APP!

FREE tool from DuPont Refrigerants

- Helpful Links**
- Retrofit of an R-22 Air Conditioning System to ISCEON® MO99™ Refrigerant
    - Click to View this YouTube video!
  - ISCEON® MSDSs
  - Contact the ISCEON® Team
  - Global DuPont Refrigerants

**Critical Information**

- DuPont Refrigerant Expert™ (DUPREX)
  - Now includes Line Sizing and ISCEON® MO99™
  - » Download DUPREX 3.2



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# Retrofit to DuPont™ ISCEON® MO99™ Refrigerant

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Uploaded by DuPontCompany on Sep 7, 2011  
A Quick Switch to Replace R-22 in 8 Easy Steps  
[http://www2.dupont.com/ISCEON/en\\_US/products/ISCEON\\_MO99.html](http://www2.dupont.com/ISCEON/en_US/products/ISCEON_MO99.html)

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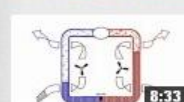
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Trane's New Hyperion Air Handlers  
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1,839 views



Patented One-Shot Revolver Blend-In-Cup



*App icon for  
Apple devices*

Droid app: development starting  
Feb 2012, with launch by June 2012

The screenshot shows the DuPont Refrigerants app interface. At the top, it displays the AT&T 3G signal, the time 12:21 PM, and a battery icon. The app title is "DuPont Refrigerants". Below the title, there are two main input sections: "Select Product" and "Enter Temperature".

**Select Product:** A blue button is selected, showing "ISCEON® M099™ (R438A)".

**Enter Temperature:** A white input field contains "66" with a "°F" label.

Below these sections, there are two more input fields: "Sat.Liq Pressure" with the value "122.2 psig" and "Sat.Vapor" with the value "104.1 psig".

The main section is titled "Pressure - Temperature Calculator". It features a numeric keypad with buttons for digits 0-9, a "change UOM" button, a back arrow with an "X", and a "clear" button.

At the bottom, there is a navigation bar with five icons and labels: "Temp-Pres", "Pres-Temp", "Subcool", "Superheat", and "Information".



dupont refrigerants

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### DuPont Refrigerants P/T Calc App

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Uploaded by DuPontCompany on Jan 25, 2012  
This FREE tool, downloaded from the Apple Store, gives HVACR service technicians handy and accurate refrigerant data on the go.  
<http://www2>

1 likes, 0 dislikes

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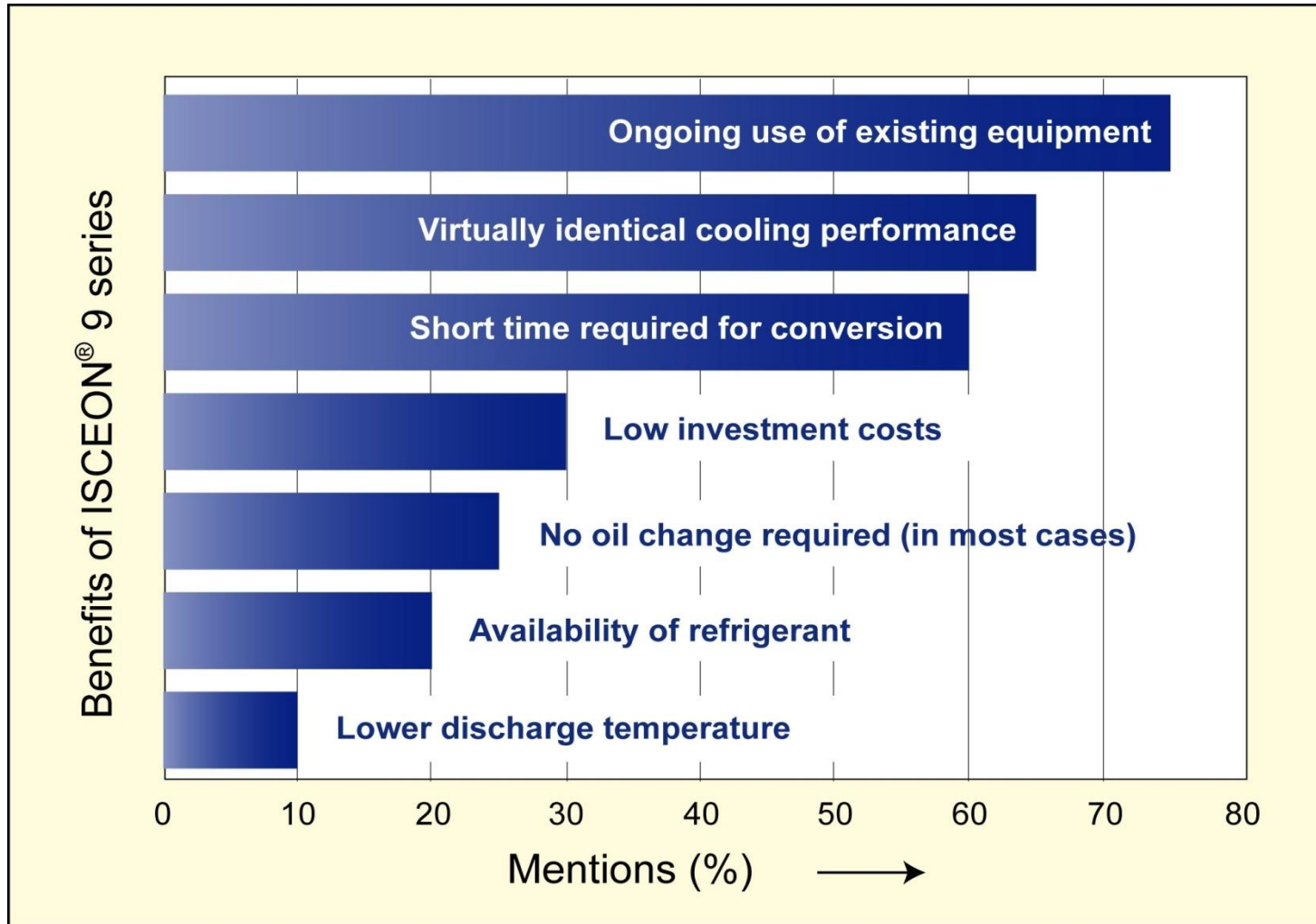


**Retrofit to DuPont ISCEON MO99**  
by DuPontCompany  
2,477 views



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# Outcome of EU-Contractor Survey



# DuPont Refrigerants Today and Tomorrow

## R22 Phase out EU: ISCEON<sup>®</sup> 9- series

- Lower retrofit costs versus HFC/POE-options
- > 5 Years successful retrofit experience in US and EU

## HFO-1234yf: Global Solution for Auto-AC

- No ODP and Low GWP
- Very similar to R134a-Properties

## New Low GWP Opteon<sup>®</sup> Refrigerant Series

- Alternatives to high GWP-Refrigerants, e.g. R404A, R410A
- Developmental Products in tests with Partners

# Conclusion on R22-Phase out

- **Several solutions are available, Contractor companies need to learn to use it properly**
- **ISCEON® MO99 (R438A) is the most versatile alternative to R22, which can be used in new systems and as well for retrofit**
- **With regards to capacity, energy efficiency and cost-effectiveness, DuPont™ ISCEON® MO29 (R422D) or MO99 (R438A) are preferred solution in US and in EU**
- **ISCEON® MO29 (R422D) has shown as well acceptable performance after retrofits in pump circulation systems**
- **Russia might consider to accelerate the current HCFC-phase-out schema**

*Thank you!*



*The miracles of science™*