



Marta San Román  
October, 2016

## COMMERCIAL REFRIGERATION

Sustainable F-gas ready solutions

**Honeywell**

# Buy Only From Authorised Dealers



**PROTECT YOURSELF**

Don't put your business at risk. Purchase F-gas compliant refrigerants here.

**Honeywell**  
Authorised Dealer

 Report Unlawful Distribution



**F-gas target ~80% emissions reduction by 2030**

**>10million CO<sub>2</sub>e illegal entries in EU28**

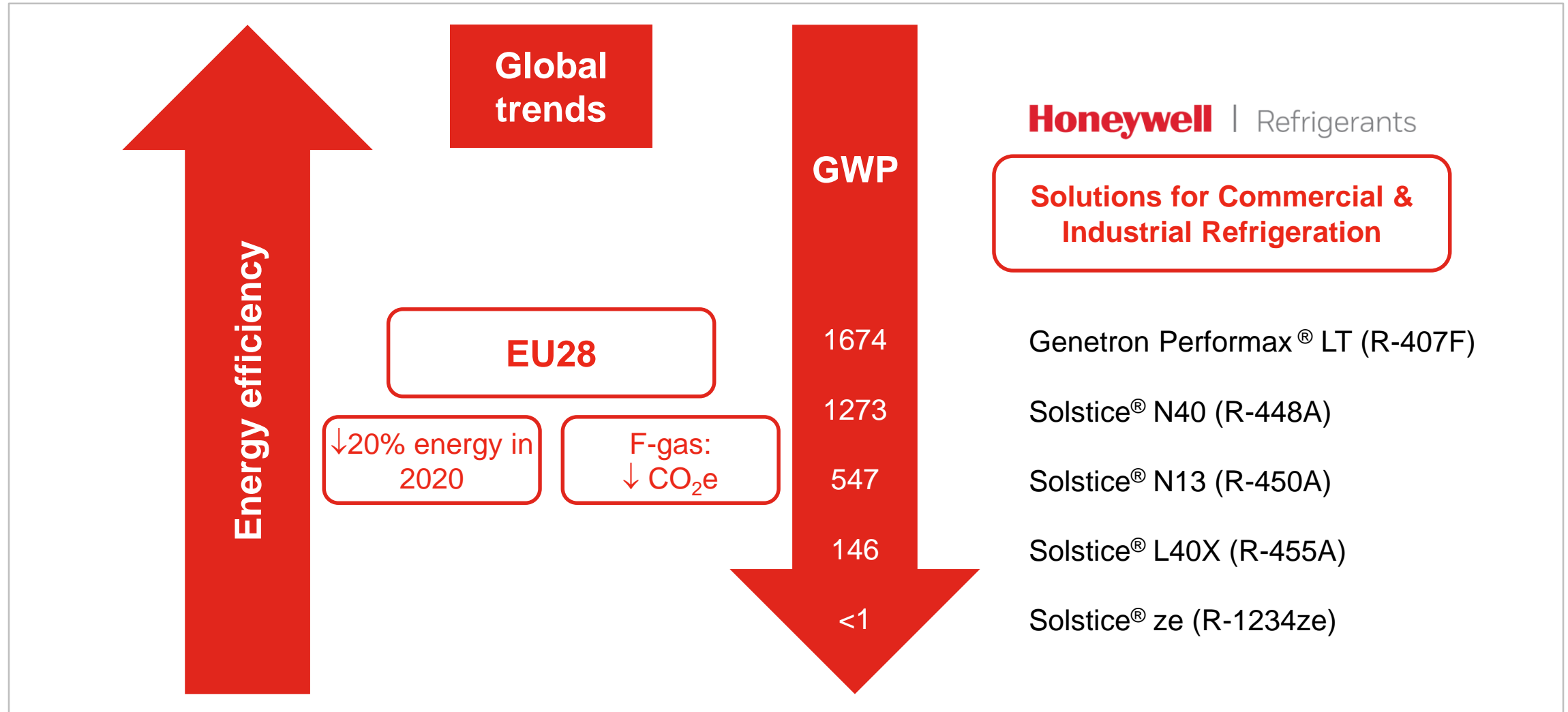
**Missing EU environmental targets**

**Business and safety risks**

**Delayed development of "greener" technologies**

**Avoid black market: Validate the supply chain**

# HFCs Under Regulatory Pressure Worldwide



Honeywell provides all solutions to help meeting regulations

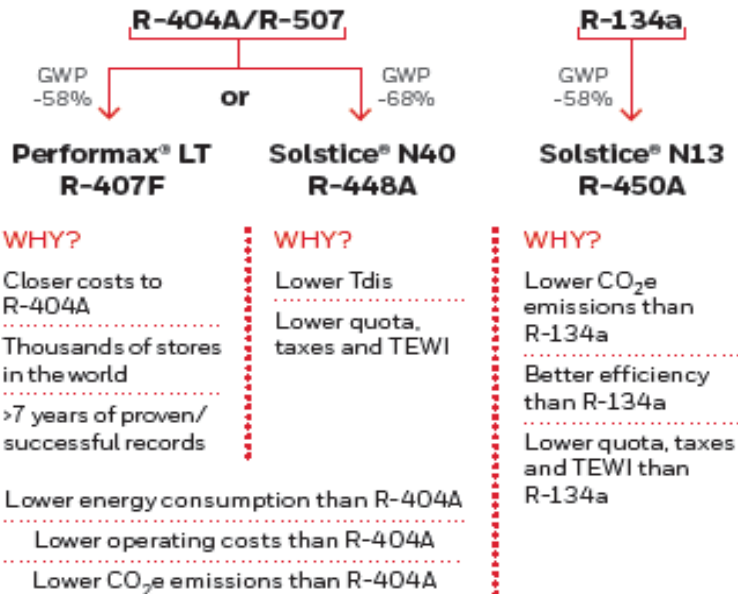
# Commercial And Industrial Refrigeration

## SMART REFRIGERANTS SELECTION

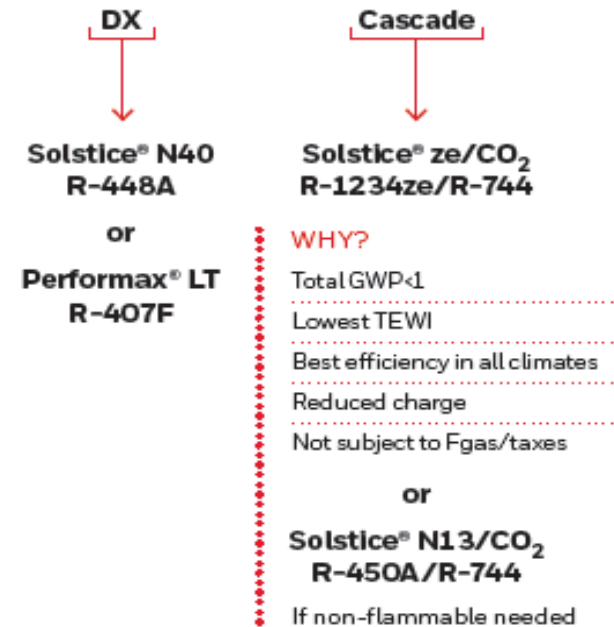


### Commercial and Industrial Refrigeration

#### EXISTING INSTALLATIONS



#### NEW INSTALLATIONS



# Genetron Performax<sup>®</sup> LT (R-407F)

- Best value for money
- Save 12% energy
- Save 58% direct emissions
- Serviceable beyond 2030
- 15,000 systems worldwide
- Possible to retrofit after 2022 systems placed on the market before 2022



## 15,000 Reasons To Choose R-407F

Honeywell Genetron Performax<sup>®</sup> LT (R-407F) is the most successful retrofit product in the industry. Join the 15,000 stores that have already answered the global demand to reduce greenhouse gas emissions by retrofitting to Genetron Performax<sup>®</sup> LT. From energy savings up to 12% to environmental performance, the reasons to switch really add up.

**Most successful retrofit product in the industry**

# Solstice<sup>®</sup> N40 (R-448A)

- Lowest GWP, highest performance direct replacement product to R-404A and R-507
- Reduces energy consumption
- Save 68% direct emissions
- Serviceable beyond 2030
- 2,000 systems worldwide by end of 2016
- Possible to retrofit after 2022 systems placed on the market before 2022



## High Adoption Of Solstice<sup>®</sup> N40 (R-448A)

By the end of 2016, close to 2,000 Solstice N40 (R-448A) installations globally will be completed, making it the most successful, lower GWP product for supermarket refrigeration. It's nonflammable, energy efficient and the most advanced sustainable alternative — ideal for environmentally conscious supermarkets. Make the switch to Solstice N40 today. Learn more at [honeywell-refrigerants.com/europe](http://honeywell-refrigerants.com/europe).

**Lowest GWP, highest performance direct replacement to R-404A**

# Solstice<sup>®</sup> N40 In Words From The End User

**TOSHIBA**  
*Carrier*

**WELL ENGINEERED REFRIGERANT** as alternative to R-404A'

**ASDA**  
Walmart

Solstice<sup>®</sup> N40 will further **REDUCE ENERGY CONSUMPTION** in our systems, compared to R-404A; will also help to further **MINIMIZE ASDA's CARBON FOOTPRINT.**

**Tewis**

**LOWEST GWP, SAFEST, MAXIMUM SAVINGS** for optimized R-404A retrofit

**makro** Member of  
**METRO GROUP**

**PERFORMANCE IS GOOD;** and set points were achieved immediately after retrofit

**HIPER SIMPLY**

In our search for best solution, Solstice<sup>®</sup> N40 was the best proposal. **RESULTS HAVE PROVED IT.**

**precision**  
refrigeration

A **VIABLE, SAFE, GREEN AND ENERGY EFFICIENT** alternative to R-404A. Hopefully more manufacturers will make the switch to Solstice<sup>®</sup> N40 asap.

**Proved results assessed by retailers and contractors**

# Solstice<sup>®</sup> L40X (R-455A)

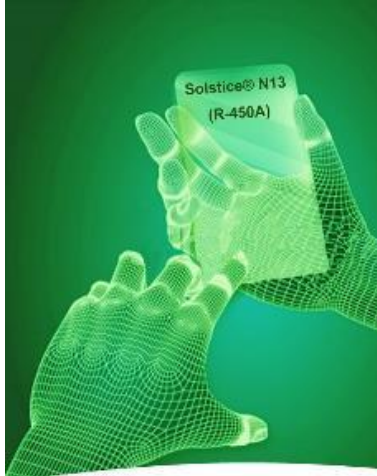
Cool yourself with Solstice<sup>®</sup> L40X



To know more about Solstice<sup>®</sup> L40X (R-455A)  
come back to our booth at 14:00  
or contact one of our experts



# Solstice<sup>®</sup> N13 (R-450A)



- Save 58% direct emissions
- Ease of use/apply
  - Similar operating characteristics
  - Larger operating map
  - Can be used in existing systems with little/no design change\*
  - Non-flammable
  - Negligible glide (0.4°C, lower than R-404A)



- Higher COP at higher ambient temperatures → energy savings
- Case studies: nothing to 14.5% capacity loss versus comparative R-134a system, with typical findings close to 7%

\* When capacity allows

# Solstice<sup>®</sup> N13 In Words From The End User

**Dia** 

'We hope that the R450A provides, in addition to the 86 per cent carbon emissions reduction, economic savings by both energy savings and lower tax'

 **Auchan**

Solstice<sup>®</sup> N13/CO<sub>2</sub> cascade - Our aim was to **SUCCESSFULLY TRIAL** the new HFO blend Solstice<sup>®</sup> N13 in a flagship store and to prove it's **OPERATIONAL AND ENERGY SAVING** credentials. The results speak for themselves

[www.racplus.com](http://www.racplus.com) Refrigeration and Air Conditioning | OCTOBER 2014

 **Tewis praises benefits of HFO blend 450A**

 **Condis**

**PERFORMANCE** is **GOOD**.  
Advantages: **LESS NOISE**, cold tube. Also GWP is 547, so **TAX REDUCTION** close to 60%

 **COVIRAN**

Solstice<sup>®</sup> N13/CO<sub>2</sub> cascade - seems to be **VERY BENEFICIAL** both from an **ENVIRONMENTAL SUSTAINABILITY** and **ENERGY EFFICIENCY** point of view. [...] **MUCH LOWER GWP**, which in turn creates **TAX ADVANTAGES**."

**Proved results assessed by retailers and contractors**

# Solstice<sup>®</sup> ze (HFO-1234ze) Cascade With CO<sub>2</sub>

- Ultra-low GWP<1 for the total system architecture
- Compact design results in reduced floor area needs
- Reduced operational costs
- Available components
- F-gas ready
- Not subject to quota
- Not subject to taxes



**Environmental  
benefits**

Best practice  
example

**Long term investment**

Energy efficiency and ultra-  
low GWP

**Sustainable  
solution**

Beyond 2022

# Solstice<sup>®</sup> ze/ CO<sub>2</sub> In Words From The End User



- Supermarket  +  + 
- 45kW installed power supply
- 35%\* energy consumption p.a.
- 15,000 Euros\* per year
- GWP<1

- Bakery plant
- 18% lower TEWI \*\*
- 9.1% energy consumption \*\*
- Granted project: Solstice<sup>®</sup> ze considered equal to a "natural" refrigerant
- Long term solution

**sinop<sup>®</sup>**

- Hypermarket cash&carry
- Retailer was satisfied as tender requirements were all met
- 30%\* energy consumption p.a.
- A2L accepted, uncomplicated to handle to meet safety demands

\* Anticipated savings compared to three system architecture (refrigeration/heating/air conditioning)

\*\* Compared to traditional R-404A system

**Solstice<sup>®</sup> ze +CO<sub>2</sub>: Proved results assessed by retailers and contractors**

# Genetron Performax<sup>®</sup> LT and Solstice<sup>®</sup> N40



Direct replacement MT&LT



Existing & new installations



Commercial & industrial



Safe handling / std tech skills



↓ GWP & CO<sub>2</sub>e



↓ Energy consumption



Cost-effective

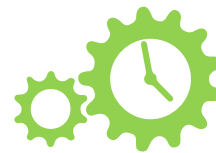


World-wide available



Solstice<sup>®</sup> N40: lower LCCP  
in DX system than booster CO<sub>2</sub>

## Solstice<sup>®</sup> ze and N13



MT alternative to R-134a  
Best combination with CO<sub>2</sub> cascade



Highest efficiency  
Sustainable architecture

**Safe / available / direct replacement / sustainable solutions**



installing new systems with R-404A

Consider Total Cost of Ownership when choosing your next refrigerant

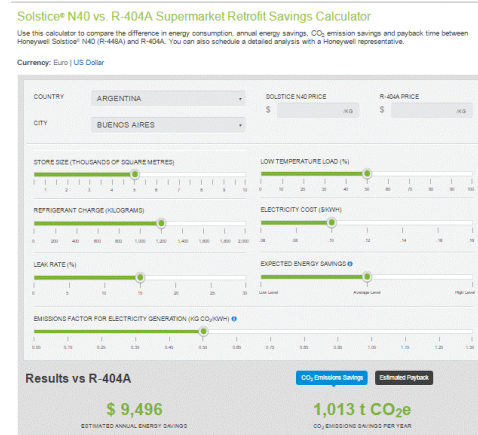
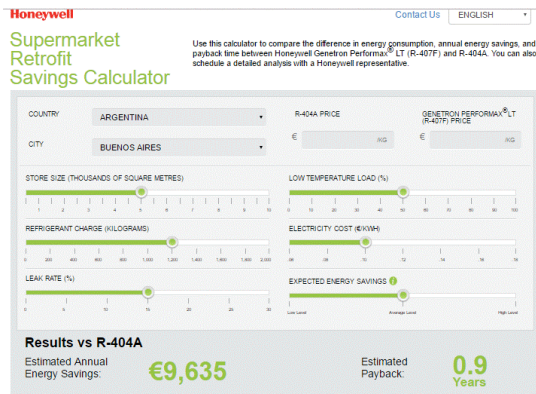


# Honeywell Apps, Online And Software Tools

- Genepro simulation software
- PT chart app
- Refrigerants selection app
- Components chart for Solstice<sup>®</sup>
- Savings calculator Genetron Performax<sup>®</sup> LT
- Savings calculator Solstice<sup>®</sup> N40
- Website
- LinkedIn
- Slideshare...

## GET ACCURATE DATA

For decision-making on the go with Honeywell mobile applications.



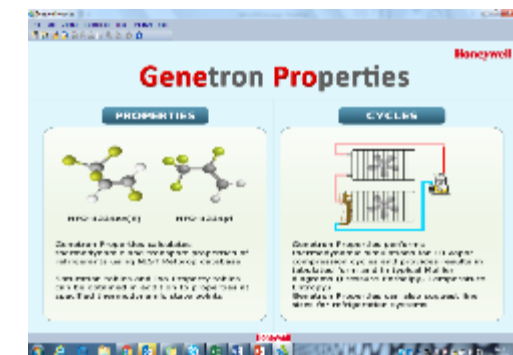
## Honeywell | Refrigerants



## Understanding Your Refrigerant Choices

Availability of certain refrigerants will diminish with F-gas quota phase-down. Use this app to understand the available choices to replace high GWP products with new technology with both performance and environmental benefits.

EXPLORE ALL REFRIGERANTS



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Best digital tools for your business

# Thank you!

# Questions?

**Honeywell** | Refrigerants

## The Most Successful Retrofit Products Worldwide

**R-448A and R-407F** More than 15,000 stores worldwide already retrofitted to Genetron Performax<sup>®</sup> LT (R-407F) and installations of lower GWP Solstice<sup>®</sup> N40 (R-448A) will top 2,000 by year's end globally, making them the most successful retrofit products in the industry.



Scan to learn  
more about  
Honeywell  
Refrigerants





# Cool Yourself With Solstice<sup>®</sup> L40X



**GWP <150**

**A1**

Solstice<sup>®</sup> zd (R-1233zd)

Watch for our new A1,  
GWP<150 refrigerants  
under development

**A2L**

Solstice<sup>®</sup> ze (R-1234ze)

Solstice<sup>®</sup> yf (R-1234yf)

Solstice<sup>®</sup> L40X (R-455A)

<http://www.honeywell-refrigerants.com/europe/>

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Back up

# Solstice® Refrigerants Roadmap

## AIR CONDITIONING / INDUSTRIAL

**TRADITIONAL:** R-407C / R-410A / R-134a / R-22 / R-123

### USE

Chillers  
 Roof tops  
 Split systems  
 VRF  
 Data centers  
 District cooling  
 Milk cooling  
 Apple storage ...

### FUTURE

- **R-1234ze** (<1, A2L)\*
- **R-1233zd** (1, A1)
- **R-455A** (145, A2L)
- **R-452B** (698, A2L)
- **L20 R-444B** (295, A2L)

**TRADITIONAL:** R-404A / R-507 / R-1 Solstice® 34a / R-22

### USE

Supermarkets  
 Cold rooms  
 Self-contained  
 Process chiller  
 Ice machine  
 Warehouses  
 Food processing  
 Food-service  
 Transport ...

### FUTURE

- **R-407F** (1674, A1)
- **R-448A** (1273, A1)
- **R-455A** (145, A2L)
- **R-1234ze** (<1, A2L)
- **R-450A** (546, A1)

## REFRIGERATION

## HEAT PUMPS / INDUSTRIAL

**TRADITIONAL:** R-410A / R-134a

### USE

District heating  
 Boilers  
 Water heaters  
 Distillation  
 Sterilization  
 Laundering  
 Clothes driers ...

### FUTURE

- **R-1234ze** (<1, A2L)
- **R-1233zd** (1, A1)
- **R-455A** (145, A2L)

**TRADITIONAL:** R-134a / R-245fa

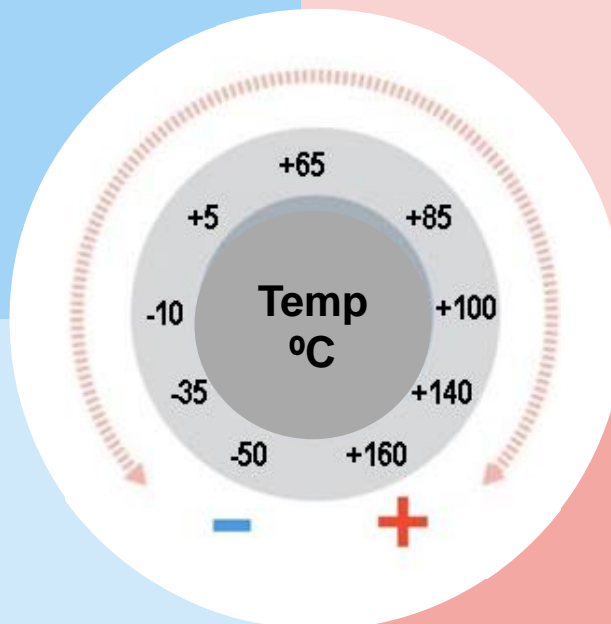
### USE

ORC  
 Drying  
 Cooking  
 Vaporizing  
 Distillation  
 Food processes  
 Chemical processes ...

### FUTURE

- **R-1233zd** (1, A1)

## ORC / INDUSTRIAL



# F-Gas Regulation

**Genetron Performax<sup>®</sup> LT (R-407F)**

**Solstice<sup>®</sup> N40 (R-448A)**

**Solstice<sup>®</sup> N13 (R-450A)**

**No end date for servicing**

**Can be used to retrofit systems placed on the market before 2022**

**Can be used in new industrial installations after 2022**

- Genetron Performax<sup>®</sup> LT (R-407F), Solstice<sup>®</sup> N40 (R-448A) and Solstice<sup>®</sup> N13 (R-450A) can be used without end date for service and maintenance of refrigeration systems placed on the market before 2022 <sup>(1)</sup>.
- Using Genetron Performax<sup>®</sup> LT (R-407F), Solstice<sup>®</sup> N40 (R-448A) and Solstice<sup>®</sup> N13 (R-450A) after 2022 in an existing refrigeration systems placed in the market before 2022 is possible.<sup>(2)</sup>
- Prohibition related to the use of refrigerants with  $GWP \geq 150$ , or  $GWP \geq 1500$  in indirect cascade systems <sup>(3)</sup> does not apply to industrial installations where end users cannot access the sale of the product.

<sup>(1)</sup> Article 13.3

<sup>(2)</sup> Annex III.13

<sup>(3)</sup> Annex III.13

**Proved solutions for servicing and retrofit >2022: No end date**