



BENEFITS OF SOLSTICE[®] ze IN COMMERCIAL AND INDUSTRIAL APPLICATIONS

Solstice[®] ze Refrigerant (R-1234ze)

Honeywell

LEADING GLOBAL TRENDS



SUSTAINABLE BUILDINGS

Buildings are responsible for 40% of global energy consumption and 33% of greenhouse gas emissions. Moving towards renewable energy and eliminating fossil fuels in buildings will be key to our efforts to reduce emissions, lower energy costs, and tackle climate change.



RAPID DIGITALIZATION

With the acceleration of data consumption in connected solutions, more and more servers are being added to datacenters resulting in rising temperatures and potential downtime. To keep data centers running efficiently, it will be critical to have the right cooling solutions.



CONTINUOUS FOOD SUPPLY

With a rapidly growing population, it is imperative to reduce the rate of biochemical and microbiological changes in fresh food in order to extend shelf-life and not waste food.

HOW DOES SOLSTICE® ZE RESPOND?

Solstice® ze is a safe, energy-efficient alternative to traditional refrigerants such as R-134a and R-410A ensuring perfect balance between safety, sustainability, efficiency and cost-effectiveness. With the new F-Gas regulation in Europe, R-1234ze provides a sustainable solution for your heating and cooling applications.

HIGH PERFORMANCE

Solstice® ze is aligned with the eco-design directive and shows up to 5% increased efficiency compared to similar systems using R-134a or R-410A.

Its wide operating envelope enables OEMs to develop high performance chiller equipment with operating conditions reaching -15 °C for process cooling to +90 °C for heating purposes.

SUSTAINABILITY

Solstice ze (GWP=7) stands out as a green alternative when compared to R-134a (GWP=1430) refrigerant in screw / oil-free centrifugal chillers and R-410A (GWP=2088) in scroll chillers leading to a reduction of direct CO₂ emissions by 99%.

Solstice ze has zero ozone depleting potential (ODP) and it has an atmospheric life of 18 days compared to more than 10 years of R-134a and R-410A resulting in lower environmental impact and compliance with environmental regulations.

SAFETY

Solstice ze (GWP=7) stands out as a green According to ASHRAE standard-2010, Solstice ze (R-1234ze) is classified in safety group A2L, i.e., it is in the lower segment of the mildly flammable refrigerants and much safer than alternatives like propane, that is classified as a highly flammable refrigerant (A3), or ammonia, that is toxic (B1).

A unique characteristic of R-1234ze is that it is not flammable under 30°C. Therefore, R-1234ze is considered non-flammable for handling and storage and is designated as non-hazardous according to the European directive PED (group 2).



MOVING TOWARDS LOW GWP REFRIGERANTS

The increasing concerns about climate change have produced environmental regulations aiming to progressively phase down the use of F-gases, i.e. fluorinated greenhouse gases – a group of chemicals containing fluorine. Since the most common F-gases in use in the HVAC sector are refrigerants such as R-134a and R-410A, manufacturers are working to pair up their technologies with alternative refrigerants.



EQUIPMENT

Chiller

COMPRESSOR TYPE

Scroll

Mini-Centrifugal

Screw

TYPICAL CAPACITY

50 kW-
800 kW

250 kW-
1500 kW

350 kW-
2500 kW

INCUMBENT REFRIGERANT

R-410A
GWP = 2088

R-134a
GWP = 1430

R-134a
GWP = 1430

LONG-TERM REFRIGERANT

R-1234ze /
A2L
GWP <1

R-1234ze /
A2L
GWP <1

R-1234ze /
A2L
GWP <1

APPLICATIONS

- Commercial Buildings
- Industrial Processes
- Data Centers
- Retail
- Healthcare
- District Heating

APPLICATIONS



COMMERCIAL BUILDING COMFORT

Airport building in northern Europe replaced old gas boiler with 600kW heat pump that reuses heat in flue gas



+75°C

Supplied temperature, high enough for district heating of the airport

COP 4.0

Improved overall efficiency with the potential to lower the total cost of system ownership

1,000 MWh PER YEAR

Estimated savings with payback period of approximately 4 years



FOOD PROCESSING

Aiguillon Fruit Cooperative (COFRA) in southwest France wanted to renovate and improve its fruit preservation process, and replace its on-site chillers.



Lower carbon emissions with GWP<1 and safer alternative to ammonia

25%

Consumes less electricity than ammonia system, reducing energy bills and carbon footprint.

**300k
€/YEAR**

Reduced annual electricity consumption.



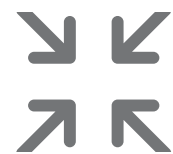
RETAIL (CASH AND CARRY)

Reduced operating costs

- Lower maintenance requirements
- Lower leakage levels



9700_{m²} 20-30%



Retrofit refrigeration and integrated heat recovery system

- Includes A/C and MT systems
- Independent LT CO₂ system

Reduced energy consumption

- Compact system design requires reduced space in equipment room
- Refrigerant charge lower than equivalent conventional R-404A DX system



DATA CENTER

Cooling system designed to prevent datacenter overheating and integrated into the existing BMS, giving facility managers a complete view of their infrastructure.



5 MW

Cooling system
(4 chillers)

12.1%

Reduction in annual
energy consumption

**€150K
PER YEAR**

Energy cost savings



RESPONSIBLE CARE[®]
OUR COMMITMENT TO SUSTAINABILITY

For more information

sustainability.honeywell.com

fluorines.europe@honeywell.com

Honeywell Advanced Materials

2 Dublin Landings

North Wall Quay

North Docks

Dublin 1

D01 V4A3

Ireland

www.honeywell-refrigerants.com

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FUTURE
IS
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WE
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