2021

Food Retailer Survey Report

Natural Refrigerant Condensing Units

NORTH AMERICAN
Sustainable
Refrigeration
Council

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Background

Increasing regulatory pressures are driving US retailers to explore refrigeration technologies using the lowest possible Global Warming Potential (GWP) refrigerant. Compared with the European and Asian markets, the US has relatively fewer refrigeration technologies available using natural refrigerants such as CO2, Ammonia and Propane.

In 2020, NASRC retailer members participated in this survey as a first step to characterize retailer demand for natural refrigerant-based condensing units and ultimately bring more products to the market. Participating Retailers included Albertsons, ALDI, Costco, Giant Eagle, HEB, Kroger, Publix, Stater Bros., Target, UNFI, Walmart, Weis, and Whole Foods Market.

This report summarizes their responses indicating preferences for product applications, load type priority and corresponding capacity ranges (MBTUs). Retailers were also asked to indicate condensing medium preferences, and other considerations and requirements.

- **Part I focuses on CO2 condensing unit options**
- **Part II focuses on Propane condensing unit options**

All survey results are reported based on the number of store locations each response represents.

Why Condensing Units?

NASRC retailer members indicated specific interest in CO2 and propane-based condensing units due to their potential to:

- **Modularly transition existing systems during normal replacement of aging equipment**
- **Provide flexibility to serve unique load types in new and existing stores**
- **Contribute to overall GWP reduction targets**

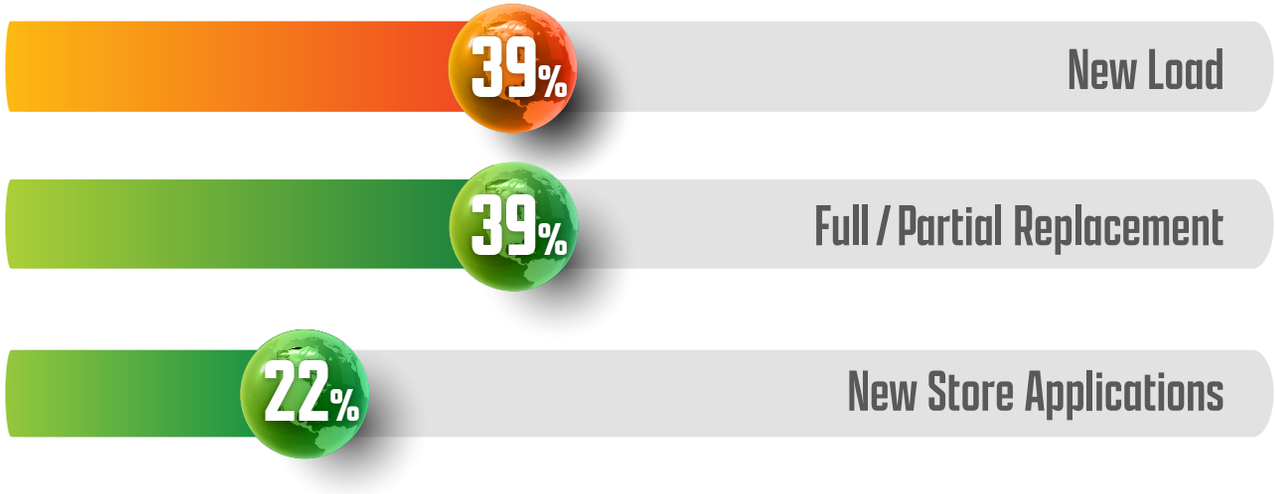
Conclusions

- There is a strong demand for condensing unit technologies using natural refrigerants. At least 13 major food retailers representing over 17,000 US store locations have an interest in natural refrigerant-based condensing unit technologies.

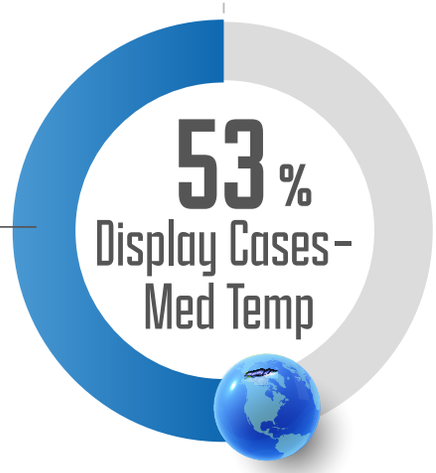
- Further assessment is needed to understand the barriers preventing natural refrigerant-based condensing units from entering the US market as well as the cost and energy implications of these technologies.

13 food retailer participants representing 17,200 US locations submitted responses.

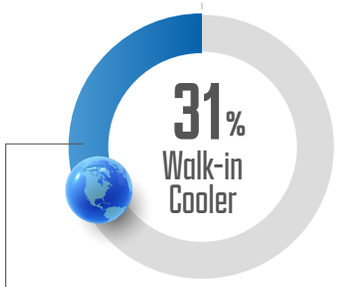
What APPLICATIONS are you interested in for this product? (Check all that apply)



What load type is your **FIRST PRIORITY** for this product?



What CAPACITY RANGE?



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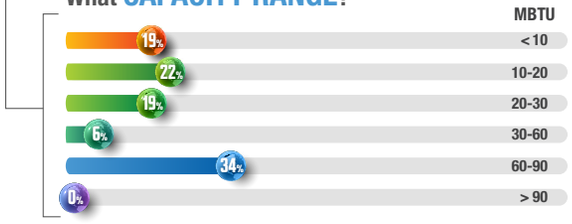

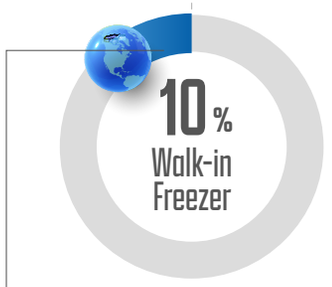

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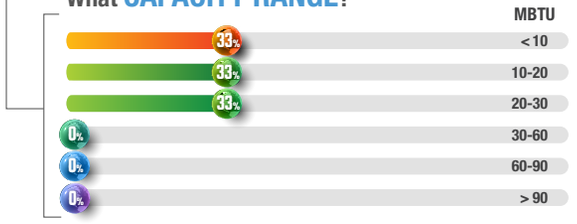

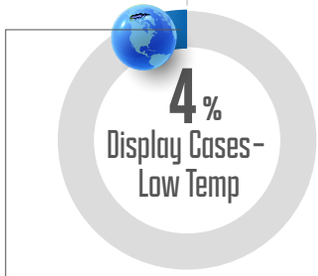

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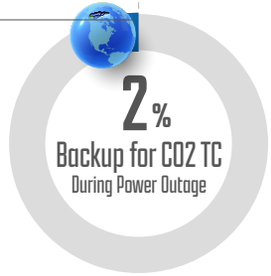

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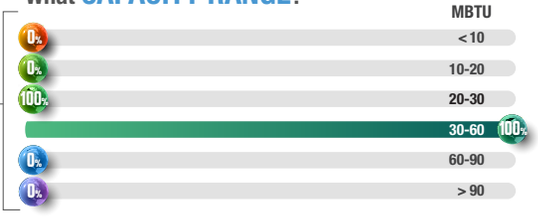
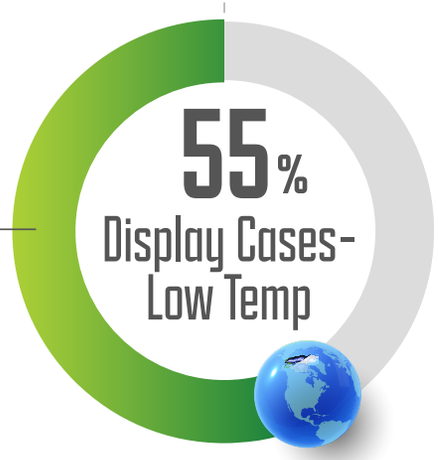
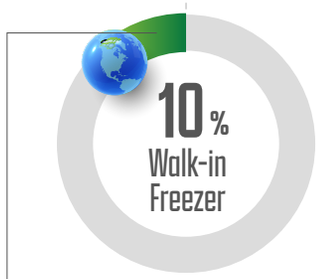


What load type is your SECOND PRIORITY for this product?



What CAPACITY RANGE?

Note:
16% of survey respondents did not indicate a second priority load type for this product.



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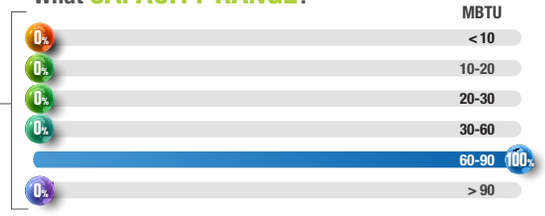

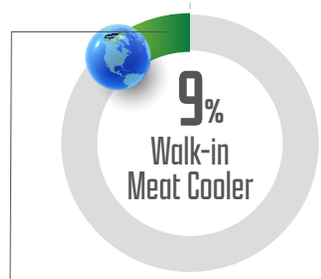

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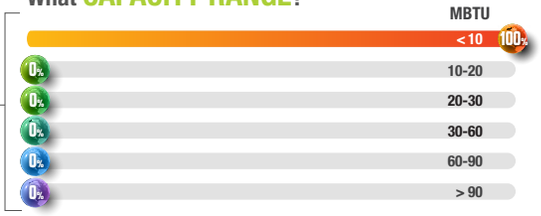

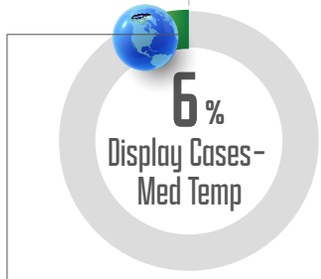

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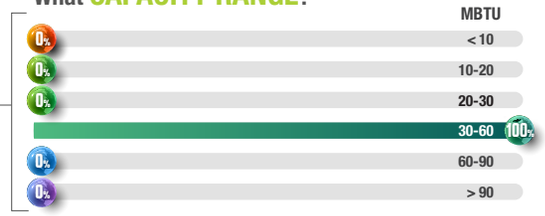

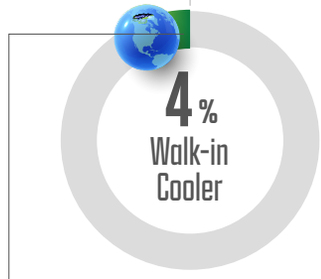

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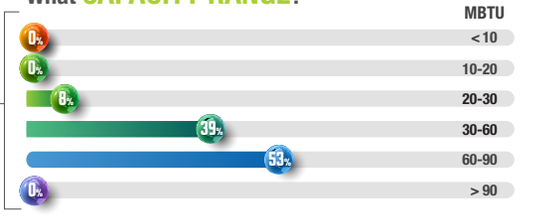


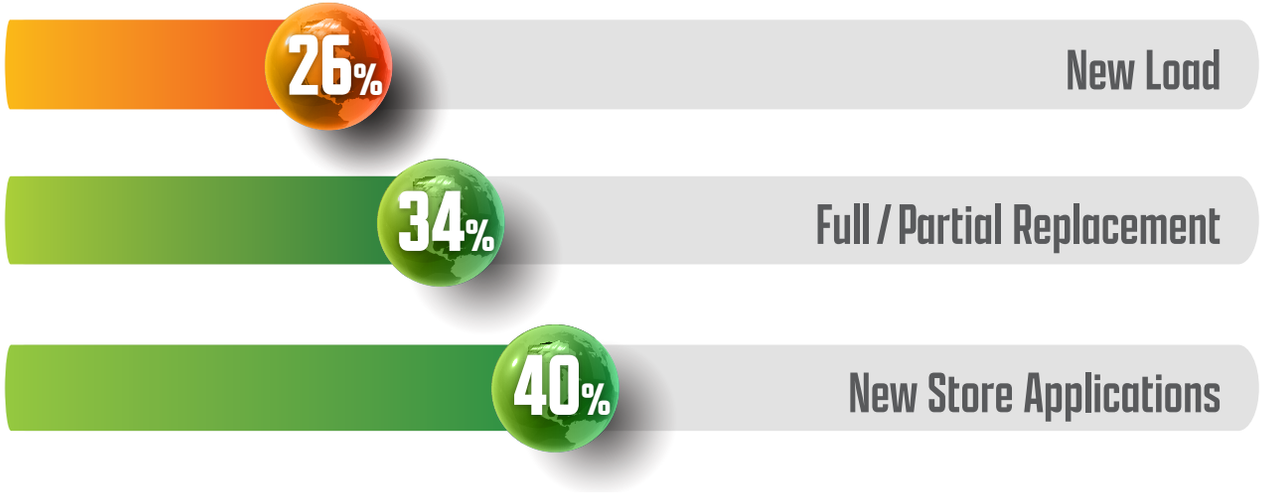
What is your preference for CONDENSING MEDIUM?

Do you have any other REQUIREMENTS or PREFERENCES for this product?

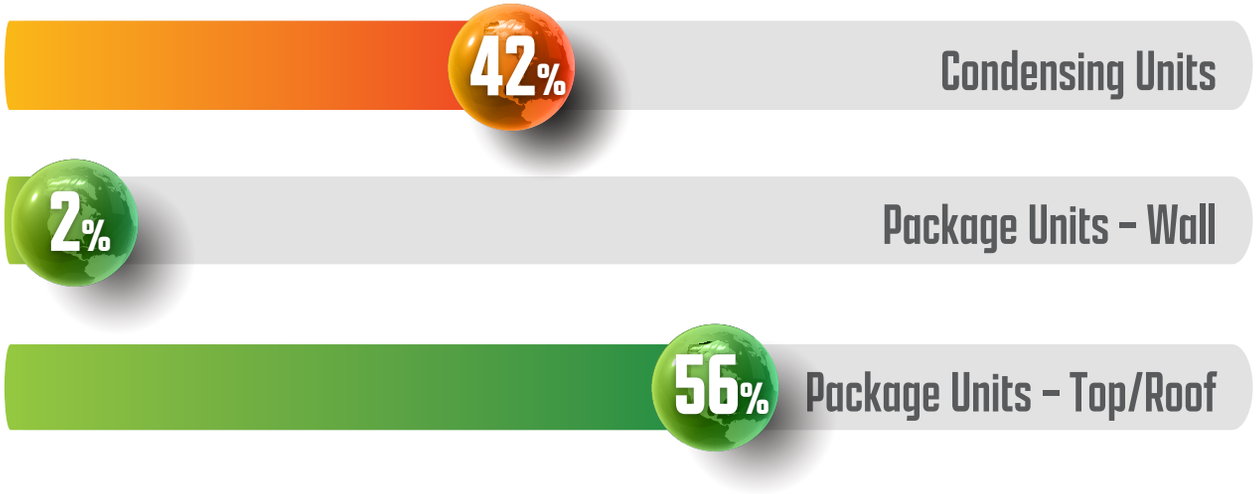
- We would be interested in a distributed CO2 system. Something bridges the gap between the small condensing units and large racks. 100 to 200 MBH for LT and 300 to 400 MBH for MT.
- Outdoor, bench mounted
- Outdoor unit. Sound level below 70dBa. What is the required stand still pressure for the unit and how would this impact case selection?
- Outdoor, reliability, serviceability, able to handle varied and low load conditions
- We want these units to be 65Db at 10' and short and long so we can put them on top of the cases and hide them with short metal screenings. This reduces the charge by not having to run long lines and helps with the ROI (Co2 unit costs more but is offset by not running new copper to a central machine room)
- Outdoor mostly, needs to have ROI, if indoors sound is important
- Prefer indoor

11 food retailer participants representing 16,200 US locations submitted responses.

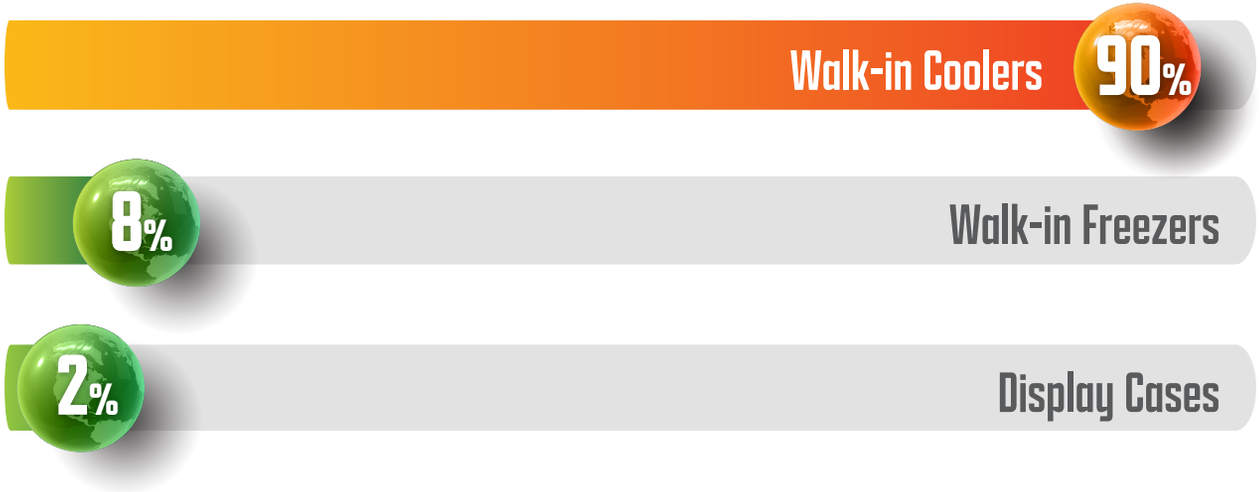
What APPLICATIONS are you interested in for this product? (Check all that apply)



What PRODUCT(S) would best meet your need? (Check all that apply)



What LOAD TYPE is your FIRST PRIORITY for this product?



What load type is your SECOND PRIORITY for this product?

Are there any OTHER CONSIDERATIONS why you would or would not choose an R290 PRODUCT?

- I would always choose a propane product over a CO2 product. Expected energy savings from propane would be up to 30%. Also propane is a simpler technology, easier to maintain, with lower pressures. No complex modifications/additions are needed to make it work in 2/3's of the country.
- Currently, having an evaporator every 4 feet in a display case is not presently a consideration. If the charge size increases to where the manufacturers can develop a display case with an 8-foot evaporator, then that's a game changer.
- If multiple units are required for a single box, then it could get expensive and complex.
- Reliability, serviceability, able to handle varied and low load conditions
- Low leak rates and low charge amounts
- Charge size and acceptance

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About North American Sustainable Refrigeration Council

The North American Sustainable Refrigeration Council (NASRC) is a 501(c)(3) environmental nonprofit working in partnership with the grocery refrigeration industry to advance climate-friendly natural refrigerants and reduce greenhouse gas (GHG) emissions caused by traditional refrigerants. The organization works with stakeholders from across the grocery refrigeration industry, including over 24,000 grocery locations, to eliminate the barriers preventing the adoption of natural refrigerants. For more information, please visit www.nasrc.org.