



# Opteon™

## A2Ls Break Through in U.S. Cold Storage

A Success Story of  
Bustamante Refrigeration,  
American Refrigeration Supplies,  
Chemours, HTPG, and Copeland





## The Project

Designing then installing a cold-storage refrigeration system that needs to operate efficiently and perform consistently in Nogales, Arizona—one of the hottest ambient climates in the United States—is challenging enough. Doing this in a regulatory landscape limiting the use of legacy refrigerants also has the potential to steepen the challenges. However, in the case of a recent project lead by Bustamante Refrigeration and American Refrigeration Supplies, Inc. (ARS), regulations-driven technology transitions were embraced for the opportunities they presented to pioneer the use of a new-generation refrigerant and system. Seen as a milestone for the U.S. commercial refrigeration industry, the project represents the area's first successful installation of a cold storage refrigeration system using Chemours Opteon™ XL20 (R-454C)—supporting objectives including high performance operation, energy savings, a smaller environmental footprint, and more.

From the start, it was recognized that the success of a project of this scope depended on the collaboration of leading companies in HVACR who demonstrate a commitment to providing the industry with innovative technology that supports more sustainable solutions. Bustamante Refrigeration—an independently owned business in Nogales who has more than 40 years of experience in heating, cooling, and refrigeration and offers commercial refrigeration repairs and cold room design—teamed up with ARS to lead the project. Rounding out the team as partners in the project were Chemours, Heat Transfer Products Group (HTPG), and Copeland.



# Aligning System Design with U.S. Regulations

The Bustamante project was influenced by the U.S. EPA's American Innovation and Manufacturing (AIM) Act. First, the Act's schedule for the phasedown hydrofluorocarbons (HFCs) was underway. Secondly, the AIM Act's Technology Transitions Program would soon start requiring the use of lower GWP refrigerants in certain new equipment. Collaborators on the project recognized that these restrictions were working to transition the industry away from many of the refrigerants—such as R-404A, R-449A and R-448A—currently used in condensing units. Consequently, the team looked at solutions supporting use of a new generation of mildly flammable A2L refrigerants, ultimately deciding on Opteon™ XL20 (R-454C) for the project

Opteon™ XL20 is a lower flammability, low GWP, hydrofluoroolefin-based (HFO) refrigerant that, along with several other HFOs, has been deemed as acceptable, subject to use conditions, for various commercial refrigeration applications under the EPA's Significant New Alternatives Policy (SNAP) Rule 26. For low-temperature and medium-temperature refrigeration applications, Opteon™ XL20 provides an ideal alternative to legacy HFC refrigerants such as R-404A, R-507, R-448A, R-449A, and R-407 series fluids. Offering a GWP of 148 (AR4), Opteon™ XL20 meets many of the application-specific regulations requiring new system designs to utilize refrigerants with < 150 GWP.

The system design for the Bustamante Refrigeration project was very similar to designs using nonflammable HFC refrigerants. Each condensing unit fed two Russell evaporators. Within the condensing unit, there was a Copeland discus semi-hermetic compressor specifically designed and optimized for Opteon™ XL20. To maximize the energy efficiency of the system, each evaporator utilized an electronic expansion valve and state-of-the-art EcoNet® control technology.

Now up and running in Nogales, Arizona, the system is delivering game-changing advantages by:

- Saving energy during fan off cycles by reducing speed to 50%
- Maximizing energy efficiency by optimizing compressor run time
- Reducing icing issues and unnecessary defrosts
- Improving product quality by minimizing large temperature fluctuations
- Offering the option to be configured to control a condensing unit with single or multiple evaporators as a group



## Additional Considerations and Solutions

For projects in the U.S. market that use mildly flammable A2L refrigerants such as Opteon™ XL20, refrigeration systems must comply with the relevant Building Codes and updated standards. Additionally, equipment must be specifically designed and approved by a nationally recognized testing lab (NRTL) for use with mildly flammable refrigerants. In many cases, such as this installation in Nogales, the largest change in equipment using A2Ls comes from the need to install mitigation technology in case of a refrigerant leak. For the Bustamante Refrigeration project, this mitigation step included a factory-installed leak detector in the evaporator. This technology prompts a safety shut-off valve to minimize the amount of refrigerant that might leak into the occupancy.

*“The transition to better, lower-GWP solutions we’ve been hearing about for years is now well underway, making it a pivotal and exciting time for the HVACR industry,” said Jeff Warther, Key Account Senior Consultant, Chemours. “Now that SNAP Rule 26 has cleared A2Ls for takeoff in commercial refrigeration, collaborations like this one in Nogales are going to become increasingly important in paving the way for industrywide adoption. Chemours is proud to have been a part of this milestone project, and we applaud Bustamante for stepping up to help lead the way.”*



## Conclusion: Achieving the optimal balance of safety, sustainability, efficiency, and investment.

The successful installation of new-generation cold-storage refrigeration technology in Nogales, Arizona represents a significant step forward for the commercial refrigeration industry's transition to lower GWP solutions. It also demonstrates the impact already being made by pioneering projects happening ahead of the January 1, 2026 deadline for certain new equipment requirements.\*

The collaboration between Chemours, Bustamante Refrigeration, American Refrigeration Supplies, Inc., HTPG, and Copeland on this project demonstrates the ways refrigeration system upgrades can be optimized for sustainability, efficiency, and performance when teams work together to customize solutions for a customer's application, requirements, budget, and operating environment. Key benefits included:

- Stellar performance—achieving desired operating temperatures under the intense conditions of one of the most extreme ambient temperature regions in the U.S.
- Energy savings—championed by the high energy efficiency of Opteon™ XL20 and the EcoNet® Control system
- Lower total cost of ownership (TCO)—comprised of system investment and equipment operating costs, such as preventive and corrective maintenance, labor, parts, and the fixed expense of energy consumption
- Reduced environmental footprint—achieved directly by Opteon™ XL20's (R-454C) ultra-low GWP and indirectly by a significant reduction in power consumption

As businesses—driven by new U.S. regulations, environmental concerns, changing customer demands, and the bottom line—continue to move toward more sustainable commercial refrigeration solutions, collaborations such as this one are becoming increasingly important for meeting the challenges and leveraging opportunities afforded by the latest A2L technology. Ongoing investments and innovations by HVACR leaders will continue to provide commercial refrigeration businesses with a robust selection of options to lower TCO, increase sustainability, and remain competitive.

\* On January 1, 2026, all new condensing units need to comply with GWP limits below 300 GWP for systems with under 200 lbs. of charge or under 150 GWP.