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R290 Units for Lotus's

Advancing Energy Efficiency and Reliable Refrigeration for Hypermarket Operations

Lotus's Malaysia, one of the country's leading hypermarket chains, has invested in upgrading its refrigeration infrastructure to better support high-volume frozen food operations. Lotus's identified limitations with its existing remote chest freezer systems, which were increasingly energy-intensive, required large refrigerant charges, and involved higher maintenance efforts. Given the scale of its frozen categories and the need for flexible store layouts, Lotus's wanted a more efficient, reliable and flexible solution to replace the ageing remote system.

To meet Lotus's objectives, AHT Cooling Systems recommended the ATHEN XL R290 inverter compressor Jumbo chest freezers. The inverter technology in the ATHEN XL units adjusts the compressor speed to match actual cooling demand.

This reduces energy peaks, improves efficiency, and ensures ultra-low heat emission into the store environment. The units use R290, a natural refrigerant with very low global warming potential (GWP ~0.02), much lower than conventional refrigerants like R404A (GWP ~3,922). The plug-in design eliminates the need for extensive field piping and complex commissioning. The installation was carried out across two Lotus's stores—Puchong and Shah Alam—with system integration, installation and commissioning supported by Lotus's technical team and AHT's partners –E Frigo and The Hub's Engineering Malaysia. The plug-in architecture allowed for a fast transition from the existing remote system with minimal disruption to store operations.

_Year of installation

2024

_Installed System

_ATHEN XL

_Project requirements

Low complexity, fast and simple installation combined with energy efficiency and cost-saving operation.

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In total, 150 ATHEN XL chest freezers were installed in two stores.

Key Benefits to Lotus's Malaysia

By replacing the remote system with AHT's ATHEN XL R290 inverter chest freezers, Lotus's Malaysia gains clear operational advantages. The inverter compressors adjust output according to load, which helps reduce electricity consumption and energy peaks—important for large-format stores running extensive frozen displays. The choice of AHT's plug in solution utilizing R290 reduces total refrigerant charge and associated leakage risk compared with older remote systems. Installation was straightforward due to the plug-in design, avoiding field piping and complex commissioning, so upgrades were completed with minimal downtime. Finally, the sealed circuits and robust inverter compressors deliver reliable cooling with lower maintenance needs—matching Lotus's requirement for low maintenance, low power consumption and flexible plug-in deployment.

Industry Impact & Future Outlook

This deployment demonstrates a practical route for hypermarkets to modernize frozen goods refrigeration by combining inverter compressor technology and low-GWP refrigerants in a plug-in format. Lotus's Malaysia implementation highlights how large-format retailers can address energy performance and operational flexibility without significant installation complexity—providing a viable option for further rollouts across additional stores.