

Dual Path *Dual Path*

*Lower your energy costs.
Raise your standards.*

Unique solutions for the
supermarket environment



SEASONS  4TM

Engineering and Manufacturing
Specialty HVAC Equipment Since 1971

For supermarkets, cookie cutter HVAC just doesn't cut it.

The supermarket environment is unlike any other. Both refrigerated cases and power exhaust systems complicate your HVAC profile. The environment in which your display cases operate greatly affect the energy used by your refrigeration systems, which consumes up to 50% of your energy costs. A properly designed HVAC system will help to control operating costs and protect your investment while generating long-term savings. To do so, it must provide optimal, efficient, and reliable environmental control to minimize store energy consumption and reduce food spoilage. You need a unique HVAC system, one with an innovative method of cooling and dehumidifying. One with efficiency that's only matched by its power. You need Dual Path.

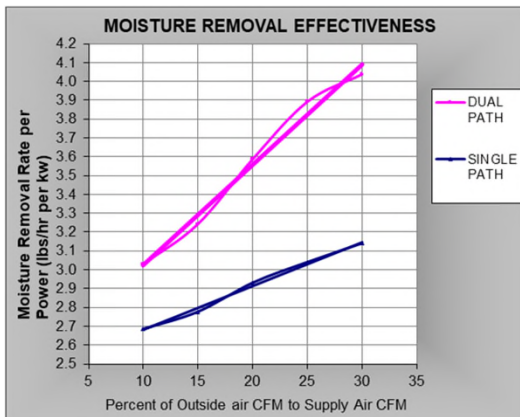
...some physics:

Single Path systems dilute the outdoor air with return air which reduces "approach" to cooling coils, thus making it a less effective dehumidifier.

Optimize your store's HVAC moisture removal capacity with Dual Path.

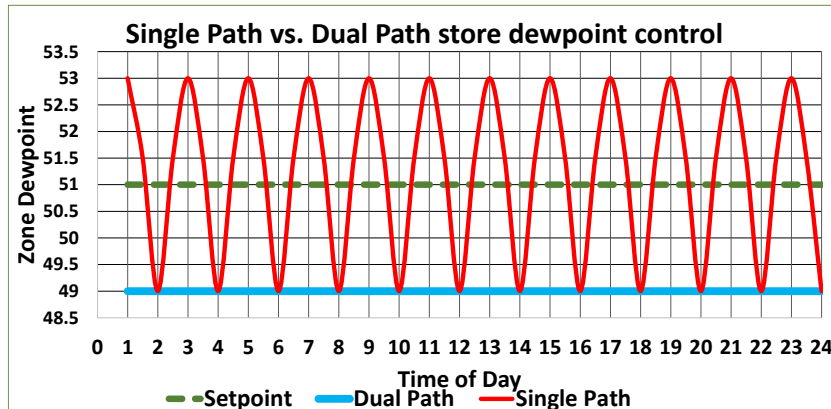
Outdoor air represents as much as 25% of your store's airflow and accounts for 50–75% of your store's moisture load. The Dual Path system treats indoor air and outdoor air separately, taking the outdoor air with its highly concentrated moisture content, and drying it separately with dedicated dehumidification coils. This delivers much greater operating efficiency than conventional single path systems, especially in high-humidity environments. Return air is treated separately to maintain overall energy efficiency for your store. **Dual Path technology is the "biggest bang for the buck" for controlling humidity.**

Comparison of Dual Path and traditional Single Path systems clearly shows the increased moisture removal performance of a Dual Path, especially at elevated ventilation quantities.

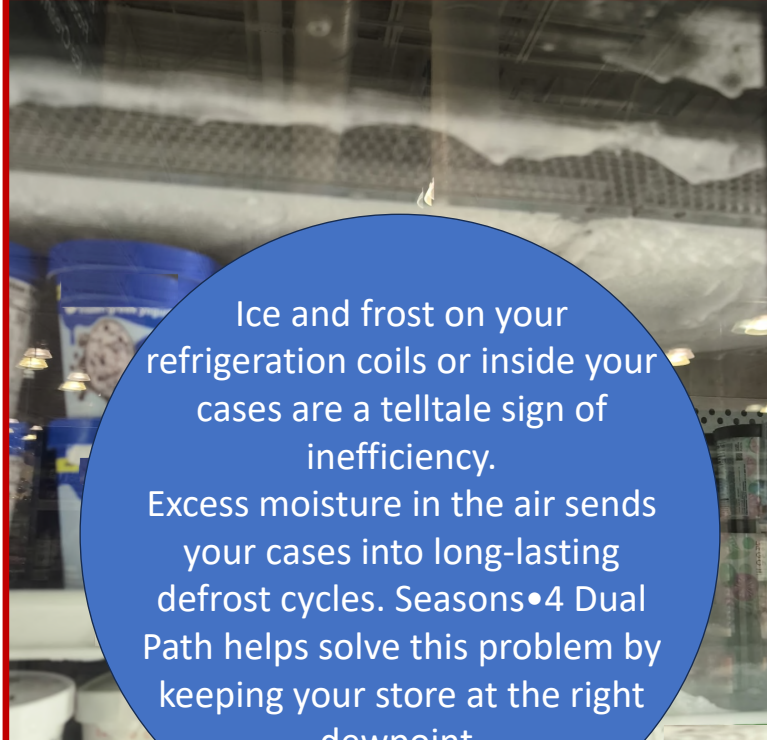


We're the experts in supermarket HVAC design.

With over 50 years experience and thousands of installed units, Seasons-4 knows the unique moisture control requirements of supermarkets inside out and outside in. As pioneers in Dual Path design, we can build a custom-tailored Dual Path system that provides exceptional moisture removal capacity. It's a combination of quality, unparalleled service, and overall reliability that can keep your supermarket cool and dry.



Dual Path tracks the store conditions BELOW setpoint, meanwhile a Single Path will cycle on and off causing store conditions to float above setpoint.



Ice and frost on your refrigeration coils or inside your cases are a telltale sign of inefficiency.

Excess moisture in the air sends your cases into long-lasting defrost cycles. Seasons•4 Dual Path helps solve this problem by keeping your store at the right dewpoint.

Custom-sized means XL satisfaction.

At Seasons•4, any and every detail that affects your store's environment affects the design of the Seasons•4 Dual Path HVAC system we build for you. Whether you have plans for a sushi case or a 'meals-for-busy-families' display, we take it all into account. For you, it translates into the most reliable, cost-effective solution for your store's HVAC needs.

...some physics:

Moisture in air is attracted to the coldest surface in the room: cases, coolers, freezers.

The equation is simple: lower humidity = lower operating costs.

Since up to 50% of your energy costs are for your refrigeration systems, Dual Path can generate great savings. With that in mind, Dual Path was designed to reduce interior relative humidity from the conventional 55% to 45%, thus lowering your dew point from 58°F to 50°F. Doing so lowers refrigeration energy consumption by up to 20%, translating into almost 15% savings in combined refrigeration and HVAC energy.

A Dual Path unit can dehumidify your store efficiently by running only the required number of compressors. You can achieve a significantly lower humidity level, all with a machine that will last as long as 25 years.

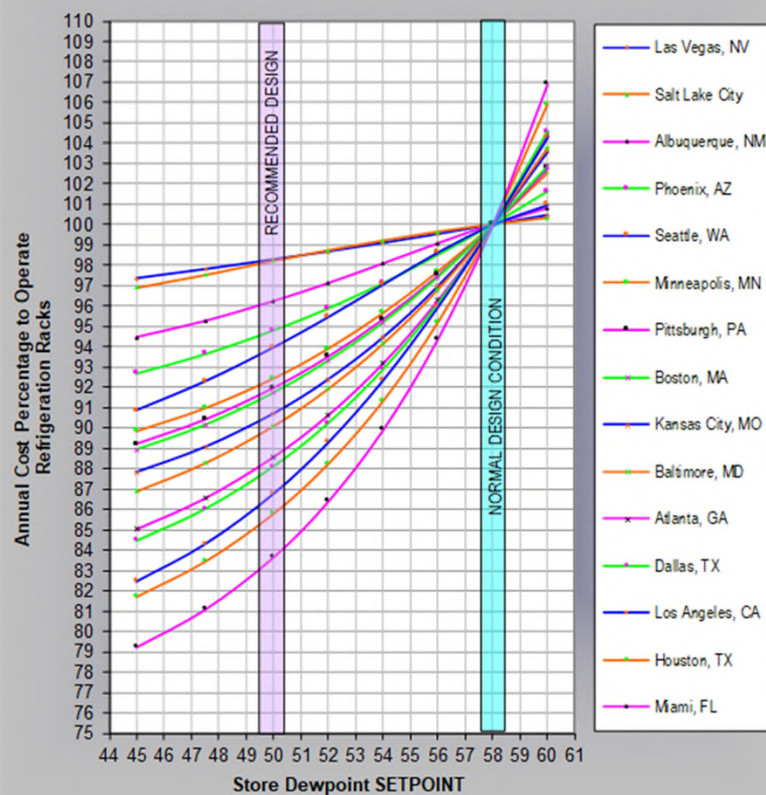
...some physics:

A positively pressurized store is required to maintain proper levels of humidity

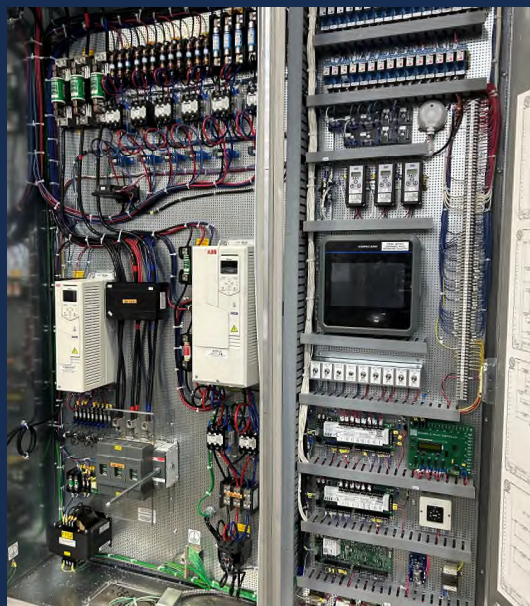
Dual Path in the supermarket environment balances:

- Increased outdoor air requirements for people and exhaust systems
- Moisture load introduced with outdoor air
- Available case credits with HVAC requirement

Annual Operating Cost for Refrigeration Racks



Study of supermarkets in several cities shows a percentage reduction in annual refrigeration energy use by lowering the supermarket's humidity level.



A custom system means that installation is fast, because all connections have been planned. And specialized controls give you remarkable amounts of information for maximizing your system efficiency.

Our goal is to properly control your store's environment conditions.

At Seasons•4, no unit leaves our factory without undergoing extensive trial runs to ensure that what we've built for you works for you. As expected in the industry, Seasons•4 also provides a factory-authorized representative for equipment startup and training of your staff on operation and maintenance to achieve the highest performance. And we'll leave behind comprehensive operational and service manuals to supplement our in-person service.

Of course, even the best-made equipment may require occasional attention. And that's why we provide a one-year parts warranty from the date you start up a system. When you buy Seasons•4, you're buying the best in the industry.

With Seasons•4, maintenance is a breath of fresh air.

At Seasons•4, we make maintenance as easy as possible to help you enjoy the energy savings our Dual Path units create. Dual Path units feature full-height access doors for ease of maintenance. An enclosed service vestibule shelters critical parts, allowing maintenance and service accessibility in almost any weather conditions.

Our units' standard and custom parts are selected carefully from leading manufacturers to minimize your maintenance costs even more. Plus, the replacement parts you'll need for regular maintenance and service can be found at most HVAC parts wholesalers.

...some physics:

During off-peak weather conditions, the Dual Path return air coil will not need to operate, thus tempering the supply air to avoid over-cooling the store.

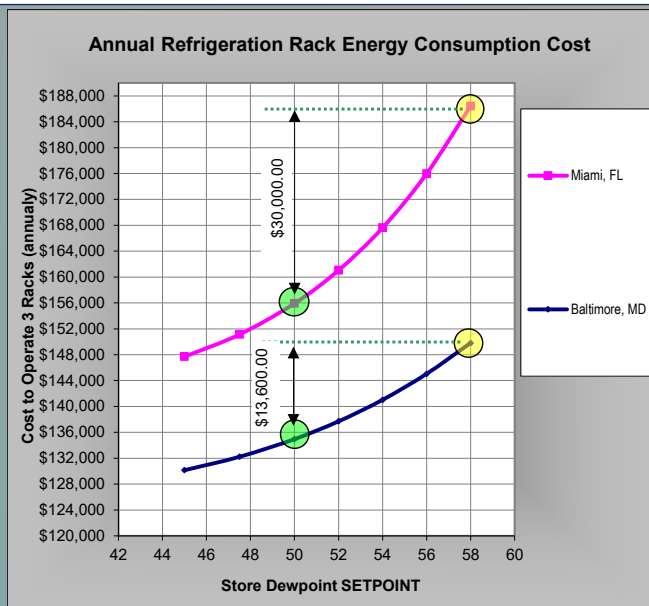
Miami Supermarket Saved \$30,000.00

Baltimore Supermarket Saved \$13,600.00

Annual savings vary by location. In Miami, which needs humidity control 90% of the year, a Seasons•4 system reset a store's dew point from 58F with a conventional system to 50F with a Dual Path unit. The store realized \$30,000 in refrigeration energy savings. Even stores that need humidity control for only half the year still realize significant savings. We saved a store in Baltimore, for example, \$13,600 in refrigeration energy.

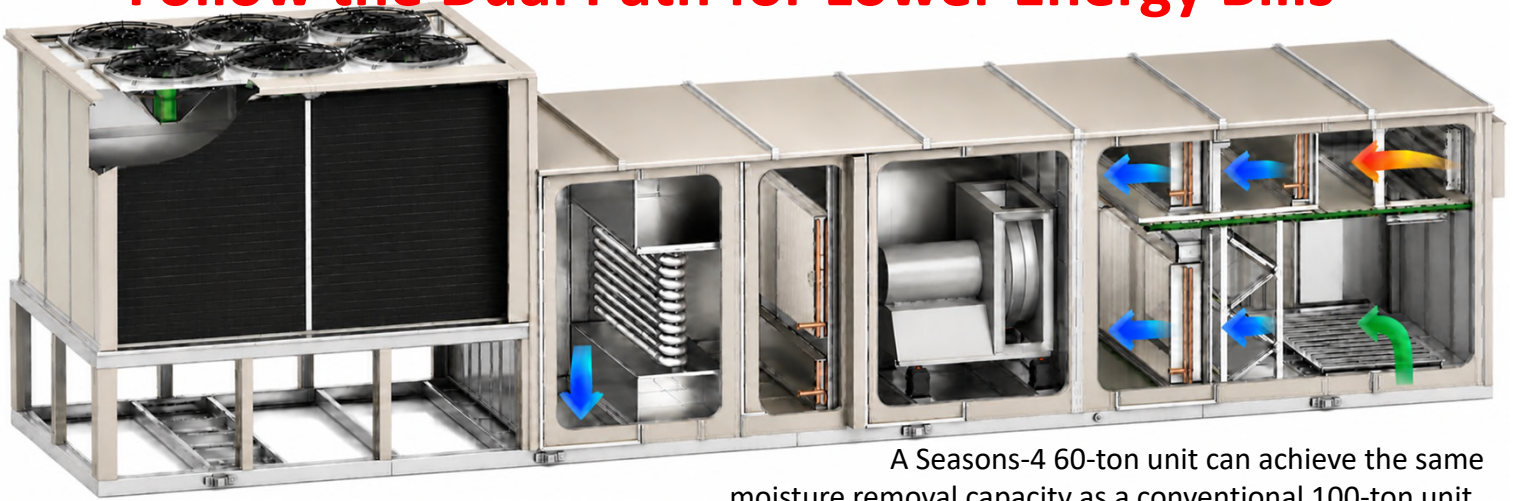
...some physics:

With multiple compressors for staging and variable capacity compressors, Seasons-4 Dual Path will always be operating with the LEAST amount of energy.



Case study of two supermarkets in different locations shows a reduction in annual refrigeration energy cost use by lowering the supermarket's humidity level.

Follow the Dual Path for Lower Energy Bills



A Seasons-4 60-ton unit can achieve the same moisture removal capacity as a conventional 100-ton unit. Our innovative unit is often easier to install, and easier to maintain - all with a unit designed to last the lifetime of your building.

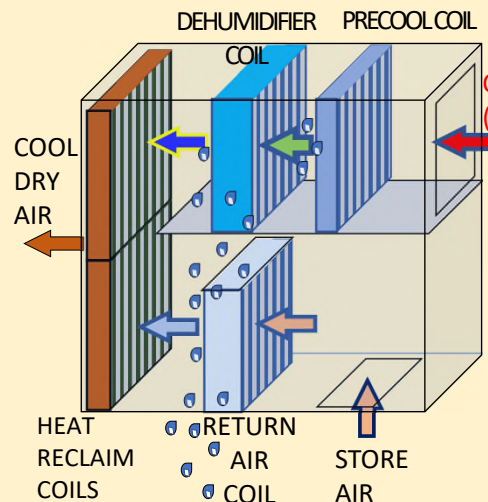
Lower Moisture. Higher Efficiency.

Outdoor air conditions can vary greatly throughout the day, and throughout the year. A Dual Path system separates outside and inside air into two air streams handled by dedicated compressors. The result? Greater operating efficiency.

...some physics:

By monitoring outdoor air temperature and humidity levels we can pre-empt the nasty hot humid air from EVER entering your store.

The *pre-cooling* circuit is designed to remove sensible load from outdoor air, allowing the capacity of the dehumidification coils to be used primarily for moisture removal.



The *outdoor air deck* uses two banks of row split-coil surface, a pre-cooling circuit, and deep-row dehumidification coil circuit(s).

Dual Path units include the following features

1. Multiple AND Variable capacity compressors for efficient load matching and low electric demand
2. Multiple AND Variable capacity compressors for optimum dehumidification in the outdoor air circuit
3. Independent high efficiency outdoor air pre-cool circuit eliminates "sensible load" cooling burden from dehumidification coils
4. Independent return air circuit parallel to outdoor air circuit treats sensible load requirements of space, giving your system built-in flexibility
5. Motorized outdoor air damper with cost-efficient night-bypass
6. Manual balance dampers in outdoor and return air plenum for easy, fast fine tuning
7. Low velocity pleated, air filters.
8. Backward inclined airfoil blade blowers for high-efficiency operation.
9. Premium efficiency 4-pole motors (exceeds EPAC requirements).
10. Single point power connection for easy installation.
11. Spacious cabinet design with full height access doors, with single handle, multiple point latches, for easy access and maintenance.
12. Oversized condenser coils designed for higher efficiency and energy savings.
13. Factory mounted 24-volt controls are compatible to the ***computer hardware of your choice***. Your control system matches your specifications exactly.

Direct Replacement in 8 Hours or Less. Seasons•4 Makes It Easy.

Older rooftop units are costly due to higher maintenance requirements, higher energy bills, and poor performance. That's why Seasons•4 offers replacement units that fit directly onto existing roof curb or steel structures, and match duct and performance conditions. Our direct replacement units match up weight-wise, too. And our unit's aluminum exterior is lighter than ordinary steel metal panels, lasts longer, and is rust-free.

Old



Conventional rooftop units usually do not have the moisture removal capacity needed for supermarkets

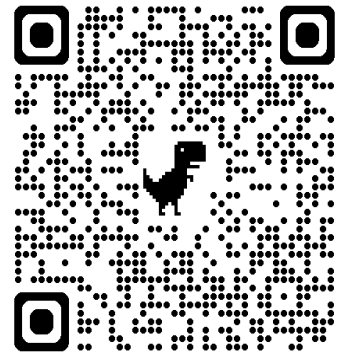
New



A dual Path rooftop unit can be installed in eight hours or less. The benefits are immediate: lower energy consumption and lower humidity.

Common Dual Path optional items

1. Coastal protection
2. Specific brand building controls systems (e.g. Copeland, Danfoss, RDM)
3. Heat reclaim coils use waste heat derived from your refrigeration system to offset requirements for comfort zone heating.(e.g. CO2)
4. Additional reheat types are available: Hot Water, Hot Gas Reheat
5. Auxiliary heat section is specifically designed for your location's requirements: Natural Gas, Propane, Electric



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