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AN EVERIDGE BRIEF

The Preservation Advantage: Floral Edition

Why cut flowers decline faster than they should, and the technology category that helps you keep more of what you stock.

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Walk-in cooler and refrigeration solutions

The hidden cost of floral shrink

Cut flowers are one of the highest-margin categories in fresh retail, and one of the most punishing when they fail. Unlike most refrigerated products, a flower's value collapses long before it is unsellable. Petals brown at the edges, leaves yellow, blooms wilt or drop. The product is still there, but it can no longer be sold at full price, marked down, or in many cases sold at all.

Industry research published by the International Fresh Produce Association puts supermarket floral shrink at roughly 9 percent on average, nearly double the shrink rate of fresh produce. For an operator moving even a modest volume of cut flowers, that is real money walking out the back door every week.

Why even small reductions matter

Because fresh-cut flowers carry a high gross margin, a relatively small reduction in shrink can produce a disproportionate improvement in category profitability. Flowers that hold their quality two or three days longer convert into either fewer markdowns or more sellable inventory at full price, sometimes both. The same is true at the wholesale and floral-shop level: every additional day of usable vase life is a day the product is still earning.

The question for any operator is not whether shrink exists. The question is which of its causes are preventable, and what tools are available to address them.

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Why cut flowers die faster than they should

Once a flower is cut, it is on a clock. The job of any well-designed cooler is to slow that clock down. Most floral coolers do this through temperature and humidity control alone, which is essential, but it is only one part of the picture. Four other forces inside a typical floral cooler quietly work against vase life every day.

1. Ethylene buildup

Ethylene is a naturally occurring plant hormone often described as the "ripening hormone." Even at concentrations measured in parts per billion, ethylene accelerates aging in many cut flower species. Carnations, snapdragons, lilies, gypsophila, and others are particularly sensitive. Ethylene accumulates in confined spaces from the flowers themselves, from any nearby produce, and from microbial activity inside the cooler. Standard refrigeration does not remove it.

2. Botrytis and other fungal pathogens

Botrytis cinerea, commonly called gray mold, is the single most economically important fungal pathogen in the cut flower industry worldwide. It thrives in cool, humid environments. Spores are airborne, infection can occur on the flower in the field or during transit, and the disease often does not become visible until the product is already on the retail floor or in the customer's home. By that point the damage is done.

3. Airborne bacteria and yeasts

Cut flowers and their water introduce bacteria and yeasts into the cooler environment. These organisms shorten vase life through stem-end blockage and accelerate visible decline. A floral cooler with a high airborne microbial load works against every flower it stores.

4. VOC accumulation

Cut flowers, leaf material, and stem water release a range of volatile organic compounds during normal respiration and decay. In a confined cooler, these VOCs accumulate, contributing to the "old cooler" smell and feeding microbial growth on surfaces and in drain pans.

Temperature and humidity control alone were never designed to address these four problems.

How UVC + PCO technology helps

Two well-established air-treatment technologies, used together, address the four drivers above directly. Both have decades of peer-reviewed research behind them in adjacent fields, healthcare, HVAC, and postharvest floral and produce storage. What is new is their packaging into air-treatment units sized and priced for retail-footprint floral coolers.

Ultraviolet germicidal irradiation (UVC)

UVC light at 254 nanometers disrupts the DNA and RNA of microorganisms passing through its field, rendering them unable to reproduce. Decades of public-health research, from tuberculosis-ward studies in the mid-twentieth century to current ASHRAE and CDC guidance on healthcare and indoor-air applications, establish UVC as one of the most well-studied air-disinfection methods available.

Inside a floral cooler, UVC is designed to help reduce the load of airborne fungal spores (including Botrytis), bacteria, and yeasts. It is a tool that targets the biological half of the problem.

Photocatalytic oxidation (PCO)

PCO uses UV energy combined with a titanium dioxide catalyst surface to generate highly reactive species that break down volatile organic compounds, including ethylene, primarily into carbon dioxide and water vapor. PCO is the part of the system that targets the chemical half of the problem, the ethylene and VOC accumulation that microbial control alone cannot solve.

Why combining them matters

UVC alone addresses biological contamination but does not remove ethylene. Ethylene scrubbers alone address ethylene but do not reduce microbial load. Combining UVC and PCO in a single air-treatment unit means a floral cooler is being treated for both the biological and chemical drivers of shrink at the same time, continuously, while the cooler is operating.

That combination is what makes the technology relevant to floral specifically. Other refrigerated categories have one problem or the other. Floral has both.

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What you can expect, & what's next

A properly specified UVC + PCO air-treatment unit, sized to the cooler and operated correctly, can help reduce airborne microbial load and slow the buildup of ethylene and other VOCs in the storage environment. Independent laboratory testing supports the underlying performance claims, and field deployment in floral, produce, and other refrigerated cold-storage applications has been ongoing for years.

Performance in any individual installation depends on cooler size, airflow, loading, humidity, lamp condition, and operational practice. The technology is not a substitute for proper cooler temperature, sanitation, water hygiene, or postharvest handling. It is a complement to them, a continuously operating layer of protection that addresses the things temperature and humidity control cannot.

Request the full technical white paper

This brief is intentionally short. The full Everidge technical white paper on UVC + PCO for floral coolers covers, in detail:

- Detailed performance data from independent third-party laboratory testing
- ROI framework and payback math at typical operator volumes
- Product specifications and cooler-size sizing guidance
- Installation requirements and operator safety considerations
- Comparison with alternative approaches (ozone, ethylene scrubbers, ionization)
- An honest discussion of the technology's limitations and where it does not apply
- A full bibliography of the peer-reviewed research underlying the claims

To request your copy, visit Everidge.com to review detailed performance data, ROI modeling, and application guidance.

About this brief

This brief is published by Everidge as an introductory educational resource for floral retail, wholesale, and supply-chain operators. It is not a substitute for site-specific engineering or application advice. Statistics on floral shrink are drawn from publicly available International Fresh Produce Association reporting. References to UVC and photocatalytic oxidation reflect the established peer-reviewed research base in air disinfection, postharvest produce science, and HVAC indoor-air applications. The full technical white paper, available on request, contains complete citations.

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