

Issued By: Hillphoenix Learning Center  
Title: How to Avoid 6% of Fresh Meat Sales from Going Down the Drain



### **How to Avoid 6% of Fresh Meat Sales from Going Down the Drain**

A recent headline in the Wall Street Journal read “Cow Prices Jump Over the Moon” signifying that record high fresh-beef retail prices were showing no signs of easing any time soon.<sup>1</sup> Although the article goes on to note that some analysts consider the rise in consumer prices to be unsustainable, the fact remains that they’re still going up. The overall effect, not surprisingly, is that fresh-beef sales are declining.

The trend among shoppers has been toward other sources of protein, most notably chicken and pork. Retail beef sales still drive a significant portion of overall supermarket purchases. And according to one industry trade group<sup>2</sup> the product remains the top-selling item in the meat case accounting for just about half of all meat sales (excluding seafood).

Beef’s benefits to a store’s retail mix do not simply end with its proportion of sales, which typically make up 8% of the total. The turn rate of the product improves cash flow. For most retailers beef sells within two weeks of an order’s receipt.

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<sup>1</sup> [www.wsj.com/articles/cow-prices-jump-over-the-moon-1415302201?KEYWORDS=beef+sales](http://www.wsj.com/articles/cow-prices-jump-over-the-moon-1415302201?KEYWORDS=beef+sales)

<sup>2</sup> Cattlemen's Beef Board & National Cattlemen's Beef Association - [www.beefretail.org/beefvaluetoetailers.aspx#sthash.JF2XwMYl.dpuf](http://www.beefretail.org/beefvaluetoetailers.aspx#sthash.JF2XwMYl.dpuf)

Overall, the continuing demand for fresh meat products including seafood, results from shoppers' preferences for quality and healthy choices. According to the trade group, two-thirds of consumers see these factors as "very important" and a key element in deciding where to shop.

Fresh meat sales clearly matter in any store's overall strategy. The contribution they make to profitability is of critical importance. The challenges stores face to effectively merchandising these products are all the more consequential. And none of these challenges, not even rising prices in the case of beef, threaten profitability more than the potential loss of product integrity that can result from merchandising meat in conventional forced-air display cases.

A study performed by Hillphoenix, and evaluated by an independent lab, found that traditional forced-air refrigerated display cases can cause fresh meat products merchandised in them to lose up to 6% of their weight by volume.

### **Pitfalls of Traditional Display Cases**

Fresh meat that sits in display cases for extended periods of time (more than one day or two) can fall prey to shrink, bacterial growth and visual degradation. Any one of these factors by its self can offset profits. But, when combined together by the limitations of conventional service meat cases, the losses add up.

Traditional supermarket refrigerated display cases rely on a process called convection heat transfer to keep the products cold. Convection works by circulating cooled air through the case. As the cooled air flows over the product, the difference in temperature between it and the product causes heat to move from the product to the air. These types of display cases are sometimes referred to as forced-air cases.

Forced-air cases work by use of fans, usually located in the bottom of the case, that circulate the air in the case over the coiled tubes of an evaporator beneath the fans. Refrigerant that runs through the coils absorbs heat from the air that is forced over them. But, not only does that air flowing over the coils carry heat away from the product in the case, it also carries moisture. As the heat in the air is absorbed by the refrigerant in the coils, the moisture in the air condenses out and eventually finds its way down the drain.

In an independently monitored test conducted by Hillphoenix,<sup>3</sup> a selection of typical fresh meat products in traditional cases was found to lose as much as 6% in volume over three days. The loss that was measured in the test was result of moisture carried away from the product by the movement of the air forced over it. Since fresh meat is usually sold by volume, the longer the meat sits in conventional cases, the less there is of it to sell.

If that weren't bad enough, the effects of forcing air over cuts of fresh meat also cause the changes in the appearance of the product. Shoppers associate freshness with terms like tenderness and juiciness (i.e., moistness). As meat dries, it tends to look less appealing. So in order to offset this negative effect, retailers employ case technologies such as humidifiers and misters. Unfortunately, adding moisture has the side effect of promoting bacterial growth. While the type of bacteria that develops does not amount to a food safety concern, it does cause a problem for merchandising that is called bloom, or discoloration. The drier and darker a cut of meat is, the less tender, juicy and appealing it appears.

### **Another Approach**

Fortunately, there is an alternative to traditional forced-air display cases. Instead of convection, the method of transferring heat used in conventional cases, another type of display case is available that works through conduction.<sup>4</sup>

Convection cooling relies on the use of an intervening medium to transfer heat. In traditional display cases that medium—air—is actually a pretty poor option. It's a better insulator. That's why it's used between the panes of glass in thermal-pane windows. Conduction, on the other hand, works without the use of an intermediate substance. It works by the direct transfer, or conduction, of heat from one substance to another.

Secondary fluid display cases rely on the tendency of any two substances in contact with one another to equalize in temperature, or in other words, to seek equilibrium. Whereas forced-air display cases cool their product by transferring heat from them to the air around them, secondary cases work by circulating chilled fluid through the surfaces of the shelves on which the products are displayed. This direct form of cooling produces no

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<sup>3</sup> Comparative Testing of Refrigeration Technologies Applied in Service Meat Gravity Cases using Live Product Measurements, Hillphoenix Research and Development Group

<sup>4</sup> Understanding Conduction Case Cooling, RSES Journal – March 2012

loss in moisture, so it doesn't require any to be added. Product volume is maintained and bloom is significantly reduced.

Another advantage to this approach is better and more even temperature control. The fans in traditional cases run intermittently. As a preset temperature point is reached, the fans turn off. Eventually, the temperature of the case rises and the fans turn back on. This lack of a consistent temperature contributes to the problems noted above. Conduction cooling, as used in Coolgenix® cases, results in more stable product temperatures through the use of a pulse-control strategy. The system continuously circulates the chilled fluid through the case's deck pans by cycling between a narrower range of temperatures than could otherwise be achieved by a forced-air system. A secondary fluid heat exchanger at the top of the case also controls air temperature in the case, which in turn maintains the moisture in the product since the air and the product are kept at the same temperature.

A number of supermarket chains and specialty stores have benefited from the use of conduction cooling for their fresh beef, chicken, pork and smoked meat offerings. Even greater advantages have been seen when Coolgenix cases are used for seafood where the approach eliminates the need ice in displays while at the same time conferring the same benefits as when used for meat.

But of all these product categories, fresh beef may be where the approach offers the greatest return at the moment. The challenges to selling fresh-beef products nowadays are in certain ways greater than they have ever been. Anything that can help retailers overcome those challenges allows them to realize greater returns from an ever more discerning shoppers' dollar. Use of secondary, conduction-cooled display cases right away can increase product volumes by up to six percent. A difference that in traditional convection-cooled cases literally goes down the drain. The benefits, such as better looking product and enhanced shopper perceptions of quality and healthiness, only multiply from there with the conduction cooling technology that is used in Hillphoenix patented Coolgenix cases.

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