

TECH TIP #3

COOKING YOUR PRODUCT – PART 1 CHECK MECHANICS OF DAMPERS

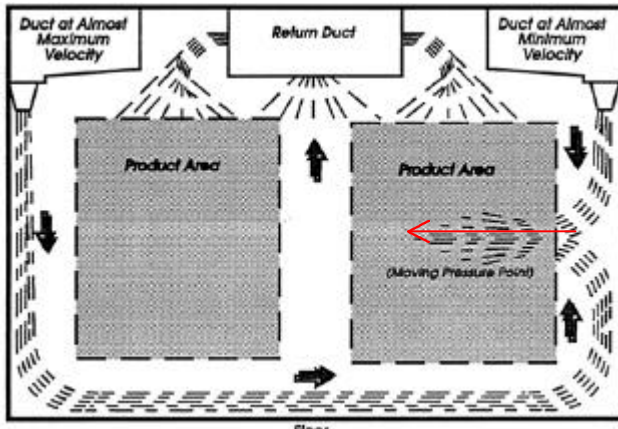


Figure 1

HEAT TRANSFER FROM AIR TO PRODUCT

Now that it's understood that the Break Point has the most significant affect on uniform cooking, lets examine this more closely.

As mentioned in Tip #2, the air from the Break Point hastens across your product, eventually from all angles in the oven. At times it is on the wall, as shown in Figure 1 above, and product located at the red arrow will see the high velocity air of the Break Point. Product in this area will be absorbing heat more rapidly than anywhere else in the oven. As the alternating damper/s move and the Break Point moves from the wall, down to the floor, product near the floor of the right truck will see the most heat. This process continues as the Break Point moves across the floor and up the left wall, delivering heat to this area. Repeating this motion until the end of the cook heat, should be evenly distributed.

In the 13 years I spent balancing smokehouses I found many problems associated with the delivery of heat using this method. Now I will begin to list areas of importance regarding heat delivery. Some are simple concepts and others will be discussed in the next few Tech Tips, since they are somewhat more complex. I want to emphasize that this is not rocket science and will be quite easy to understand. I will approach this from the easy items to the more complex in an orderly fashion. We will rediscover some of our High School physics, make some interesting observations and learn some trade secrets along the way.

WHAT YOU CAN DO NOW

Lets begin with the things that you can consider and check immediately.

1. If your alternating dampers are chain driven, insure the chains are not loose. They should be tight enough so that the alternating dampers move evenly, but not so tight that they cause excessive wear of the bearings or bushings at the damper plates.

Regardless of the drive mechanics used, insure everything is tight. Some small ovens don't have alternating dampers, and the Break Point is always on the floor in the center of the house, in which case this step can be ignored.

2. Turn off the oven and open the supply ducts. Observe the positions of the dampers on each side. In this example we are using two damper plates, the most common in the industry. These plates must be held exactly 90° to each other. When one is fully closed, the other should be fully open to air flow. While your there, make sure that the dampers are in good condition. Often plate will have fallen off or damage has been done. Another design will be discussed in future Tech Tips.
3. Insure that nothing in the oven intrudes into the air steam from the cones. This means product must be high enough off the floor on both trees or trucks. Truck wheels and truck design should be such that air moves unobstructed across the floor and on the walls so that the Break Point is formed properly.
4. Make sure your supply duct, from the fan to the cones, is in good repair. Split seams or damaged gaskets must be repaired.

TIP OF THE DAY

Did you know that a 1°F error in you Wet- or Dry-Bulb reading can lower or raise the Relative Humidity in your oven approx. 3% ! Calibrate your controls regularly.