

HOOD PROBLEMS: NOT JUST SMOKE AND MIRRORS

Normally I try to avoid discussing technical subjects in this column, but there is one subject that I just could not hold off on any longer. Exhaust hood systems, located in all types of foodservice establishments, are incredibly complex. The design of these systems can significantly impact a building in a number of different ways. To cite one example, I had a client whose hood performance was so terrible that the excess heat which was *not* being captured by the hood system was chewing up an estimated 15 tons worth of air conditioning. In other words, a 15 ton air conditioning unit was required just to offset the amount of heat that was escaping from the hood system. If you translate the equipment cost, operating costs, and maintenance costs into real dollars, it is not hard to figure out that the owner was almost literally watching his money go up in smoke.

Signs of a Hood Problem

Even if you are not the technical type, there are some easy ways to determine if you have a hood or ventilation problem. The first is the presence of excessive heat in the kitchen. Though many of us understand that hoods remove smoke and grease, they also remove heat. If you can feel significant heat outside of the hood, then your hood may not be working properly. This escaping heat can hit an operator directly in the wallet, either through increased utility costs as described above or even by increased turnover rates if the environment is too uncomfortable.

A second way to self-diagnose a hood problem is by looking for roll-out. Roll-out is the escape of smoke from the hood cavity. If such a condition exists, the smoke will typically rise off of the cooking equipment, and overwhelm the exhaust system, spilling out into the kitchen. What this means is that the amount of smoke being produced is too great for the amount of exhaust from the hood. It is comparable to a sink that overflows when the volume of water far surpasses the capacity of the drain size. Hoods are, in essence, just like a bathtub turned upside down. They can “overflow” as well, which results in roll-out.

If your floors or equipment are regularly greasy or slippery, this may also be a sign that your hood is not working properly. Slippery floors or “coated” objects within the kitchen could mean that the grease laden vapor (a technical term for the little grease particles that are so hot and so small that they are carried through the air) is condensing and settling. The problem is a result of inefficient grease removal by the hood. If the hood was doing its job properly, then there wouldn't be enough grease left to settle.

Okay, here is one more. Can you recall ever going into a restaurant (or any building for that matter) where the doors were hard to open, or the second set of doors opened by themselves when you opened the first set of doors? Have you ever entered a restaurant and seen the doors sitting open just slightly? These are all problems indicative of unbalanced pressure within the facility. If the doors are hard to open, it means that there is too much air being pulled out of the building or not enough air being replaced in the building. This is called negative pressure. On the other hand, if the doors are resting in a slightly open position, just the opposite could be true. There may be more air being pumped back into the building than is being pulled out. This is called positive pressure. These are just a few ways to identify a potential hood problem. There are others.

Pressure problems within a foodservice facility, which ties directly into the hood system's performance, can represent a complicated physics problem. The issues can become extremely complex, and the entire building must be considered. Let me share a quick story. One manufacturer told me of a call that they once received from a customer who indicated that their hood wasn't working and they wanted the manufacturer to fix the problem. The manufacturer's response was “that's perfect, because it didn't work when it left the factory either.” Though this was a rather brash response with a little dose of humorous sarcasm for the hospitality techno-geek, what the manufacturer was trying to convey was that the hood is just a box – a part of a much larger system that “works.” Consider the bath tub example again. Does the bathtub “work,” or is the bathtub tied into a drain system that allows the evacuation of water from the tub?

Obviously, the bathtub is not very effective all by itself. Instead, it is an integral part of an overall system.

Where Hoods Go Wrong

So far we have established that hoods can be a problem. We have also looked at some ways to self-diagnose a problem and explored the reasons why answers to the problem may be a bit more complex than most owners and operators realize. Now, I want to take a look at some of the reasons why hoods tend to have these problems and look at potential ways to avoid these problems in the first place.

Let's start with the equipment under the hood. Whether most operators realize this or not, the amount of air exhausted from and returned to a space by a hood is specifically designed to correspond with the equipment below the hood. As the equipment changes over time, the incorrect assumption is often made that the hood, in its current configuration, can accommodate the new equipment layout without a problem. This is not the case. If a convection oven (low smoke, heat, and grease output) is replaced with a fryer or charbroiler (high smoke, heat, and grease output), then the entire system must be re-adjusted to accommodate the new equipment. Of the hood problems I have seen, this is one of the most frequent causes of sub-par hood performance. Owners assume that the hood is a constant and can accommodate any changes made to the equipment below. This is not the case.

Maintenance is another frequent cause of hood problems. Filters need to be cleaned regularly. The fans which are part of the hood system require regular maintenance. If a belt becomes loose, the performance of the fan can be altered and the actual volumes of air being removed or returned to the kitchen can be impacted. A regular maintenance program can help prevent this from occurring.

Sometimes, the hood problems are a result of the original equipment selection and have nothing to do with changes over time. In particular, I am referring to "short cycle" or "short circuit" hoods. Evidence has shown that short cycle hoods don't work. To briefly summarize a fairly complicated issue, short cycle hoods

bring return air – or “make-up air” – directly into the hood, and exhaust that very same air out of the hood before it ever mixes with the space. Think logically for a second ... why would you want to bring air into the hood only to exhaust it before it ever even reaches the space within the building? Answer – well, there is no justified answer. Short cycle hoods were invented for the sole purpose of getting around certain mechanical code requirements for hoods that did not appropriately consider foodservice applications. Rather, these codes were written for hoods in industrial settings, where materials such as paint and plastics are used. Most foodservice hood manufacturers have obtained UL listings that allow the hoods to be more accurately designed for foodservice applications, making short cycle hoods obsolete. Even the hood manufacturers – the reputable ones, anyway – will tell you that short cycle hoods don’t work. They only sell them because customers are willing to pay for them. They would prefer not to make them. Honestly.

In summary, it is pretty easy to overlook the impact that a hood system can have on a foodservice facility. Keep an eye out for potential indicators of a hood problem and stay on top of regular hood maintenance. Taking these steps can significantly impact performance, functionality, and ultimately ... the bottom line.