Grease Duct Slope – Why Listed Round Grease Ducts Require Less

Anyone familiar with the requirements for grease ducts in NFPA96 and the various mechanical codes is aware of the fact that horizontal grease ducts are required to include ¼" per foot slope in order to reduce the likelihood of grease pooling in horizontal runs and creating an increased fire hazard. These requirements have been included for decades. As a matter of fact, some codes require even more slope (up to 1" / ft) in instances where horizontal runs exceed certain lengths.

Since, for many years, the only grease ducts that were being used were the site built, rectangular, welded, carbon steel construction, such requirement simply makes sense. With a flat, horizontal, carbon steel surface these ducts are, indeed, susceptible to pooling in horizontal runs.

However, if one considers the need for slope in a round duct system, it is rather easy to envision the fact that significant pooling in the bottom is nowhere near as likely due to the cylindrical walls. In such case, as soon as buildup begins to occur – the liquid grease tends to run down and settle at the single lowest point. In such case, even if the system is perfectly horizontal the grease will flow towards the pipe ends rather than build up along the pipe walls. If a horizontal in-line drain section is installed at the end, grease can be discharged out of the duct and into a reservoir.

This alone is technically sound reason for permitting a lesser slope in cylindrical grease ducts.

When one also considers the severe testing that cylindrical, factory-built grease ducts (Listed per UL1978 – the standard for "Grease Ducts") undergo and the materials they are made out of, one should also realize that such listed, stainless steel lined grease ducts are far more structurally sound and stable – under fire conditions (as well as non-fire conditions) - versus any type of rectangular carbon steel system.

[For example the UL1978 standard includes an extremely severe 2000^{O}F temperature test (simulating the effects of a grease fire within the duct) for 30 minutes. At the completion of such testing these listed, stainless steel, cylindrical, systems remain structurally sound without any buckling, bowing or any type of distortion. Under similar conditions, rectangular systems sustain permanent distortion within a very short timeframe.]

Based upon the above considerations, UL granted our proposal to include statements in our Grease Duct installation instructions (which are a part of the listed product) confirming that a minimum slope of 1/16" per foot is required for our factory-built grease duct.

Codes acknowledge the option to install factory-built grease ducts as long as they are Listed (per UL1978 and / or UL2221) and installed in accordance with the terms of its Listing and the manufacturer's instructions. NFPA 96 (7.1.4.1, 2014) gives specific exception to factory-built, so many AHJ's exempt Ampco grease ducts from the traditional requirement. Ampco and UL both agree with the technical logic presented above for exemption from this requirement. While such ¼" per foot minimum slope is critically important for site built, rectangular grease ducts, it is not for the Ampco, factory-built round systems including Models N, VSI, IVSI and ZC. Reference our slope analysis document using hydraulic flow calculation methods comparing round to rectangular shapes.

Regards,
The Engineering Department