

# FACILITY CHECKUP ALERT: *Blocked Flue Spaces Are Bad For Your Health*



**F**or companies with sprinkler protected hard copy storage facilities, you should be aware of increased attention being paid to properly maintained flue spaces in your rack structures. This is being driven by a code change just printed in the 2012 International Fire Code at the request of several fire officials in California. To see the reasoning behind the code change, it first makes sense to understand what flue spaces are and why they are so important. Here are some FAQ's:

- What are they? *Flue spaces are gaps or openings left in the rack structure, with sizes and locations dictated by fire codes, standards and / or insurance regulations.*
- What purpose do flue spaces in rack storage serve? *Flue spaces exert two primary influences on fires in racks. Flues allow a fire to spread vertically through a rack, thereby providing a means for heat to rise up through the racks and activate the sprinklers. Flues also provide the path through which water from the sprinklers reaches a fire. Where they exist, flue spaces are to extend vertically through the entire height of the rack.<sup>1</sup>*
- Are there different types? *Yes. Longitudinal Flue Spaces run parallel to the rack rows. They could be located between back to back rows or may even be the rack aisles themselves. Transverse Flue Spaces are usually located at every rack upright and run perpendicular to the rack rows. A nominal 6" space is typically required - with the rack upright itself accounting for 3".*
- What is the effect of having no flue spaces or obstructed flue spaces? *Where no flue spaces exist, fire development cannot occur up through the racks. The fire can only develop horizontally down the length of the rack and up along the rack face in the aisles. This type of fire development severely delays the activation of sprinklers, and when sprinklers do activate, their discharge cannot penetrate the rack and reach the fire even though a greater number of sprinklers do ultimately operate. A similar phenomenon also occurs where flue spaces exist but are obstructed, limited in number or size, or do not extend vertically through the entire height of the rack.<sup>1</sup>*
- Have properly maintained flue spaces been proven by testing to be effective? *Yes, the full scale rack fire tests run at Southwest Research Institute in 2007 produced successful results partially due to open transverse flue spaces. This fact was confirmed by their requirement in Section 20 of the NFPA-13 Standard<sup>2</sup> derived from, and written immediately after those tests.*

The new code language reads as follows:

**3208.3.1 Flue Space Protection.** Where required by the fire code official, flue spaces required by Table 3208.3, in single, double or multiple row rack storage installations shall be equipped with approved devices to protect required flue spaces. Such devices shall not be removed or modified.<sup>3</sup>

In essence, the code now allows for the mandating of a device where the Authority Having Jurisdiction (AHJ) (building inspector, fire marshal, etc.) feels the flue space would not be properly maintained without one. For the hard copy storage industry this bears noting, as boxes do tend to migrate over flue spaces with time - either from retrieval operations or from box dimensional changes. It makes sense to consider installing devices BEFORE boxes are loaded on shelves, as doing so afterwards at the insistence (and possible fining) of an AHJ could prove to be quite labor intensive and costly.



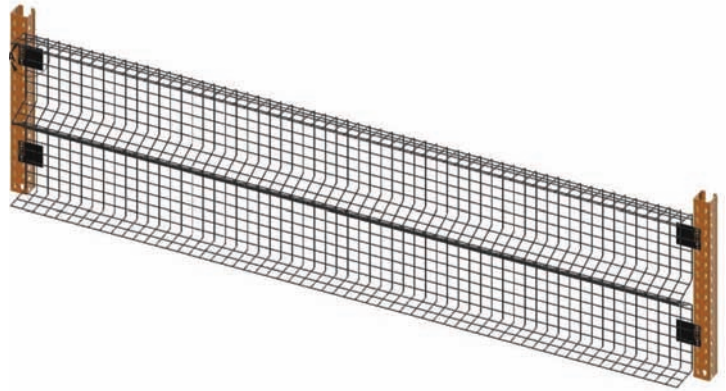
*FlueKeeper®*



**FlueKeeper®**

DACS offers a cost effective, easily installable solution called *FlueKeepers®* for protecting the transverse flues. These steel bars are inserted into your rack posts with a spring loaded mechanism. No tools or hardware are required and they can be put in either before or after boxes are loaded. Since their introduction in 2007, thousands have been effectively installed worldwide and many facilities now require them with any new rack purchase.

Protecting the other, or longitudinal, flue space has always been a challenge for both facility owners and material handling providers. The long length (up to 120") of the 6" wide space requires a device with adequate stiffness, yet without significant mass that would intrude into the open space and thus block sprinkler water penetration. After hearing that devices made with wire rope, electrical conduit, steel banding, etc. were sometimes delivering less than stellar performance, DACS brainstormed to develop a new and effective product that owners could feel confident would work properly over its entire useful life. After many sample iterations, the *FlueKeeper®2* design has been finalized and it is now available for sale. Combining the idea of an open area wire deck with the strength obtained when corrugating any metal, *FlueKeeper®2* provides a stiff, open area backstop for keeping boxes out of the longitudinal flue space. As it functions from either side of a back to back rack structure, only one unit is required per shelf, thus lowering installation costs over other alternatives. A sample will be available for inspection at the DACS booth # 306 in the Conference Expo.



**NEW FlueKeeper®2**

*FlueKeeper®* and *FlueKeeper®2* join the other innovative products offered by DACS including FM Approved<sup>4</sup> *Punch Deck®* open area rack deck. DACS, Inc. is a manufacturer and global provider of corrugated steel decking products and accessories for the material handling and construction marketplaces. We have been particularly focused on the needs of the record storage industry and have been fortunate to serve them for the last 25 years.



For more information, contact Gary Smith, Vice President - Sales & Marketing at 866-400-8107, +1-908-637-4476 or [gsmith@dacsinc.com](mailto:gsmith@dacsinc.com)

1. *Automatic Sprinkler System Handbook, 2002* by Chris Dubay PE, National Fire Protection Association, Quincy, MA
2. *NFPA -13 Standard for the Installation of Sprinkler Systems 2010 Edition*, National Fire Protection Association, Quincy, MA
3. *International Fire Code 2012*, International Code Council, Country Club Hills, IL
4. *FM Approvals Standard # 6914*, December 2010, Norwood, MA