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the NEWS

A **BNP** PUBLICATION

THE HVACR CONTRACTOR'S WEEKLY NEWSMAGAZINE

\$3.00

Will Your Dampers Be Up To Standard?

UL Standard Requires New Testing For Smoke, Fire Dampers.

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On July 1, 2002, manufacturers of fire, smoke, and combination fire/smoke dampers must have their products comply with the new testing requirements of UL 555 and UL 555S. These new testing requirements have been developed in order to make sure that fire dampers (UL 555) and smoke dampers (UL 555S) are more reliable and as safe as possible when used in commercial buildings.

These requirements will greatly affect damper manufacturers and engineers, but contractors and building operators must be aware of what the new standards entail and why they are important.

Safety is the number-one concern for contractors in the wake of the new standards. For fire and smoke damper installations, contractors will want to make sure they are installing the safest damper available.

A BATTERY OF TESTS

Greenheck (Schofield, WI) was the first manufacturer to have its more popular dampers approved by Underwriters Laboratories (UL) under the new standards. The manufacturer earned the UL rating on its most commonly specified dampers back in April 2001, more than a year before the mandatory deadline.

UL 555 and 555S have been around for some time now; 555 was started back in 1968 and 555S was established in 1983. Over the past 20 years, these two standards have changed and developed. The most recent changes mark the sixth edition of UL 555 and the fourth edition of UL 555S.

According to Greenheck, these changes in the standards are quite significant. A number of new tests must be performed on both types of dampers manufactured after July 1, 2002. These new testing procedures are absent from current dampers certified under the past UL standard.

UL 555 UPDATES

Of the two updated standards, UL 555 has the least amount of changed testing procedures that are required. This standard includes four new, mandatory safety tests on dynamic fire dampers.

Dynamic fire dampers are installed in systems where the hvac



Pictured above is Greenheck's UL-certified on-site testing lab, where the manufacturer's smoke and fire dampers are tested with heated air to simulate fire emergency conditions. This testing procedure is required by new UL Standards.

system continues to operate during a fire. The other damper, known as a static damper, is used in systems where the hvac automatically shuts down if a fire occurs in a building. For UL 555, the new testing only applies to dynamic dampers.

The tests required on the dynamic damper include heated air testing, minimum airflow and pressure requirements, and airflow directional testing.

First, all dynamic dampers must be tested at elevated temperatures of 250° or 350°F. This will simulate a fire emergency and test whether the damper will shut under extreme temperatures. According to Greenheck, this heated air must then pass through the damper. The heated air should then trigger a fusible link or electronic sensor, which will cause the damper to close. The current UL standard only makes it mandatory to closure test the damper under ambient temperature.

"This test is used to simulate a real-life condition, to make sure the damper operates correctly," said Mike Wolf, Greenheck's sales and marketing manager of dampers and louvers.

Also required is a check on airflow velocity and pressure rating levels. Dynamic dampers must have an airflow velocity rating level of 2,000, 3,000, or 4,000 feet per minute (fpm). They must also have a pressure rating level of 4, 6, or 8 in. wg.

To obtain one of the airflow ratings, the damper must be able to continue functioning at an airflow of 400 fpm higher than the given rating. Also, for a given pressure rating, the damper must be able to remain closed with a 0.5 in. wg higher than the actual rating. For example, to achieve an airflow velocity rating of 3,000 fpm, the damper must remain closed at a velocity of 3,400 fpm. For a 6-in.-wg rating, the damper must stay closed at least with 6.5 in. wg of pressure.

Finally, the airflow tests must be conducted through the front of the damper and through the back. According to Wolf, this alleviates a problem associated with the smoke or fire damper being installed incorrectly. If the damper is installed backwards, it will still be able to block fire or smoke in an emergency.

UL 555S UPDATES

UL 555S requires the same testing as UL 555 and then some. Smoke dampers must also be tested for the same airflow and air pressure rates, must be tested at high temperatures, and must test airflow from both directions.

Smoke dampers must also go through a cycling test. Smoke dampers with two-position actuators must be tested to cycle open and closed 20,000 times compared to the current standard, which only requires 5,000 cycles.

Smoke dampers must also go through a leakage test. The major change here is that to simulate real-life conditions, the testing must be done using heated air. The smoke damper serves as a barrier to stop smoke from traveling to other parts of a building in case of an emergency.

Through the leakage test, smoke dampers will be classified by a leakage level. Past UL standards present four separate leak classifications — Class I being the lowest or best rating, and leakage Class IV being the highest or worst leakage rating. With the new UL 555S, the fourth classification has been dropped.

HOW IT AFFECTS YOU

As stated before, the major effect the new standard has is on manufacturers and their design engineers. Manufacturers of fire, smoke, and fire/smoke dampers must have their products qualified through UL standards by the July 1, 2002 deadline. Manufacturers that fail to meet the deadline may not ship their dampers.

Wolf recommends that contractors become familiar with the new standard and keep the changes in mind.

“The most immediate concern to the contractor is when they are in the quotation stage of a project,” he said. This is important because when bidding on a project or ordering a damper, contractors will want to be confident that their projects meet the latest industry standards.

Awareness of the new UL standards should prompt contractors to request that the dampers they are installing meet the latest standards.

Also, contractors may not want to preorder a damper from a manufacturer for an installation after July 2002. Dampers shipped up to June 30 do not have to meet the new standards, but can be installed.

Finally, it will help contractors to just stay ahead of the game. Contractors with current installation projects will want to install dampers that are already up to the new standard instead of waiting for the deadline.

UL is not making it mandatory for dampers installed before the deadline to be retrofitted, but contractors may want to take advantage of installing the dampers that will be up to the new standard. This will ensure that the dampers they have installed are considered to be the safest (according to UL standards).

It will also save on a possible reinstallation if building owners decide they want their dampers up to the latest code. ©

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