

DOCKETED

Docket Number:	19-BSTD-03
Project Title:	2022 Energy Code Pre-Rulemaking
TN #:	236030
Document Title:	Leakage testing for multifamily 4 story plus
Description:	N/A
Filer:	System
Organization:	Mark Terzigni
Submitter Role:	Public
Submission Date:	12/18/2020 12:33:38 PM
Docketed Date:	12/18/2020

*Comment Received From: Mark Terzigni
Submitted On: 12/18/2020
Docket Number: 19-BSTD-03*

Leakage testing for multifamily 4 story plus

See attached PDF 1 page

Additional submitted attachment is included below.



SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.

Friday, December 18, 2020

Regarding:

2022 Energy Code

Multifamily Restructuring Proposals for 2022

Space Conditioning – Duct Leak Testing

A proposal to expand duct leakage testing requirements to include multifamily buildings was presented on December 2nd, 2020. Expanding the requirements to test these dwellings is not the focus of this comment. The primary intent of this comment is to make certain that the appropriate and technically correct approach for the method of test and the pass/fail criteria are used.

The general approach of a “fan pressurization test” is acceptable and agrees with the research and experience SMACNA has aggregated over decades of effort. The basic approach is to cap off the openings, pressurize the duct (in part or as a whole) and measure the air entering the test section under those conditions. The air going into the system is equal to the air going out which is the “leakage”.

The next part of the process is the pass/fail criteria. This is key and is related to the test method mentioned above. There are multiple research projects^{1,2} and years of experience that clearly relate the following: The static pressure in the duct or the “test pressure” and the total length of joints and seams or more simply the amount of duct. There is also test data and experience that shows the volume or velocity of air moving through the duct has negligible effect on leakage¹.

It is simply incorrect to assign a pass/fail limit based on a percentage of the volumetric flow of a forced air system. Even if you define the test condition (pressure) you would still expect to get different values between systems based on the physical size and complexity of the system. Understand that the total flow of the system does not directly define the physical size of the distribution portion of that system. In plain words we could have two systems of the same design airflow that have two very different distribution systems and it would be incorrect to compare their respective leakage performance as a percent to total flow. Using a percent to design flow would result in either having a pass/fail criteria higher than it should be and allowing an inferior system, or pass/fail criteria that is too low which would become unattainable or at least very cost prohibitive to attain.

For the reasons above I would propose using SMACNA’s System Air Leakage Test Standard 2020. Which is founded on the research mentioned as well as decades of practical field experience for the task force responsible for the content.

Sincerely,

Mark Terzigni
Director of Engineering
SMACNA

¹*Measurement and Analysis of Leakage Rates from Seams and Joints of Air Handling Systems – AISI/SMACNA 1201-351/5-71 (1972). AISI and SMACNA*

²*Investigation of Duct Leakage - ASHRAE RP-308. (1985). ASHRAE.*