

**INTERPRETATION IC 90.1-2001-15 OF
ANSI/ASHRAE/IESNA STANDARD 90.1-2001
Energy Standard for Buildings Except Low-Rise Residential Buildings**

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Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE/IESNA Standard 90.1-2001, Section 6.3.3.1, related to Fan Power Limitation for Laboratory Systems.

Background: Table 6.3.3.1 requires that the fan system use no more than 1.5 hp/1000 cfm of supply air on large ($\geq 20,000$ cfm) variable volume systems. The standard also allows the hp used to calculate compliance to be reduced to account for high filter losses, energy recovery coils, and "process loads".

It is our contention that in a building using dedicated exhausts for fume hood and laboratory systems, those parts of the HVAC system which are provided for pressurization control, safety, health, or process integrity should be considered "process loads" for the purpose of calculating the fan horsepower for Section 6.3.3 as they are made necessary only because of the type of work done in the building, not for the comfort of the occupants. These include:

- Fume hoods
- Fume hood control terminals and other associated lab-trac devices
- General laboratory exhaust (if negative room pressure must be maintained due to the use of chemicals or biological contaminants for occupant safety and/or process integrity)
- High velocity nozzles on fume hood exhaust stacks (used to insure dispersion of chemical fume exhaust)
- All horsepower associated with exhausting perchloric acid hoods
- Biological safety cabinets
- High velocity snorkles (for localized exhaust)
- Any scientific or industrial device not used for comfort (eg - welding platens, ceramic ovens)
- Exhaust duct losses for ductwork serving above devices

Most laboratory design guidelines recommend high duct velocities in the lab and lab hood exhaust ducts (higher than typical air velocities in general building exhaust). This means the pressure loss is higher than it would be if the air was returned to the air units or exhausted in ductwork sized for comfort applications. It is also our contention that the difference between the pressure losses (high velocity vs. low velocity) is a "process load" since it is made necessary by the type of work done in the lab spaces and not for comfort cooling and ventilation.

It is not contended that laboratory HVAC systems are exempt from meeting the requirements of this section. It is only contended that those portions of a laboratory HVAC system in place for pressurization control, occupant safety, health, environmental protection, or process integrity that require higher fan power to meet a safety related purpose are considered process loads and as such may be deducted from the total system fan horsepower using the pressure credit in the allowable fan system equation at the end of 6.3.3.1.

Interpretation: Those parts of a laboratory HVAC system provided for pressurization control, safety, health, or process integrity are considered process loads and as such may be deducted from the total system horsepower using the pressure credit in the allowable fan system horsepower equation at the end of 6.3.3.1.

Examples include:

- Fume hoods
- Fume hood control terminals and other associated lab-trac devices
- General laboratory exhaust (if negative room pressure must be maintained due to the use of chemicals or biological contaminants for occupant safety and/or process integrity)
- High velocity nozzles on fume hood exhaust stacks (used to insure dispersion of chemical fume exhaust)
- All horsepower associated with exhausting perchloric acid hoods
- Biological safety cabinets
- High velocity snorkles (for localized exhaust)
- Any scientific or industrial device not used for comfort (e.g. - welding platens, ceramic ovens)
- Exhaust duct losses for ductwork serving above devices

Question: Is this interpretation correct?

Answer: No

Comments: These laboratory exhaust system parasitic losses are not process loads, however no parts of 90.1 shall be used to circumvent any safety, health, or environmental requirements (Section 2.5). Parts of the systems provided for mandatory safety and health regulations shall be allowed under static pressure [SP_{HR}] credit in the fan power limitations of 6.3.3.1 per item 6.3.3.1.b.