

[Equest-users] Toilet Exhaust

Dahlstrom, Aaron [ADahlstrom at in-posse.com](mailto:ADahlstrom@in-posse.com)

Tue Oct 11 16:43:27 PDT 2011

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Omar -

Pulling this back on list to close the loop ...

If you have toilet exhaust pulling makeup from adjacent zones, I see two options for the proposed case:

1) The standalone approach: Double-check that you have adequate fresh air supplied in the design and in the model to make up the fresh air being exhausted. Specify the exhaust fan as a direct meter load and give it the correct kW and operating schedule to match the design intent. Assume the makeup air operates properly.

2) The explicit approach: create the exhaust fan as an exhaust fan in the zone where the makeup air is coming from. In your proposed case, specify the kW/cfm and operating schedule to match the fan's intended design / operation. Since eQUEST will not allow transfer air across zone boundaries, this placement ensures that the makeup air comes from the correct location.

In either case, I don't believe the reviewer will allow an additional allowance in the baseline for Exhaust Fan motor horsepower beyond that specified by G3.1.2.9. Note that G3.1.2.9 gives a single cap for supply, return, exhaust and relief fans, which I have interpreted in the past to mean that all fans associated with a given quantity of supply air must trade under the same cap. So no separate allowance for the exhaust fan beyond what you have already allowed for the system supply fan that is supplying the fresh air to this area. (This is consistent with the definition of fan system bhp from the definitions section of ASHRAE 90.1). So - you can either: 1) zero out your exhaust fans in your baseline and allocate all of the allowance to the main system supply fan or 2) allocate some of the G3.1.2.9 allowance to the exhaust fan, perhaps based on the ratio of brake HP of the exhaust fans to the supply fan in the design case. The nature of your scheduling and whether the central system is CAV or VAV may recommend one approach or the other.

Hope this helps.

Aaron Dahlstrom , PE, LEED(r) AP

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From: Omar Katanani [mailto:[omar at ecoconsulting.net](mailto:omar@ecoconsulting.net)]

Sent: Friday, October 07, 2011 3:12 AM

To: Dahlstrom, Aaron

Subject: RE: Toilet Exhaust

Adjacent Zones..

Best,
Omar

Omar Katanani

Sustainable Design Engineer

Email: [omar at ecoconsulting.net](mailto:omar@ecoconsulting.net)

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-----Original Message-----

From: Dahlstrom, Aaron [mailto:ADahlstrom@in-posse.com]
Sent: Thu 10/6/2011 11:27 PM
To: Omar Katanani
Subject: RE: Toilet Exhaust

Infiltration from outside? Or from adjacent zones?

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From: Omar Katanani [mailto:omar@ecoconsulting.net]
Sent: Thursday, October 06, 2011 4:26 PM
To: Dahlstrom, Aaron; eQUEST Users List
Subject: RE: Toilet Exhaust

Aaron,

It's most probably coming through infiltration (toilet door grills).

Best,
Omar

Omar Katanani
Sustainable Design Engineer
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-----Original Message-----

From: Dahlstrom, Aaron [mailto:ADahlstrom@in-posse.com]
Sent: Thu 10/6/2011 7:08 PM
To: Omar Katanani; eQUEST Users List
Subject: RE: Toilet Exhaust

Omar - where is the air coming from that makes up the exhaust?

This affects how I would model toilet exhaust.

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From: equest-users-bounces@lists.onebuilding.org [mailto:equest-users-bounces@lists.onebuilding.org] On Behalf Of Omar Katanani
Sent: Thursday, October 06, 2011 11:15 AM
To: eQUEST Users List
Subject: [Equest-users] Toilet Exhaust

Dear all,

I would like to double check with you if I'm modeling my toilet exhaust correctly, in order to answer the USGBC's design review comments properly!

> *The project has exhaust fans on the roof, with ducts to each toilet (i.e., ducted exhaust).*
> *Since the toilets are not conditioned, I'm placing them arbitrarily under random AHUs.*
> *I am then entering the exhaust flow rate and the kW per flow as in the attached screenshot.*

1. Can someone please confirm that the above is correct?
2. I assume ASHRAE 90.1 App G3.1.2.9 (baseline fan power corrections) applies for toilet exhausts. I think I'll have to use the correction factors for the "Fully ducted return and/or exhaust air systems" (125 Pa). I'll plug in the resultant kW/cfm in the input box in the attached drawing. Correct?

Many thanks,
Omar

Omar Katanani
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