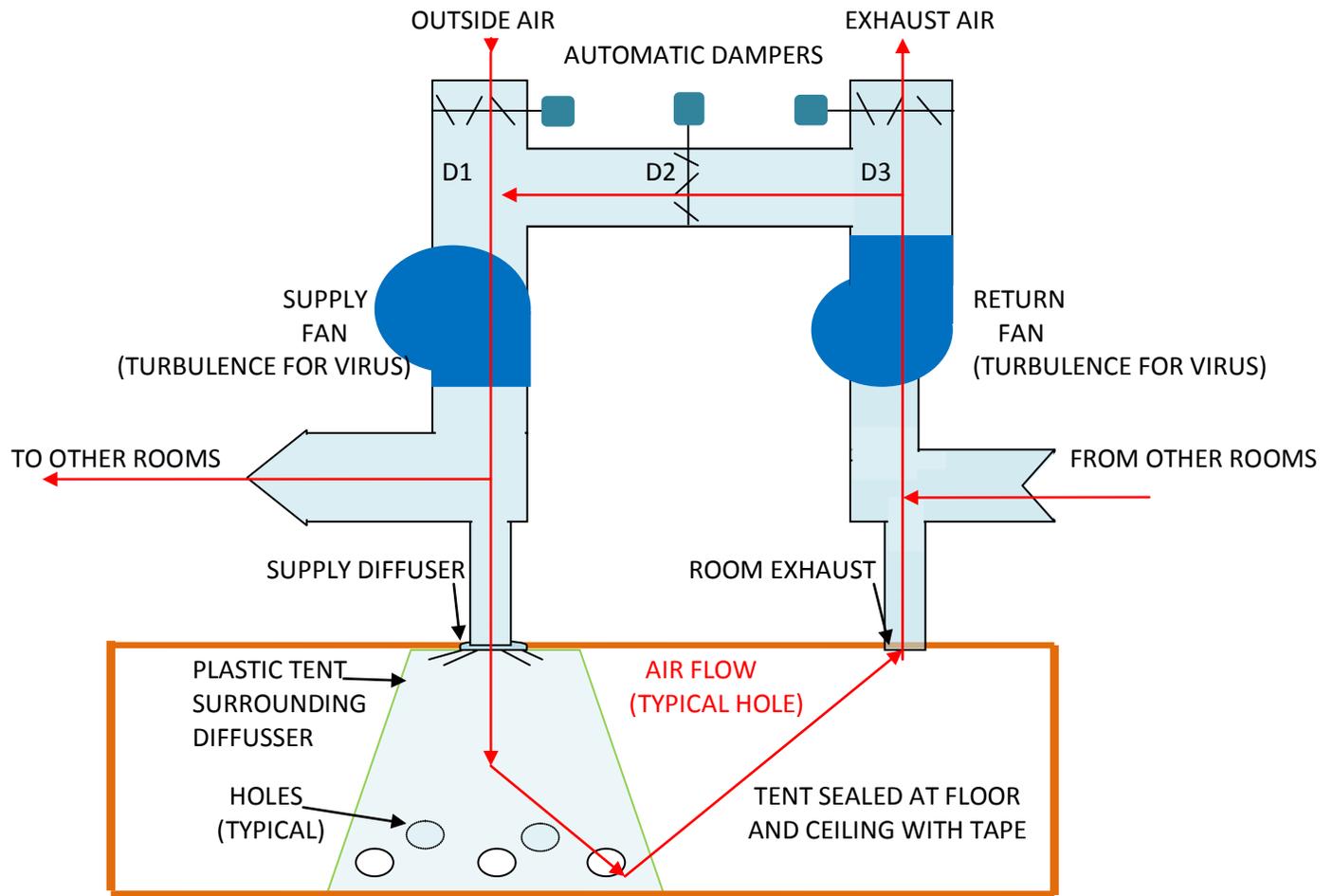


## COVID VIRUS TEST IN NON-TURBULENT HVAC FAN SUPPLY AIR

### CONSIDERING ESCALATED GLOBAL WARMING AND POSSIBLE VIRUS TRANSMISSION IMPACTS



THE PROBLEM----- Increasing outdoor air ventilation is escalating global warming in two manners:

- 1- The increased heating required increases GHG emissions caused by the HVAC system up to about 700%
- 2- The increased exhaust air increases atmospheric heat input via the HVAC system up to about 550%.

The only information we have found indicates that no testing has been done in all the appropriate locations on typical HVAC systems for live COVID virus, supporting the maximum ventilation position of much of governing society. Opinions expressed by authorities indicate that the virus cannot live through turbulent environments. The reports found indicate the live virus cannot travel through the typical HVAC system and return to the occupied space as a threat.

REQUIRED TESTING---The illustration above presents a means of creating a relatively non-turbulent supply air environment to determine if live virus can survive the turbulence of the HVAC fans and return to the occupied areas.

#### TEST METHOD

- 1- Build a tent as illustrated and run system until the air in the tent matches supply air quality.
- 2- Alter the HVAC automatic dampers to have D1 and D3 closed and D2 open (full recirculation) if fan CFM's allow.
- 3- Test the tent air and the room air for the live virus.
- 4- Introduce the live virus into the room outside of the tent.
- 5- Run for enough time to have tent refilled completely with return air that had the live virus introduced.
- 6- Test again for the live virus in the tent and the room. Record the quantity of live virus at both locations.
- 7- Alter the HVAC automatic dampers to have D1 and D3 open and D2 closed.(full outdoor air) if allowable. Repeat testing.

**CONSIDERATION---If the tent live virus content is the same in both scenarios, there is no benefit regarding the live virus in increased ventilation: however, this position will have significant damage implications regarding Climate Change.**

**If there is benefit in extra ventilation, it should be weighed against the negative impact, regarding Climate Change.**

**Subject:** RE: COVID-19 transmission consideration

Hello,

Please see the following response from a member of the ASHRAE Epidemic Task Force:

*Hello David.*

*Thank you for your question to the ASHRAE Epidemic Task Force (ETF) and for forwarding the interesting attachments.*

*The science surrounding the possibility and likelihood of airborne transport and transmission of COVID-19 is rapidly changing. As time goes on, more and more respected scientists are convinced that the airborne pathway for transmission is likely. For instance, in early July, 239 well-respected scientists (including some serving on the ASHRAE ETF) from 32 countries petitioned the World Health Organization (WHO) to rethink the importance of airborne transmission of the SARS-CoV-2 virus. Their letter can be found [here](#). It prompted the WHO to change their [position](#) and recognize the airborne pathway in the ongoing pandemic. As you mentioned, there is not a lot of hard evidence showing that airborne viral particles can travel long distances and through HVAC systems. However, this lack of evidence is not proof that airborne transmission cannot happen. **Sampling and culturing viable virus (any virus) from the air is extremely difficult to do. The relatively turbulent act of sampling tends to kill the virus, making true viability very difficult to ascertain.** Given those limitations, it is likely viable SARS-CoV-2 viral particles are traveling further in the air than we can concretely prove. **HIGHLIGHTING ADDED.***

*After reviewing all of the literature we have available (and doing our best to keep up with new reports), the conclusions of our group of experts is that the transmission through the air is likely enough that we believe countermeasures are warranted. That is why we put together what we hope are practical suggestions for ways for owners/managers/occupants to proceed. We also tell people to use the suggestions with caution. As you suggest, difficulty maintaining the RH level is one reason to consider limiting the amount of incoming outdoor air.*

*We also wholeheartedly agree with your assertion that more research is needed to be sure our recommendations are the best possible. However, in the throes of a global pandemic, we firmly believe we need to be intelligently proactive and not wait for absolute proof before acting. There is a significant amount of research going on currently, and there will likely be much more in the future. Eventually, we may learn more about how effective our guidance truly was during the pandemic. In the meantime, we are choosing to err on the side of caution.*

Regards,  
Steve Hammerling  
ASHRAE Manager of Technical Services

*Answers to technical inquiries are provided as a service to the public. While every effort is made to provide accurate and reliable information, they are advisory, are provided for informational purposes only, and may represent only one person's view. They are not intended and should not be relied upon as official statements of ASHRAE.*