The Elimination of the Return line from the HVAC systems due to COVID-19

Abdullah Kendoush[1]

1 Augusta Technical College

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Abstract

Due to the spread of the deadly COVID-19 virus in the US and around the world, the author proposes the elimination of the return line from the HVAC (Heating, Ventilation, and Air conditioning) systems , simply by closing the return air damper to avoid the spread of the virus.

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Abdullah Abbas Kendoush

Dept. of Nuclear Engineering Technology

akendoush@augustatech.edu

Augusta Technical College, Augusta, GA 30906, USA

Due to the spread of the deadly COVID-19 virus in the US and around the world, the authors propose the elimination of the return line from the HVAC (Heating, Ventilation, and Air conditioning) systems [1], simply by closing the return air damper (RAD) shown Figure 1 that represents a single zone HVAC system. The idea of closing the RAD may be applied to other

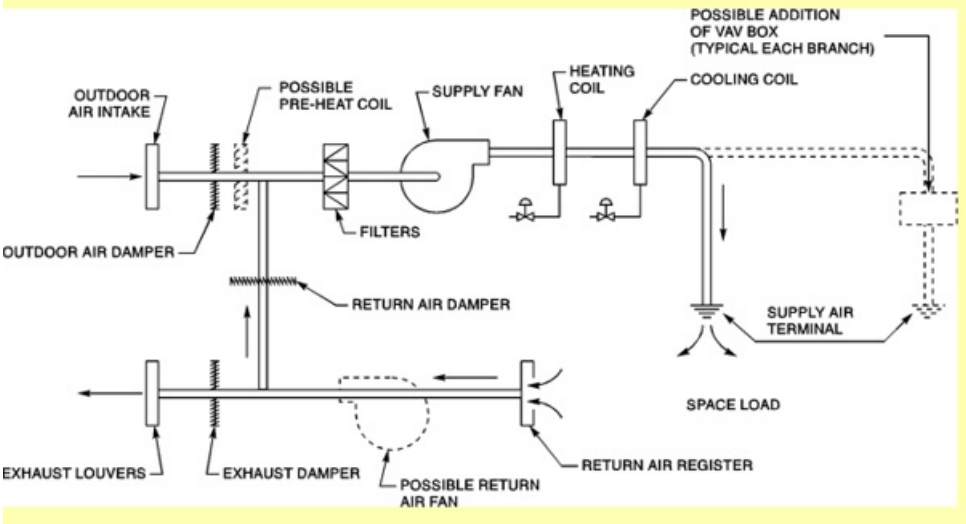

Figure 1. Schematic of a single zone HVAC system. (Courtesy of General Physics Strategies, https://www.gpstrategies.com)

Design systems such as variable air volume, terminal air reheat, dual duct flow , . . .etc.

It should be noted, that the presence of filters in the HVAC systems, is not capable of preventing the transfer of the COVID-19 virus through theses filters. Employing efficient filters like MERV 13 that filter 0.3 micron size virus [2] would not be sufficient as the size of the COVID virus is 0.11 micron [3] The elimination of the return line may cause pressurization inside the building, but there are technical solutions as how to overcome the pressurization.

Certainly, there will be technical difficulties in closing the RAD like over pressurization or less comfortable temperature conditions, but these could be managed.

It should be noted, that the return line is nonexistent in the HVAC systems employed in the nuclear buildings, to avoid the spread of radioactive particles throughout the nuclear facility.

References

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