A quick note on upgrading to MERV 13, HEPA and other high efficient filters.

Are high efficient filters a good idea? in a word YES. BUT (There is always a but isn't there)?

Installation of a new system needs to be properly designed by a qualified heating and air conditioning professional. In commercial applications you definitely want the services of an HVAC Engineer who will take into account the effectiveness of high end filtration and design a system that will " breath easily".

Without proper mating of system components you can create havoc causing operational problems, high utility bills and shorten the life of the mechanical equipment. This may be superficial to severe depending on how far off the mark it is and how the system was implemented in the field. An engineer can more than pay for themselves with good design practices.

Now these are the risks with a newly designed system from scratch.

If you have been tasked to upgrade to high efficieny filtration systems. You may want to consider some of the unintended consequences of doing so with your existing mechanical equipment. If your equipment was designed with PSC motors or had a system design of .5 through .8 total external static pressure, using a simple MERV 8 1" pleated filter could put you into undesired operational conditions including, but not limited to:

- Excessive system pressure drop resulting in low air flow.
- Increased operational cost.
- Increased maintenance cost (better filters capture smaller particles causing the filter to load faster and require a more frequent change interval).
- At the least cause comfort and distribution of air problems.
- At worst, it can in cooling mode cause freeze up of the coils / and eventually damage the compressor.
- At worst, in heating mode it can slow the airflow down across the heat exchanger enough to result in a cracked heat exchanger and tripped limits. Safety problems, short life issues? Indeed.
- Running of a system that was never meant to over come that much static resistance will definitely have a toll on the longevity of the equipment life.

If you are attempting to upgrade your filtration system on existing equipment remember surface area is your friend. Changing to a 4" filter and changing it out more frequently will go a long way to reducing the problems stated above. But don't take my word for it you can find many articles referencing this very subject by greater minds than mine. Check out these articles below.

https://www.energyvanguard.com/blog/unintended-consequences-high-merv-filters

Posted by Allison Bailes of Energy Vanguard.

https://www.ebs.nyc/post/the-rush-to-install-high-merv-rated-filters-could-be-a-costly-mistake

I believe to be authored by Annmarie Bhola of Enhanced Building Solutions.

Both have a lot of links leading to other experts and organizations like ASHREA, DOE many other sites if you look around a little. Everyone in our profession is offering solutions to the problem that is Covid – 19.

Just remember before upgrading to high efficiency filtration on existing equipment…You wouldn't drop a 600 hp super charged motor in a stock vehicle without an upgraded tranny, drive shaft and rear end amongst many other upgrades to handle that kind of horsepower.