How to read the figure of air flow capacity of a machine

Air flow capacity: The air flow volume of the machine can supply, which is always related with the machine fan power and capacity, very simple that we can always assume the larger than fan may always provide more the air flow volume from the machine. Consumer always evaluate a machine with their cost, filtration efficiency and also service area, the services area of the machine may easy be checked out from the manufacturer catalogue, But, most of the consumer may not understand the relationship of service area with the air flow capacity, is the manufacturer provided figure of the air flow reasonable for the service area stated? How should we read the air flow figure? Especially of the "Passive Type" air purifier e.g. the machine with HEPA filter, pollutant air need to be removed by passing through the filter, then we should request the machine to provide at least 5 nos. of air change per hour (ACH) in the application area, now we can believe the machine filtration efficiency may reasonable enough for the area. E.g. there is around 25 m3 of air for a 100ft.2 room (9ft. height), then the machine air flow capacity should be over 125 m3/hour. If a user see that the air flow capacity of the machine is 125 m3/hour but the manufacturer state this passive type machine can effective for area up to 200ft.2, then we challenge the machine efficiency now.

Cleaver to read the figure of air flow

We can direct calculate the air flow capacity with the service area. BUT we should need to read the air flow figure more clever. Over 9x% of the manufacturer will tell us the machine air flow capacity with the figure from the "Fan" only. When the fan installed inside into the air purifier machine, the original air flow rate of the fan will be drop down by some of the machine internal parts inside, when we further install the HEPA filter into the machine, the air flow rate will be further drop down so much now. (Most commonly may drop over 30% to 50% before filter installed). Means that if a machine catalogue state their air flow rate is 830 m3/h, then the finally actual air flow capacity provide may just only 415 m3/h or 580 m3/h. So we should more clever to evaluate a machine especially we need to consider the air flow rate for comparison between different air purifier. This market situation has been explained why we can never apply an air purifier into the area that manufacturer stated.

Refer from the previous example a room with 25 m3 of air for a 100ft.2 room (9ft. height), then the machine air flow capacity should not be over 125 m3/h only, we should select and expect the machine air flow rate should over 250 m3/h (divided by 50%) or 178 m3/s (divided by 70%), then we may have more confidence to use the machine now. Or, user may reference from reliable manufacturer's information that clearly stated their air flow rate is come from "Fan" or "Actual machine air delivery rate at outlet".