Wuhan Corona Virus and Middle East Respiratory Syndrome (MERS)

Reference: 21.00.00119 Issue date: 23-JAN-2020 Last check date: 23-JAN-2020 Status: Open
A/C type/serie: A300, A300-600, A310, A318, A319, ... ATA: 21-00
Engine manufacturer: Supplier:
Purpose / Reason for revision: To expand the scope of the ISI to include Wuhan Corona Virus

Engineering Support Status: Open

Applicability

All Aircraft

References

OIT 999.0032/09

Background

Airlines can ask for recommendations regarding MERS Corona virus and the current Wuhan Corona virus outbreak with respect to;

- Disinfection, procedures and materials
- On-board Transmission
- Operational Techniques needed (eg. turning off recirc fans) ?

Description

We would like to provide you with the following information in relation to questions on the MERS Corona virus, the currently-named "Wuhan Corona" virus, and Corona viruses in general.

Based on the currently available information, we consider that the OIT 999.0032 (swine flu, attached) is equally applicable to the MERS and Wuhan Corona virus. However, the hyperlinks in that OIT are updated and replaced by the following updated specific links. In addition to the specific links below you may also want to refer to the World Health Organisation (WHO) for additional information.

IATA : This page includes Corona virus updates, and some aviation specific information.
www.iata.org/en/programs/safety/health/diseases

European Centre for Disease Control : This page has Corona virus update, and a section called - *Risk assessment guidelines for infectious diseases transmitted on aircraft (RAGIDA) - Middle East Respiratory Syndrome Coronavirus (MERS-CoV)*.
https://www.ecdc.europa.eu/en/novel-coronavirus-china

US Centre for Disease Control : This is a link for information related to aviation aspects of communicable diseases. This contains latest information on Virus outbreaks and further links including "Preventing Spread of Disease on Commercial Aircraft: Guidance for Cabin Crew". Additionally, you will find from this page *"Interim Recommendations for Airline Crew: Novel Coronavirus in China"*
https://www.cdc.gov/quarantine/air/index.html

Additionally, the following US Centre for Disease Control (CDC) link gives some information relating to in-flight and post-flight clean-up/disinfection:

http://www.cdc.gov/quarantine/air/managing-sick-travelers/commercial-aircraft/infection-control-cabin-crew.html

To Airbus current knowledge, there are no "special products" being suggested as necessary for MERS Corona virus or Wuhan Corona Virus disinfection. Therefore, we assume that the existing cleaning and disinfection procedures detailed in the relevant sections of each aircraft AMM remain sufficient. In the case that there is a doubt regarding aircraft material compatibility with a specifically recommended cleaning or disinfection product, please refer to Airbus Customer Support.

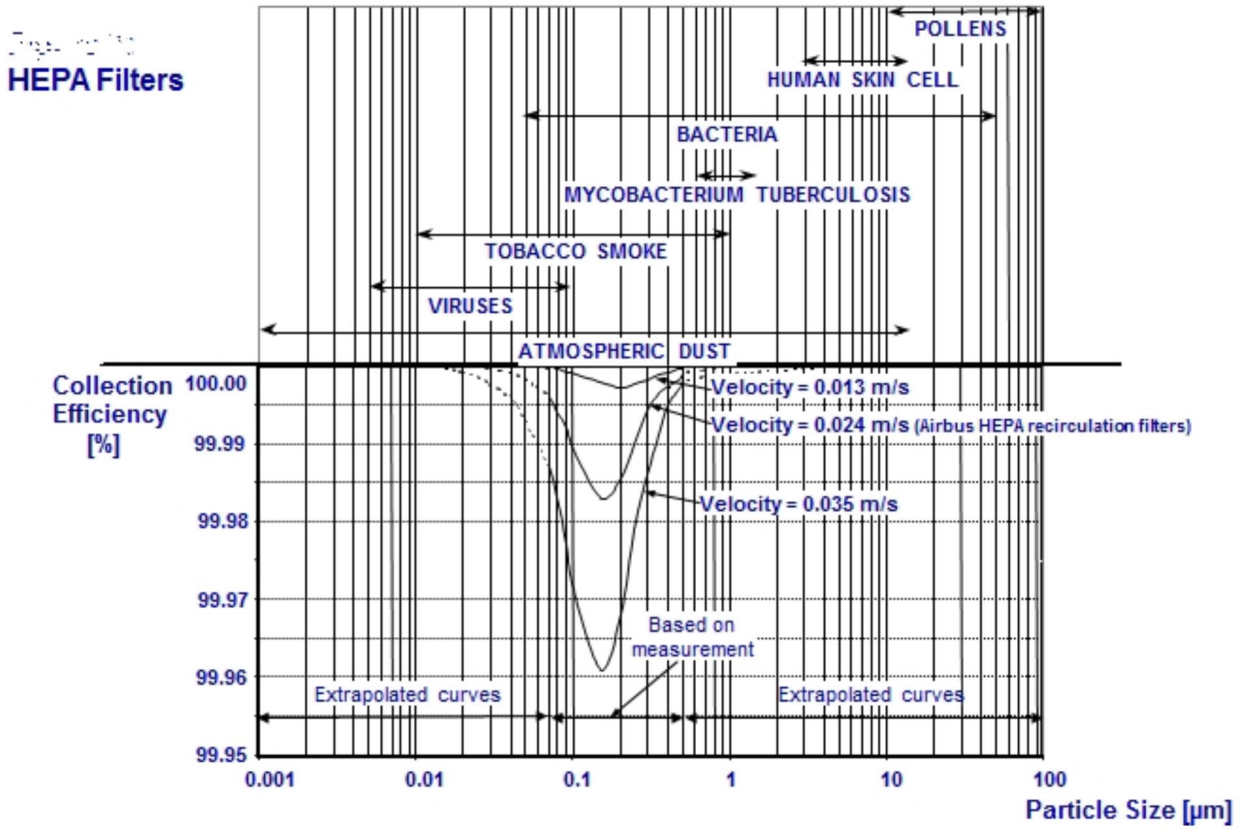
Next, we would like to provide the following background information which is relevant to all Airbus current production aircraft.

Background (Air Quality)

All of the air in Airbus cabins is, on average, completely changed every 3 minutes - even after taking account of filtered and recirculated air. This is a much higher rate of flow than people experience in other indoor environments, and means that passengers are provided with about 80 times as much air as they need to breathe.

The air in Airbus aircraft cabins is a mix of fresh air drawn from outside, and air that has been passed through extremely efficient filters, which remove particles in the air down to the size of microscopic bacteria and virus clusters (with an efficiency of better than 99.99 per cent). These filters – called High-Efficiency-Particulate Arrestors (HEPA) – have been shown in tests to provide air that meets the standards set for hospital operating theatres. With reference to the below efficiency chart, we can see that particles

within the size range of typical Viruses are captured by the HEPA filters with in excess of 99.99% efficiency. You can also refer to the attached information from filter manufacturers PALL and Donaldson-Le Bozec.



As stated in the attached OIT we consider that the HEPA air recirculation filters capture viruses such as the MERS (Corona virus) and Wuhan Corona virus with extremely high efficiency.

In normal operation, less than a half of the air is filtered and recirculated - the rest is fresh air drawn in from outside.

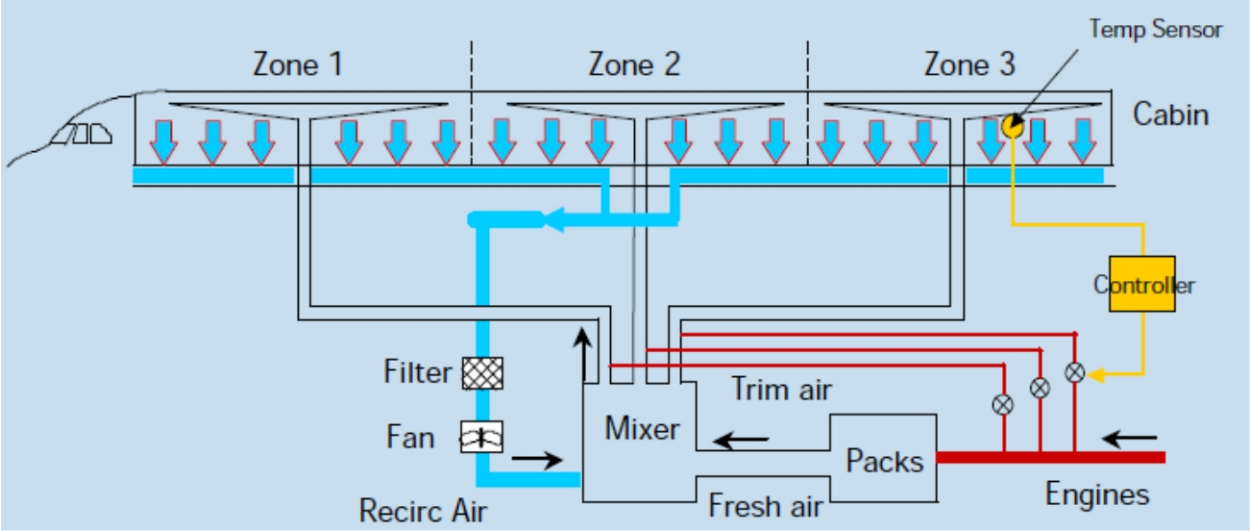
None of the air that is supplied to aircraft toilets, galleys and cargo-holds is filtered and re-circulated – instead it is dumped directly overboard.

The air supply to the cabin comes in at the level of the overhead stowage compartments – from above or underneath them, depending on the Airbus aircraft type – and is extracted at floor level, which means that it is drawn down rather than going up. Most importantly, there is no flow forward or rearward along the cabin.

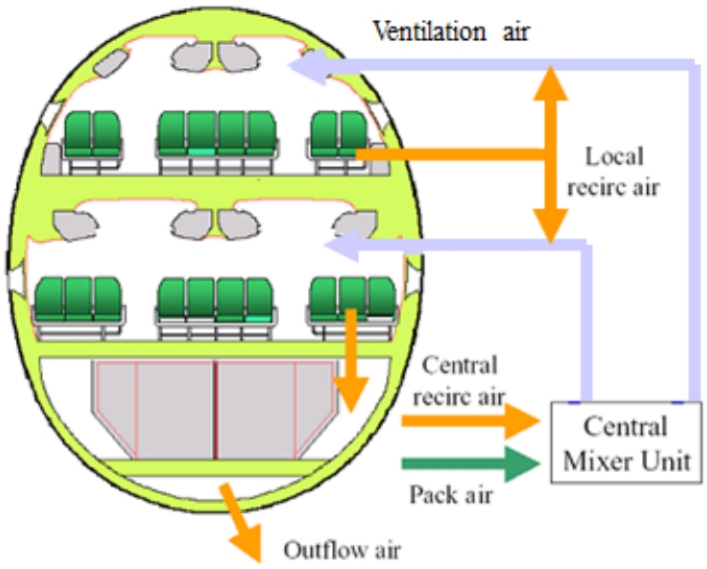
In order to understand how the airflow patterns within the cabin in relation to the possibility of spreading viruses, please see the following;

Fresh/Recirculation Airflow

In general, the fresh air (from outside) is mixed with recirculated air in a mixer unit and then this air is supplied to the cabin, and all occupied areas within the fuselage. This means that there is no specific recirculation airflow entering the cabin that is separate from the fresh air flow. There is only 1 airflow which is comprised of mixed fresh and recirculated air. See the diagram for A320 family below. The A330/A340/A350 family aircraft are similar.



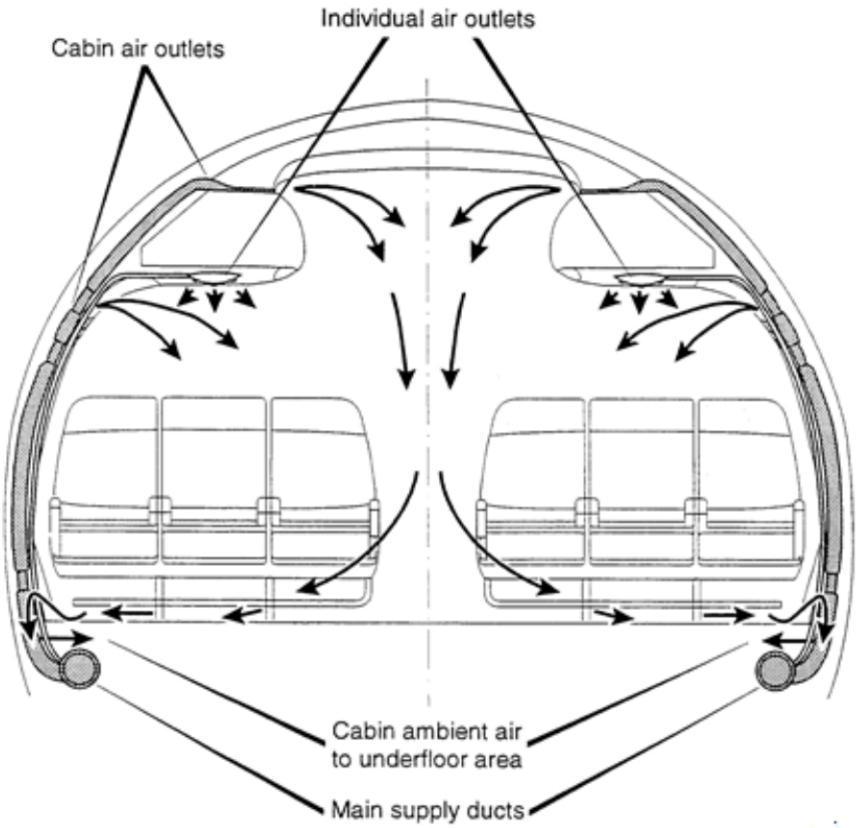
On A380, the airflow follows the same general principle, but is slightly more complicated, see below. In this case there is some additional local recirculation of air in the upper deck, but this is still mixed with air from the central mixer unit. Even though the diagram below does not show it, **all** recirculated air is passed through a HEPA filter before re-entering the cabin or being mixed with fresh air.



A320 Family

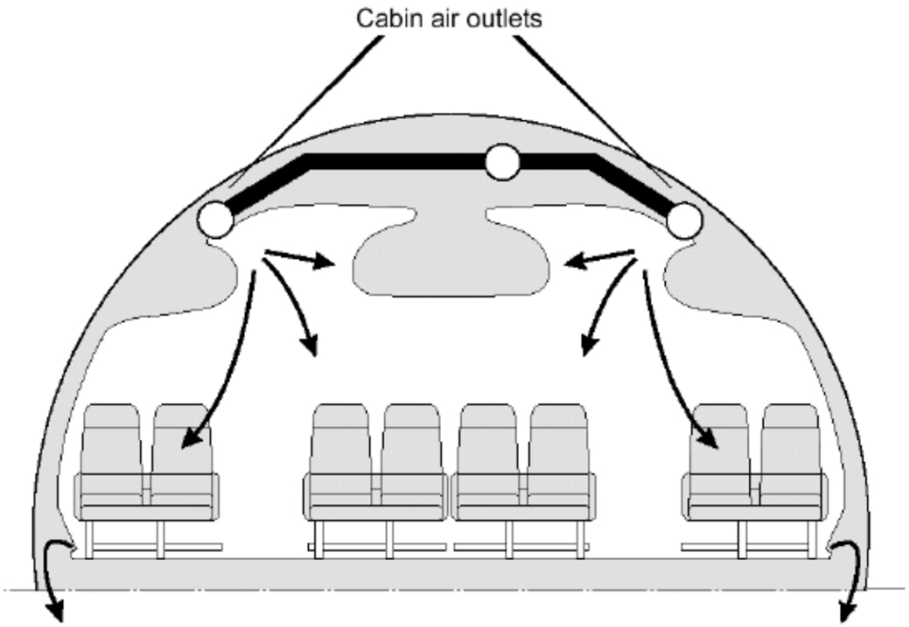
The ventilation system of the Airbus Single Aisle Aircraft (A318/ 319/ 320/ 321) have got two air outlets per side. The lower one ensures a sufficient flow to the passenger seats, the other one to the upper cabin space, which is the head space for working flight attendants or walking passengers:

- Flow from upper part of the cabin downwards
- Two air outlets per cabin side
- Lower outlets ensure good ventilation to seat area
- Upper outlets ensure good ventilation for persons standing/ working in the aisle



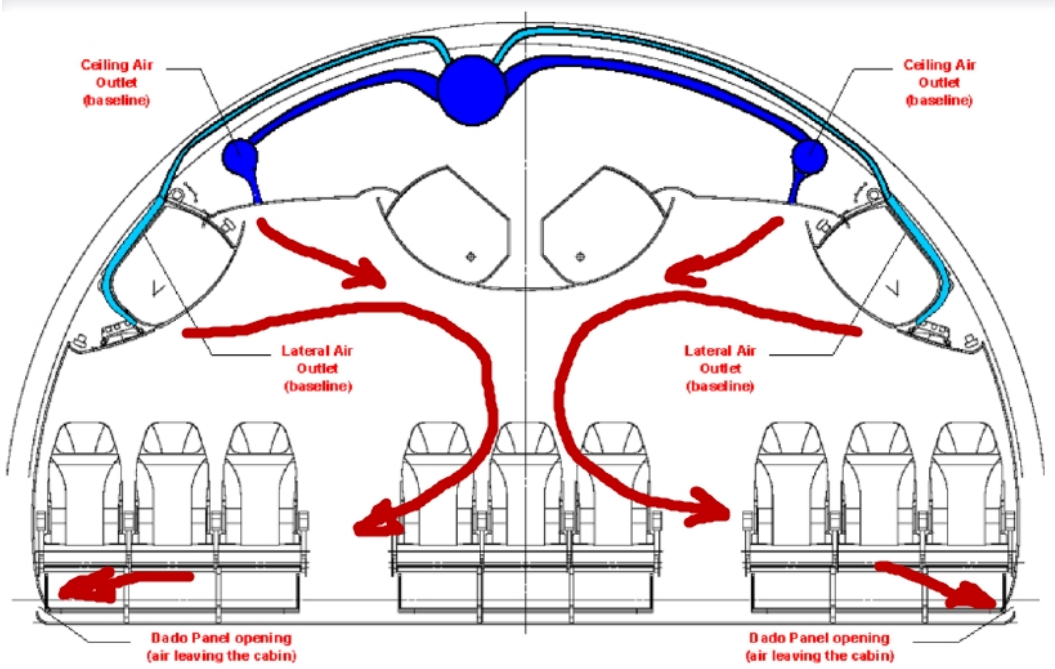
A330/A340 Family

The ventilation system of the Airbus Wide Body and Long Range Aircraft (A300, A310, A330, A340) have got one air outlet per side, which was proven to be appropriate to get an equal distribution of the air within the cabin.



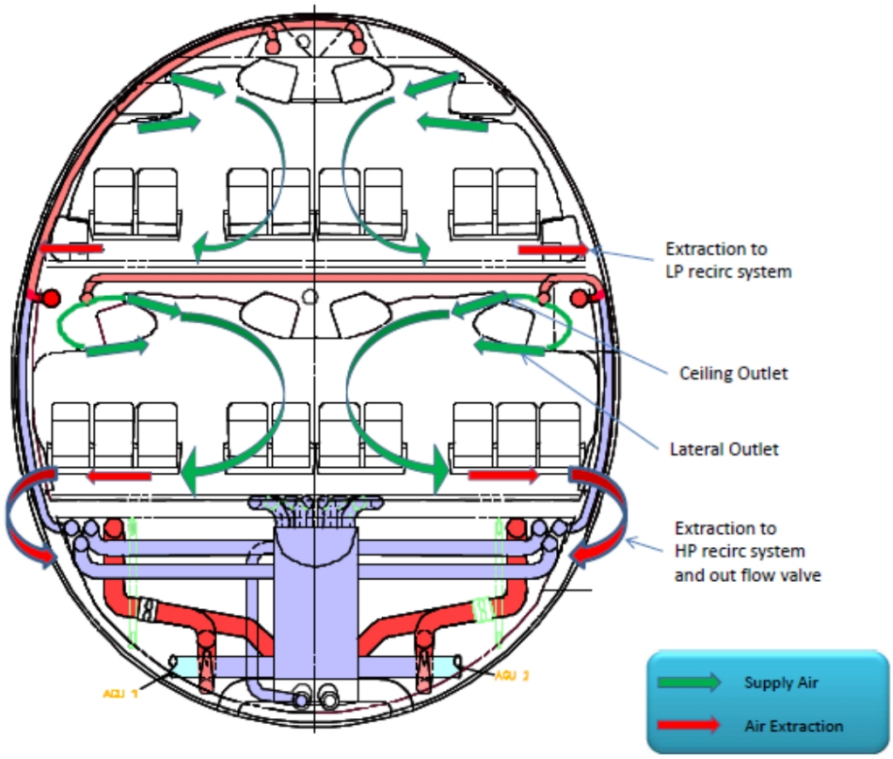
A350

On A350 there are Aisle ceiling outlets and also outlets between the baggage bins and the sidewall.



A380

On A380 there are 2 air outlets per side, making the airflow pattern similar to that of the A320 family.



Can Recirculated Air Spread the Corona Virus ?

This is unlikely. As mentioned above, the airflow induced by the recirculation system is mixed with fresh air in the mixer unit, and the combined air enters the cabin through the air outlets. This airflow passes over the occupants as it passes towards the floor level where it is extracted. This air will then go overboard via the pressurization outflow valves(s), or will pass through a HEPA filter for injection back into the mixer unit. Therefore, because the HEPA filters have an extremely high efficiency in capturing the Corona virus, the recirculation airflow does not spread the Corona virus throughout the cabin.

Special Operating Procedures ?

No. In reference to the information provided above, there are no special aircraft operating techniques recommended by Airbus in relation to MERS or Wuhan Corona virus transmission on board the aircraft. Airbus does not recommend turning off the air recirculation fans.

There may, however be relevant crew procedures recommended by IATA, CDC etc. relating to hygiene matters because the most likely way that such virus transmission on board the aircraft could theoretically happen, would be due to direct physical contact between passengers and cabin crew, and we recommend the operator to review the internet links we previously provided at the beginning of this message.

Survey for the Engineering Support section

Annex

General Information

Potential impact:	Maintenance				
Key information:					
Solution benefit:					
First issue date:	04-JUN-2015	Issue date:	23-JAN-2020	Last check date:	23-JAN-2020

Technical parameters

ATA:	21-00
A/C type/serie:	A300, A300-600, A310, A318, A319, A320, A321, A330, A340, A350, A380, AST
Engine:	
Engine manufacturer:	
Fault code/ECAM warning:	
FIN:	
Part Number:	
Supplier:	

Attachments

General:

- ISI_21.00.00119_Summary.docx

Engineering Support:

- AECAHEPENc(released).pdf
- OIT_999.0032_09_01.txt
- PATTLNK_11282005_1544-Donaldson - Le Bozec HEPA filter facts.pdf

Links

N/A