



DATE: December 8, 2020

SUBJECT: Honeywell Ultra-Violet Light (UV) System Benefits

1. Introduction: Honeywell has released its second-generation UV system for use in aircraft and other transportation systems such as rail, metro, and ships/ferries. This second-generation system adds additional UV power and flexibility while reducing size, weight and cost. This paper provides a summary of UV performance and safety requirements.

2. UV Performance

a. The Honeywell UV system has been found in a clinical study to achieve greater than 99.9% reduction of tested pathogens.¹ In on-aircraft testing the Honeywell UV system was found to achieve greater than 99.9% reduction of the tested pathogen on tested tray tables, cabin seating arm rests and lavatory seat, armrest and wash basin.²

b. The second-generation Honeywell UV system comes equipped with 14 UVC 253.7nm wavelength low pressure mercury lamps (eight 95W and six 35W). When properly applied, UVC irradiation has been found to reduce pathogens - including tested bacteria and viruses - on multiple surfaces and in multiple environments.^{3,4,5} A collection of publications identified in the References section of this document indicate reduction rates as high as 90.0% - 99.9999% on certain bacteria and viruses when irradiated at specified dosages.

c. Multiple clinical studies on the efficacy of 253.7nm UVC light on SARS-CoV-2, the virus which causes COVID-19, have been performed. Boston University has reported achieving a 99% reduction with a dose of 5 mJ/cm² in its testing. It is still too soon to know definitively whether UV light will be effective against COVID-19 outside the clinical environment, but testing is on-going, and we have reason for optimism.⁶

d. The Honeywell UV system has been tested and shown capable of delivering doses ranging from 9.6 – 39.0 mJ/cm² at a speed of 10 rows/minute when applied to aircraft surfaces including seating surfaces, tray tables, windows, overhead bins and lavatories.⁷

3. UV Safety – Operators

a. A third-party safety evaluation has been performed for the second-generation Honeywell UV system which finds that the system can be operated safely with no short or long-term health impacts when adequate Personal Protective Equipment (PPE) is used appropriately.⁸

b. Organizations such the International Commission on Non-Ionizing Radiation Protection and national/local organizations set standards for UV exposure and worker PPE. Users of the Honeywell UV systems must be familiar with and follow all applicable regulations, policies and procedures for their region and country of use.

c. Consistent with the foregoing, the potential risk areas are the eyes and skin areas such as hands, face and neck. These areas can be protected by appropriate work clothes including long sleeve shirts. The hands can be protected by wearing gloves. Suitable headwear will protect the head and neck. Goggles, mask, visors or face shields, which absorb UVR, should be worn



as a precaution against potential eye hazard associated with UVC. As indicated in 3.b., always consult applicable regulations, policies and procedures for the region and country of use.⁸

4. UV Safety – Aircraft

Honeywell has tested for UVC impact on a wide variety of aircraft materials including but not limited to seating materials, plastics, window and IFE covers, cockpit systems and seat belts. Testing included an assessment of potential impacts to flame retardancy, strength, and color/appearance. Materials tested for flame retardancy and strength exhibited no significant impact. Potential for color or appearance changes depend on the material and accumulated dose – many materials show no change at any tested dosage, and some show fading or yellowing after specified dosages and periods of use. Seat headrests showed the soonest change due to proximity of the UV system wing lights, with color changes starting at 4 years of use when using the system once per day. Most materials showed no noticeable change until greater than 10 years of use (when using once per day).⁷

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