

# Final Report

February 2020

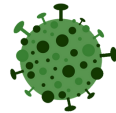
"Hotels deal with a wide range of potential indoor air quality problems that can lead to a negative effect on overall customer satisfaction" [Lodging Magazine, 2019](#)



Odors



Airborne Germs



Dust, Mold  
spores, Pollen



Volatile Organic  
Compounds (VOC)

## Hospitality Trends



### Personalisation

"The need for personalisation is a major trend. A growing number of hotel guests want to be treated as individuals, rather than just another anonymous customer"

[Revfine Magazine, 2020](#)



### Sustainability

"Will be a key factor in successful brand management of hotels, as it's one of the most important global issues facing the world right now"

[Trivago, 2019](#)



### "Bleisure Travel"

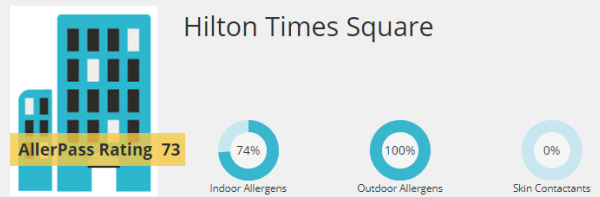
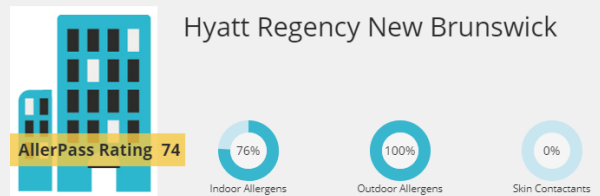
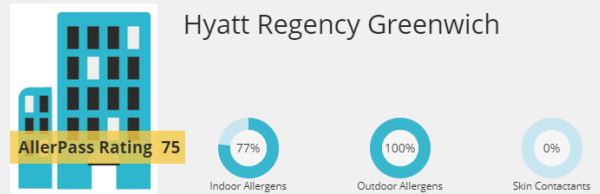
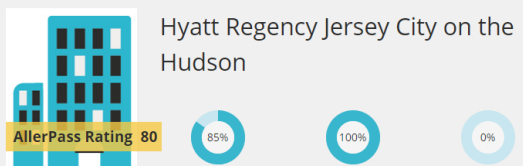
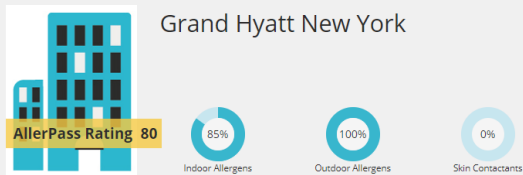
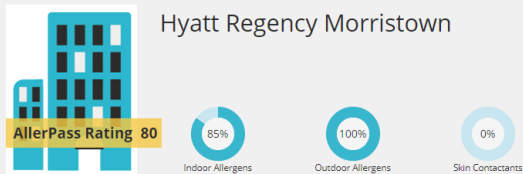
"Millennial prioritise and experiences, and they bring this mentality to business travel. They want the best bang for the buck, rather than the cheapest options available"

[Maxim, 2019](#)

# Wellness Hotels

"More hotels are adding air purifiers and filters to their guest rooms. Either because the outside air is prone to smoke or pollution, or because guests demand them for health reasons" The New York Times, 2019

## Hypoallergenic Hotel Room Accommodations in New York



**Breathe Easy in a PURE Environment**

Allergy Free Guest Rooms

Residence Inn

Breathe easier in our allergy friendly rooms. We have installed PURE™ technology in several guest rooms so you can be confident your stay will be comfortable. Select Guest Rooms have been specially treated to virtually eliminate the growth of bacteria and viruses normally found in hotel rooms.

Residence Inn By Marriott  
Dallas Plano/Legacy  
Check-in:

SEAPORT HOTEL  
SEA THE DIFFERENCE™

Reservations: 877-732-7678

RESERVE

ALLERGY-FRIENDLY PURE™ ROOMS

Allergy Free Boston Hotel Rooms Are Pure Joy



# The Pilot

Provide a comprehensive solution for improving and managing the air quality in a room in Hilton Hartford hotel, while increasing awareness of air quality in the entire hotel. The pilot will be executed through an interactive data-based approach providing recommendations for the hotel staff and visitors.

## Schedule:



### Week 1

 Installation and Measurements

### End of week 1

 Comprehensive Report

### Weeks 2-3

 Full Operation  
 Dashboard and Display Screen

### Week 4

 Feedback & Summary



Picture: Aura in the hotel guest room



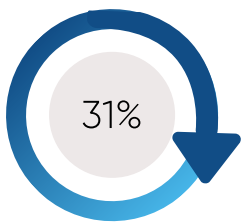
Picture: Dashboard and screen in Hilton's lobby

# The Results

## Air Quality Improvement:

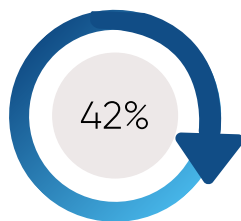
In weeks 2-3, Aura operated in a hotel guest room. The device disinfected and purified the air, significantly reducing the amount of harmful particles and parameters in the room:

### VOC



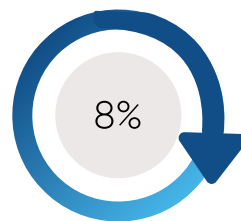
VOC levels were decreased by 31% as a result of the Ray Filter's Carbon layer

### PM 2.5



PM 2.5 levels were decreased by 42% as a result of the Ray Filter's HEPA layer

### PM 10



PM 10 levels were decreased by 8% as a result of the Ray Filter's HEPA layer

### CO2

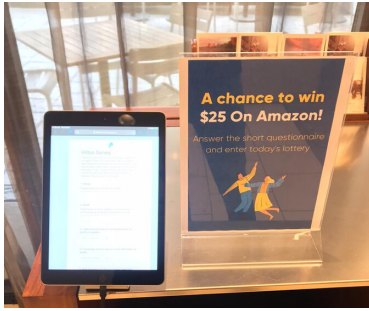


CO2 levels were decreased by 34% as a result of our recommendations

## Dashboard:

The dashboard displays the following information:

- Outdoor Air Quality:** AQI 40 (Great)
- Outdoor Air Quality Index:** Excellent (50-300 scale). Parameters: Pm25 (40.00/ppb), Pm10 (17.00/ppb), Co (2.49/ppb), No2 (5.10/ppb), O3 (No Data), So2 (No Data).
- Heidy Recommendation:** The current outdoor AQI is excellent. It's a fine day for an outside activity and for opening the windows.
- Current Pollen Level:** 0/5 (Off Season)
- Pollen List:** Dust, Grass, Maple, Pine, Elm, Oak, Juniper, Alder, Ash, Cotton, RegWood, Graminales.
- News:** Home - BBC News: US charges four Chinese military 'hackers'
- Map:** A map showing the location of the device in Hartford, CT.



## Survey

Throughout the pilot we placed a short questionnaire in the lobby of the hotel, which was directed at hotel guests.

Below are some of the results of the 96 people who answered the questionnaire.



# Users Feedback



**Nick Lorusso**

General Manager at  
Hilton Hartford

**"I believe the hospitality industry is hyper competitive. Aura Air could be the next brand differentiator. Every hotel brand is selling a story or a life style and Aura fits all life styles. During the pilot process, our guest woke up refreshed and Aura air made it possible".**



**Luis Antonio B. Silos**

Deputy Consul General  
of Brazil in Hartford

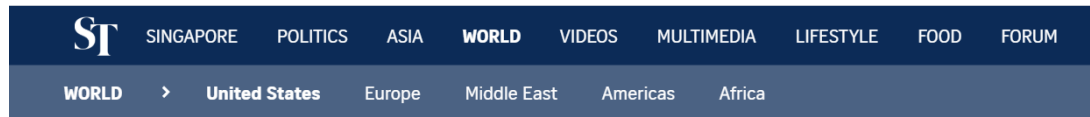
**"The quality of the air has vastly improved due to Aura Air. Hotel rooms are notoriously stuffy due to all the traffic. The air in my room smells like fresh air all the time now. I have been living in the hotel over the last two years and with Aura Air it is a different experience!"**

# Our Value



## Financial

**Fast ROI for a room with Aura will lead to a new revenue stream**



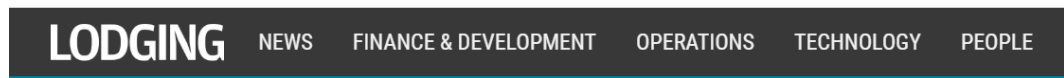
And travellers with respiratory conditions or allergies may especially benefit from breathing cleaner air. **Most hotel properties charge a higher nightly rate for their clean-air rooms and a stay can be 5 to 7 per cent more expensive.**

Last month, the InterContinental San Francisco installed air purifiers in 30 of its 556 rooms following last year's wildfires in Paradise, California, about a three-hour drive away.



## Branding

**Improving user satisfaction and adding value for the guests**



and comfort is often overlooked by executives and managers: indoor air quality (IAQ).

Hotels, in particular, deal with a wide range of potential IAQ problems. **Odors are one of the most common complaints and can quickly have a negative effect on overall customer satisfaction.** However, the volatile organic compounds (VOCs) found in cleaning supplies and the perfumes designed to make bathrooms smell more pleasing can cause uncomfortable symptoms such as nausea, dizziness, fatigue, and eye irritation.



## New Audience

**Exposure to a new audience that suffers from respiratory illnesses and often choose not to stay in hotels**



Mikeyt21  
San Francisco, California



Hi, do your rooms have air purifiers? I am sensitive to air pollution and would like a room that has an air purifier. If not, is there a way I can rent an air purifier for my room?

over a year ago  Answer



## Operation

**Real-time control on air quality parameters including energy efficiency**



# Our Filters Test Results

(From the Aura Air white paper)

The efficiency of the Sterionizer in removing different types of pollutants is presented in Table 2.

Table 2- Sterionizer efficiency tests

Substance	Substance name	Removal
Bacteria	Escherichia Coli	99%
	Escherichia Coli ATCC	91%
	Staphylococcus aureus	91%
	Pseudomonas aeruginosa	99%
	Staphylococcus aureus (MRSA)	99%
Fungus	Aspergillus Niger	97%
	Candida albicans	36%
	Dichobotrys abundans	90%
	Penicillium	95%
Mold	Cladosporium cladosporioides	97%
Spores	Bacillus subtilis var Niger	89%
Viruses	Influenza H1N1	99%
	Influenza H5N1	99%

Table 2 shows that the Sterionizer decreased the amounts of bacteria for at least 1 order of magnitude (more than 90%) for all the strains tested. It also decreased the amounts of fungus for at least 36% and the amounts of mold, spores, and viruses for at least 89% for all the tested strains.

Examples of the plates after incubation are presented in Figures 12-13:

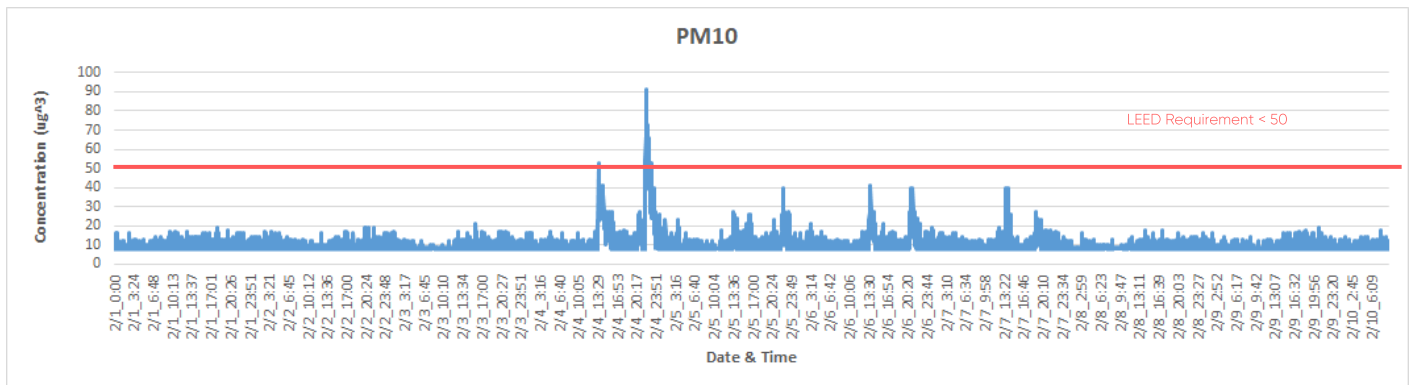
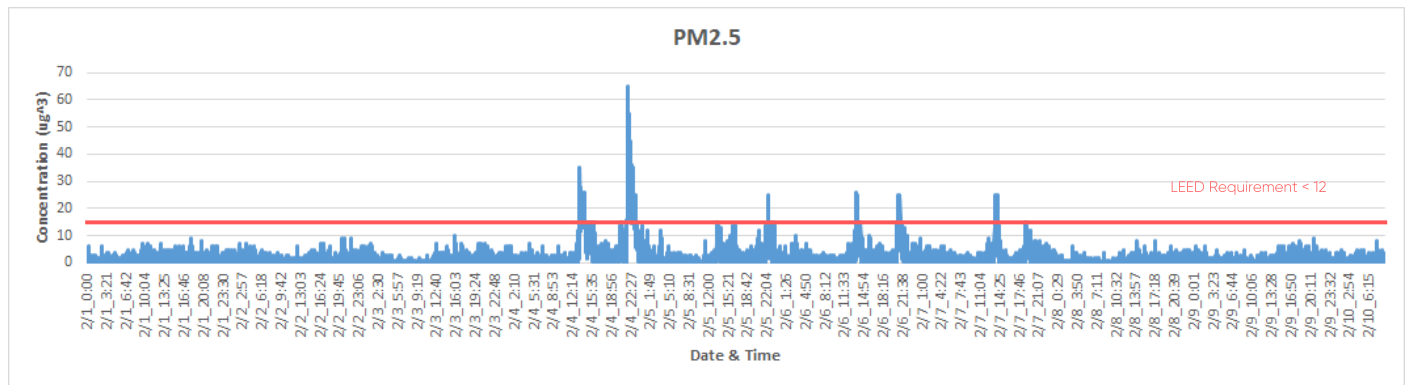
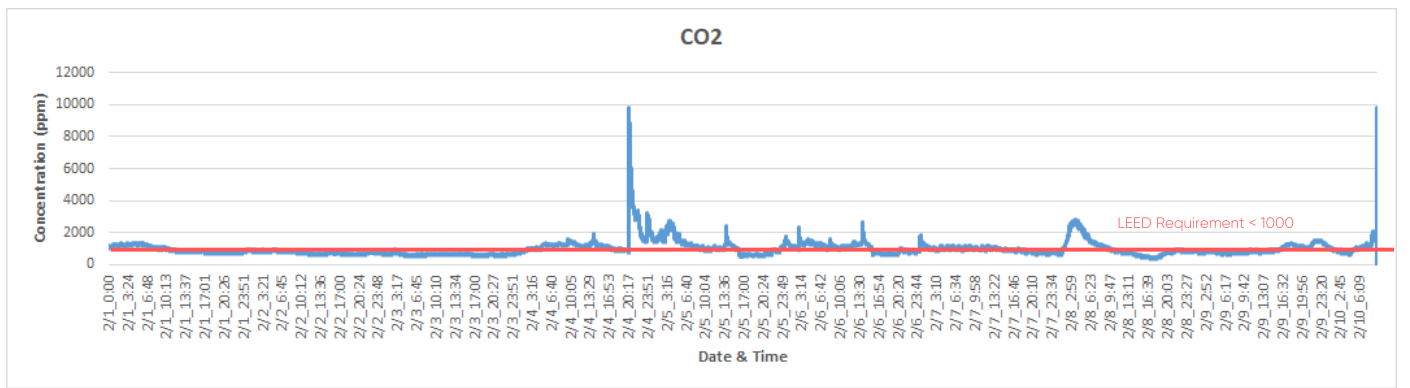
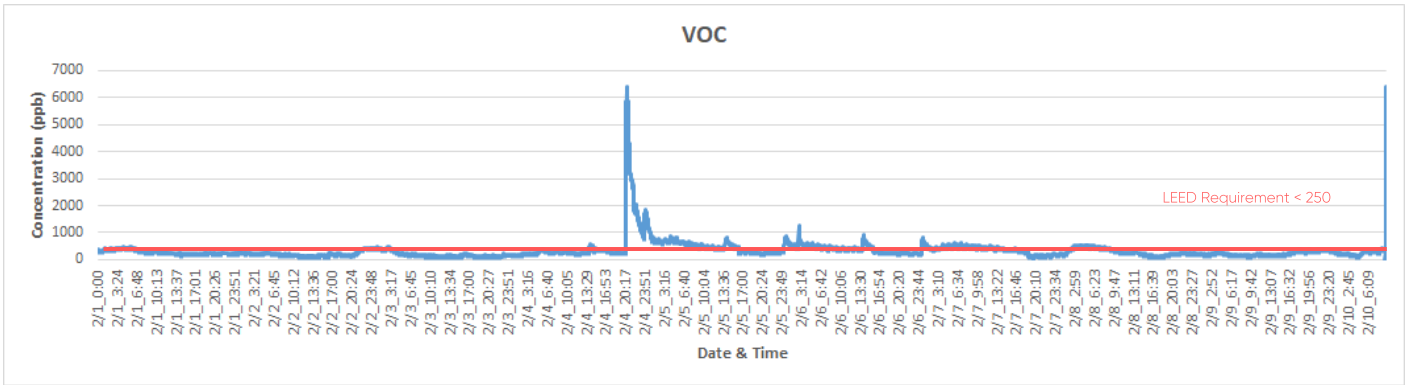


Figure 12: incubation results of the control plates on December 31<sup>st</sup>, 2019



Figure 13: incubation results of the Ray filter+ Sterionizer+ UVC LEDs plates on December 31<sup>st</sup>, 2019

# Only Measurement Data



# Active Measurement Data

