CASE STUDY: 2020 CABIN HEALTH ALERTS

FLYING HEALTHY

COVID-19: CABIN HEALTH CONSIDERATIONS
KEEPING HEALTHY WHILE TRAVELLING BY AIR

The Covid-19 pandemic represents an unprecedented crisis for aviation and challenges the airline industry's long-established practices and procedures around cabin hygiene. An event this significant requires a deeper exploration of its implications. This new case study complements Jetliner Cabins Chapter 9 'Look Smart: Keep Clean' and examines the latest trends in managing the outbreak while taking care of passenger well-being and preserving the airline brand. Featuring insights from medical and industry experts, Jetliner Cabins author Jetliner Coutts Clay explores key considerations for healthy flight: Cabin Air Filters, Air Travel Hygiene, Rethinking the Aircraft Seat, Sanitizing the Cabin, Communicating Covid-19 Cabin Concepts, Airport Hygiene, Passenger Care in the Cabin and Future Flying Healthy. As Jetliner Cabins readers have come to expect from this unique E-Book app, the informative content is complemented by rich images of flying healthy solutions, and a listing of companies and experts. Note: Links in this cover version are inactive.

CASE STUDY

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The Covid-19 pandemic has created a spiral of economic misery. And it has devastated the airline business: borders are closed, fleets have been grounded and there have been mass job cuts.

Air Travel in 2020.

New Haz-Mat-style uniforms for cabin crew.

Welcome aboard!

Globally, it is estimated that 330 million jobs depend on the travel sector. In its forecast for 2020, the UN World Tourism Organization is predicting a fall in international travel spending of close to US$1 trillion.

In the US, the Transportation Security Administration screened 3.2 million passengers in its airports in April 2020, whereas the comparable figure for April 2019 was 70 million. At London Heathrow Airport, in April 2019, there were 6.8 million passengers, but only 200,000 in April 2020.
Source: The Economist, Travel after covid, 30 May 2020.

As airlines and airports move ahead with innovations to cope with problems created by the Covid-19 pandemic, airline passengers are scrutinizing the evolution of jetliner cabins. The great challenge for the airline sector is to reassure passengers that they are flying in a clean, safe and healthy environment—and to provide proof of same.

Both Airbus and Boeing have issued announcements that they are researching the subject and assessing Covid-19's risks for fliers.

CABIN AIR FILTERS

Since the outbreak of Covid-19, news reports have focused heavily on the subject of cabin air quality. When asked about the use of hospital-grade filters onboard aircraft, Richard Jeremy Stone MD, MBA, FRSA, aviation physician and executive, and advisor to Caircraft (an organization that deploys aircraft for emergency critical care), explained:

'High-efficiency particulate air (HEPA) filters are routine on modern passenger aircraft. HEPA filters are variously measured and certified according to the percentage of particles they trap. Filters from Pall, the largest maker for aviation, have a microbial removal efficiency of greater than 99.999% with bacteria and viruses, which is sometimes referred to as equal to an H13 level classification—a level of 0.3 microns particle size. This is very helpful but cannot completely remove all viral particles from a sealed cabin.

'SARS-Co-V2 is an enveloped virus; this means it's not especially hardy or resilient, but its tiny size makes airborne transmission the most significant vector. While HEPA filters will remove particles that pass through, and air circulation is frequent on modern aircraft, there is no assurance of 100% sterility.'

And how about fellow passengers onboard who might be coughing or sneezing?

'HEPA filters will not stop direct spread from an infected neighbour's cough or sneeze,' said Dr Stone. 'These filters cannot prevent contamination from a table or a monument covered in viral particles. We should look at HEPA filters as an important part of a number of measures needed before, during and after flight to reduce the risk of contamination — general measures such as PPE (personal protective equipment), deep cleaning and specific aviation measures such as seat barriers, social distancing and changes in in-flight service routines.'

AIR TRAVEL HYGIENE

Recently announced ***FLYING HEALTHY*** cabin upgrades include:

- nominating passenger ‘wellness’ directors
- incorporating anti-microbial and anti-bacterial surface-treatment coatings, finishes and fabrics for cabin furniture and fixtures;
- using electrostatic-spray ‘fogging’ machines to disinfect the aircraft interior;
- installing touch-free and self-cleaning lavatories;
- placing hand-sanitizers at contact locations;
- providing PPE (personal protective equipment) garments for cabin crew;
- requesting or requiring that passengers wear face coverings;
- digitizing in-flight magazines and menu cards, instead of carrying ‘handled-by-all’ print versions in seat-back literature pockets;
- serving boxed meals;
- arranging trials of rolling robot servers for aisle-side food and beverage delivery;
- processing only cashless inflight sales;
- encouraging passengers to bring their personal electronic devices (PEDs), instead of touching common-use seat-back TV screens;
- asking passengers to contact a flight attendant when they wish to use the lavatory (to avoid queues and congestion in the aircraft aisles);
- carrying in-flight cleaning janitors (particularly on long-haul flights);
- reducing the number of onboard passengers but still achieving flight break-even status by installing extra seat-belts to secure boxed cargo placed on individual seats, inside the cabin;
- blocking the middle position in seat-rows with three seats;
- distributing securely sealed amenity kits containing pandemic-support items e.g. sanitizing wipes, face masks and plastic gloves.

In 2020, airline amenity kits are featuring top-priority pandemic-hygiene items. (Pictures and details of hundreds of vintage amenity kits are displayed in the Picture Gallery attached to Chapter 7/Real-Feel Customer Touchpoints.)

Covid-19 has changed the aviation world irreversibly. From now on, the core issue will be to gain and retain the trust of the flying public.

When developing new standards and procedures for environmental sanitization, aviation manufacturers, suppliers and vendors will have to follow guidance from government regulatory authorities, industry trade groups, associated scientific organizations and risk-advisory consultancies. To establish state-of-the-art disinfection and hygiene programs for aircraft interiors, cabin designers, for the first time, will need to work directly with airline medical departments, public health officials, airport operating councils and concerned Covid-19 customer-focus groups. In conjunction with their in-house airline marketing, maintenance and engineering teams, cabin specialists will be required to chart strategic models for a ***FLYING HEALTHY*** platform that will serve as an essential product feature and customer benefit for future years of air travel.

How will airline passengers feel about these pandemic-based environmental changes? What about the basic question of consumer behaviour? Dr Stone offered some professional advice:

'Aviation must tackle both the perception and reality of post-pandemic travel; 6-foot social distancing is incompatible with many airline business models. One certainty exists: Passengers will not travel again as before until the threat, perceived or actual of SARS-Co-V2 is lifted—practically by a vaccine, herd immunity or the evolution of the virus, or by measures to discourage infection. The latter requires personal protective equipment (PPE), distancing and thorough cabin cleaning.'

When asked about technological developments in cabin-cleaning methods, Dr Stone outlined the scope of a promising scientific programme:

'Deep cleaning demands long intervals for toxic fumes to clear. There is a pressing demand for new methodologies. UV lighting is under exploration as one such, although material compliance remains unproven. However, a biopharma research group, Briotech Inc., based in Seattle, WA, is working on deploying a novel safe-to-inhale disinfectant that thus far shows universal effect on all pathogens together with safety on cabin materials, allowing post-boarding misting—reducing pathogenic material and building passenger confidence. Innovations such as these will be part of a panoply of changes required to restore confidence.'

RETHINKING THE AIRCRAFT SEAT

To cope with Covid-19 caveats, some aviation suppliers have proposed re-designs of classic Economy-Class seat-rows, to achieve a ***FLYING HEALTHY*** cabin layout and configuration:

- using aviation-grade, plexiglass-type vertical dividers to separate individual seats in a seat row;
- installing hoods over the head-rest area of seat-backs;
- reversing the direction of the middle seat, to achieve social distancing between passengers.

*'This arrangement allows all three passengers to be separated with a shield made of transparent material that isolates them from each other, creating a protective barrier for everyone. Each passenger has its own space isolated from others, even from people who walk through the aisle.' – **Aviointeriors**.*

*'The Isolate kit transforms the middle seat into a reassuring screen to provide maximum personal space and separation for adjacent passengers. The lightweight table-top supports a vertical screen in translucent thermoplastic to allow light to pass through and maintain an airy cabin. The whole feature is supported by the armrests and securely belted in position.' – **Factorydesign**.*

*'The vertical screen can alternatively be produced in a lightweight thermo-formed foam with a cleanable leather trim. The kit disassembles easily for stowage and can be fitted to any seat in order to facilitate travelling couples who wish to be screened from the aisle. The kit could be retrofitted to an existing economy seat making it versatile to be fitted to single-aisle and twin-aisle aircraft.' – **Factorydesign**.*

*'"Glassafe" is made of transparent material to make the entire cabin harmonious and aesthetically light, but perfectly fulfilling the objective of **creating an isolated volume around the passenger** in order to avoid or minimize contacts and interactions via air between passenger and passenger, so as to reduce the probability of contamination by viruses or other.' – **Aviointeriors**.*

*'"Glassafe" is supplied in various executions with fixing systems to the seat that allow easy installation and removal. The shield is shaped in such a way as to leave complete accessibility to the accessories normally installed on the back, such as tables, magazine pockets, coat hooks or other.' – **Glassafe**.*

Recently developed high-tech materials for decorative—AKA "dress"—aircraft seat-covers are described in Chapter 15/'Green' Advances: Superior Interiors, including:

- anti-microbial, silver-ion infused artificial leather, and recycled-polyester artificial suede, manufactured with a reduced carbon footprint – ***Tapis Corporation***;
- traditional-look stain-protected fabrics with wipe-clean and acoustic-insulating properties – ***Replin Fabrics***;
- temperature-stabilized, bio-degradable blends of virgin wool and beech-wood cellulose – ***Lantal Textiles***.

Details of classic and current Economy-Class seats are displayed in the extensive Picture Gallery attached to Chapter 3/Economy-Class Value.

SANITIZING THE CABIN

Please make way for the GermFalcon!

Honeywell and Dimer LLC, home of GermFalcon, have partnered to bring airlines an innovative UVC system for the aircraft cabin. Background note: in 2017, GermFalcon was a finalist in the Greener Cabin, Health, Safety and Environment section of the prestigious Crystal Cabin Awards (of which this writer was a founding sponsor).

Dimer LLC company advertisements for its product GermFalcon, describe how this robot can eliminate germs across all surfaces inside the aircraft cabin, including plastics, metals, leather and fabrics. By using ultra-violet-'C' lamps: 'An operator can expose surfaces to high levels of UVC at close distances and a variety of angles. The operator can control the wingpositioning vertically and horizontally to optimize exposure to targeted areas and ensure an adequate kill.'

'…across all surfaces …'? Inside a jetliner cabin, the term 'surfaces' connotes an exquisitely intricate topography that includes: seat-cushions, seat-backs, headrest areas, seat side-panels and seat-armrest-covers; TV screens, tray-tables and literature packets; window-panes, window-shades and bezel-surrounds; doorways, side-walls and ceiling panels; baggage stowage bins, closets and monuments; lavatories; galley modules; floor coverings; light fittings; and overhead passenger service control units (in fact, a mind-numbing complexity of Euclidian- and Riemannian- geometry challenges, as demonstrated in the Maintenance Panoptic Picture Gallery attached to Chapter 9/Look Smart: Keep Clean). Just think of the strain on the robot's brain! Not surprisingly, in the overall cabin layout, the most contaminated sites, according to scientific surveys, tend to be the tops of seat-backs, seat-armrest-covers and seat-back tray-tables. So the GermFalcon is likely to have a whole lot of work on its hands—sorry,—wings.

NOTE: In the late 1990s, **Tapis Corporation** pioneered the testing and certification of ambulance- and hospital-grade artificial leather for applications inside the aircraft cabin, including high-wear seat and armrest covers, furniture design accents and bulkhead treatments. Unlike genuine cowhide leather, the surface of synthetic 'UltraLeather' is non-porous, so it can be systematically cleaned and disinfected using bleach-based and other sanitization products, as described in the **Tapis Corporation** interview in the 'New Textile Technology' section of Chapter 10/Durability.

GermFalcon in action.

COMMUNICATING COVID-19 CABIN CONCEPTS

Alongside the current stream of creative product concepts, the aviation industry is moving forward at a rapid pace to define and implement new standards to cover the hygiene and sanitization of aircraft interiors. Should there be common industry standards? Should the criteria be established by government regulatory authorities or by individual airlines? And when will air travel start to rebound? Because the regular annual conference and exhibition gatherings scheduled for 2020 were cancelled or postponed to 2021 (to the great disappointment of those who had prepared presentation material, including this writer), aviation executives had to find new ways to discuss these supremely important matters. Industry webinars and chat sessions have become the principal conduit for international, in-person knowledge-sharing, discussions, debates and the exchange of technical information. Early in 2020, RedCabin, an organization specialized in international conferences in the aviation and automotive industries, based in Hamburg, Germany, announced 'Live' webinars, featuring agendas such as:

- A safe aircraft cabin, social distancing and passenger touchpoints.
- The impact of Covid-19 on aircraft cleaning, maintenance routines and cabin designs.
- The management of the future passenger-cargo mix.
- How will airlines alter the onboard experience to prioritize passenger well-being across all classes?
- What are passengers' greatest travel anxieties and how will attitudes change long-term?
- What are the new economics of air travel?

Expert presentations were provided by veteran senior executives from across the aviation operating spectrum, including: Alaska Airlines, Boeing, Counterpoint, Etihad Aviation Group, JetBlue, Sekisui Kydex, tangerine, Teague and United Airlines. Webinar attendees were encouraged to participate in the proceedings by casting their own votes on key subjects that were debated by the specialists. The voting results were then displayed on-screen, in real time. This process provided a sense of immediacy and a welcome rapport with the webinar organizers.

Organizations such as APEX (Airline Passenger Experience Association), CILTNA (The Chartered Institute of Logistics and Transport) and FTE (Future Travel Experience) have developed a wide range of digital and video screenings. And Reed Exhibitions are hosting an online webinar series to cover programmes that had been planned for the Aircraft Interiors International EXPO, scheduled for April 2020, in Hamburg, Germany. Because of the Covid-19 crisis, this major aviation event was re-scheduled for April 2021. In the meantime, however, there are virtual versions of presentations that were originally advertised in the Cabin Space Live and PEC (Passenger Experience Conference) agendas (this writer is proud to be a participant in this webinar series).

AIRPORT HYGIENE

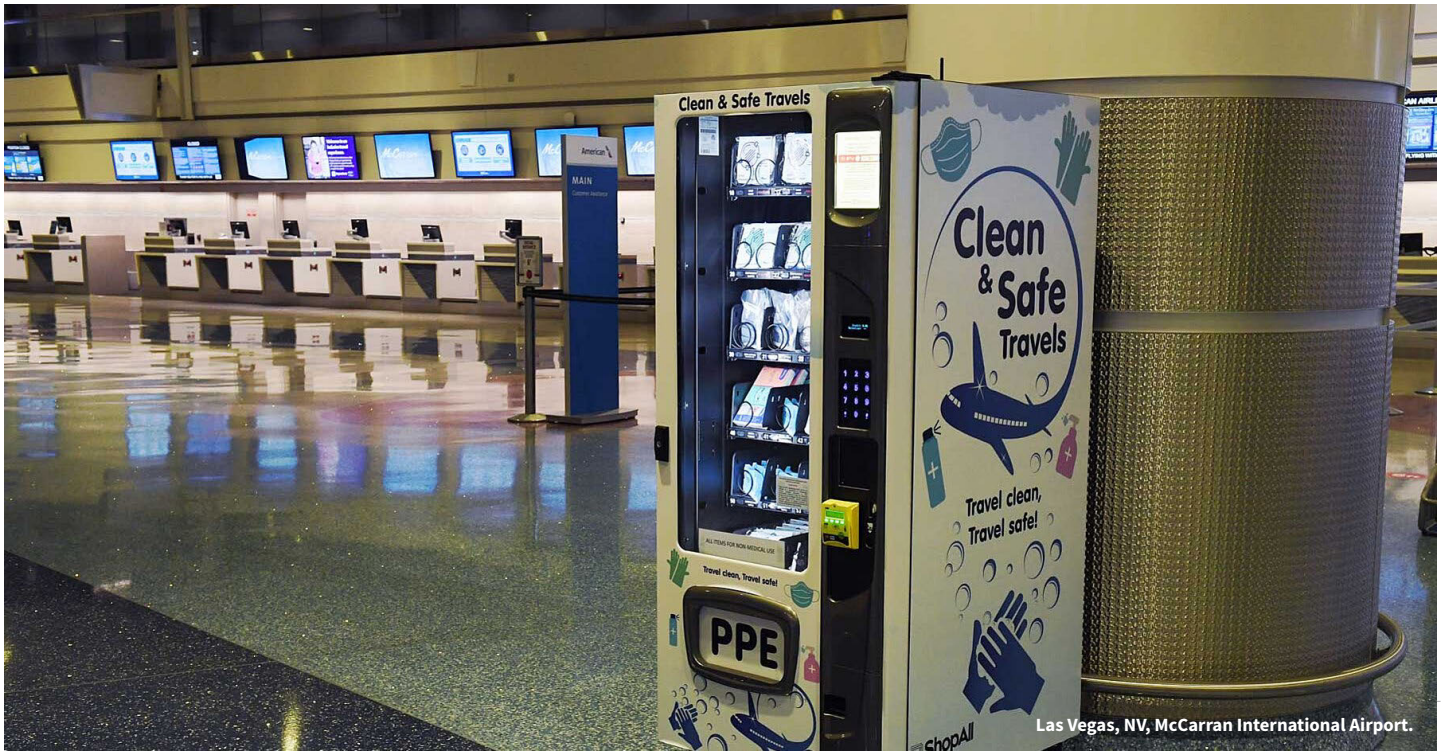
In 2020, traditional airport vending machines took on a new look, to fight against Covid-19, providing personal protective equipment (PPE).

Some airports have already implemented ***FLYING HEALTHY*** upgrades:

- inaugurating online check-in and bag-tag issuance via touchless airport kiosks;
- offering hand-sanitizer products at key locations;
- operating biometric systems for passenger registration and recognition;
- adding transparent barrier screens at contact points such as check-in desks and lounge reception areas;
- disinfecting checked baggage;
- limiting carry-on cabin baggage to one piece per passenger;
- boarding passengers in zone sequence, starting at the back of the aircraft;
- allocating certain sections of the cabin to face-mask-, or non-face-mask-, wearing passengers;
- at Amsterdam Airport Schiphol (AMS), passengers from designated high-risk areas are required to fill out a health declaration;
- at Athens International Airport (ATH), arriving passengers are tested for Covid-19, with results available in 24 hours, indicating whether 14 days of quarantine are necessary;
- at Canberra Airport (CBR), officials use thermal cameras to check the body temperature of departing passengers;
- at Dubai International Airport (DXB), Health Authority representatives conduct rapid Covid-19 blood tests, with results available within 10 minutes;
- at Hong Kong International Airport (HKG), passengers walk through a disinfection 'tunnel' (could this technology be extended to airport jetways or aircraft-cabin entryways, and how would airline passengers feel about participating in this process?);
- at Las Vegas, NV, McCarran International (LAS), in the airport passenger concourse, a classic vending machine has been converted to offer for sale: disinfection spray-gel, face masks, sanitizer wipes and washable plastic gloves.

PASSENGER CARE IN THE CABIN

Given the sudden, and essential, focus on aviation health and hygiene, airlines need to move rapidly to work out how to inspire confidence in their passengers and crew members. Are there special treats and 'perks' that could create a welcoming and reassuring ambience inside the aircraft cabin?



Las Vegas, NV, McCarran International Airport.

'2020 offers a unique opportunity for airlines to be innovative,' declared Anita Gittelson, in a recent interview. Formerly, Executive Vice President at WESSCO International, Ms Gittelson is renowned across the airline-business industry as the 'Goddess/Godmother' of amenity kits, passenger-wellness and hospitality accessories. At the glamour-filled annual TravelPlus Awards ceremony, The Anita Gittelson Innovator of the Year Award is named in her honour.

'Change requires courage,' said Ms Gittelson. 'Passengers need to feel protected and safe. With the new Covid-19 crisis and the traditional battles against the transmission of colds and influenza, all aspects of Healthy Travel need to be reviewed. Airlines know full well that buttons, knobs and table-tops can hold germs for a long time. So, in all classes of service, airlines could offer safety gloves in S, M, L and XL sizes; and there should be special versions for children. This might make passengers feel more at ease. All giveaways should be pre-packaged and sanitized. This will provide a safe feeling for passengers. The giveaways could be branded or decorated in an artistic way. No need to be drab. Perhaps there could be imaginative print designs on the gloves, to complement matching face-masks? The designs could be just as much fun as some of the amenity-kit bags that are currently on the market. There could be marketing links with hotel chains, entertainment organizations, sports clubs and so on. Furthermore, some people are already wondering about the idea of safety-zip-up suits that could be worn over passengers' normal garments. And there is an interesting new product: the TravelClean kit. You can drape a length of the special seat-cover fabric over your aircraft seat, from the headrest area to below the seat-cushion level; also, there are matching over-shoe booties, hygiene gloves and a package of wipes for exposed surfaces. (More information about corporate branding is provided in Chapter 4/Aero Identity.)

'In economy class, because of the large numbers of passengers and the need to comply with weight restrictions in the aircraft cabin, perhaps the safety accessories could be ultra-lightweight, for single-use

only, and disposable? In the premium cabins, with smaller passenger numbers, the design treatments could be more substantial e.g. with triple layers, and the products could be re-usable, with a longer life-cycle.'

When asked about the importance of displaying brand identity on passenger-comfort items, Ms Gittelson replied that over the past decade this approach has become de rigueur across the industry:

'People feel more comfortable, relaxed and confident when they are in contact with familiar brands that are widely known and trusted. And the other great trend in past years has been to focus on reducing the carbon footprint of the aircraft journey. Do premium-class passengers really need more amenity-kit bags? Would passengers prefer to have evidence of reduced carbon emissions achieved by the airline not carrying large numbers of inflight accessories, with a consequent reduction in the amount of jet-fuel required for the flight?'

But what about passengers who might need to have skin cream, lip balm, toothcare sets and so on? (More information about passenger-comfort items can be found in Chapter7/Real-Feel Customer Touchpoints, and there are several hundred detailed displays in the Amenity Kits Picture Gallery attached to this Chapter.)

Ms Gittelson continued: 'The "must-have" items such as socks, eyeshades, earplugs, hand-sanitizer wipes and face-masks, could be positioned on the passenger seats before the boarding process. In the premium cabins, after take-off, flight attendants could personally offer luxurious skin lotions and personal-care items that are not presented in special amenity-kit bags, many of which can be quite bulky. This approach would provide a suitable opportunity for cabin crew to interact individually, on a name basis, as listed in the flight manifest, with their first- and business-class "Guests". Over a defined period of time, an airline would systematically be able to demonstrate significant weight-reductions in the cabin along with the related jet-fuel savings.'

But how would these jet-fuel offsets be communicated to everyone? (More information about carbon-emissions reductions and jet-fuel savings can be found in Chapter 15/'Green' Advances: Superior Interiors.)

Ms Gittelson explained: 'Details could be presented to passengers during the flight. The airline's policy on carbon-emission reductions could be described in hand-out leaflets: everyone likes to read about "green" progress. And perhaps passengers could be given "guest-voucher" passes to museums and galleries in their flight-destination cities, in recognition of achieving specific weight-savings and carbon reductions on their own flights? I know of many museum directors who say they love welcoming premium-class airline passengers. Why? Museums are always looking for potential donors to support their fund-raising campaigns. Invitations such as these vouchers would constitute "gift perks" that can lead to experiences that passengers might not normally get while visiting a specific location for business or personal reasons. And, during holiday months, flight attendants could distribute coupons for retail-discount offers from top-name brands: these coupons are always greatly welcomed by everyone.'

Are there other ways to provide personal cabin-health reassurance for nervous fliers?

'With the current crisis,' said Ms Gittelson, 'it's essential to pre-package food and tray-table settings. Air travellers will feel safe when they see that everything possible has been pre-packaged and sanitized. However, when passengers want to dispose of all the disposable items they are handling, there will be a need for new onboard garbage-containers and garbage-collection routines. And why not provide disposable mats that would fit snugly over the seat-back tray-tables? This accessory would provide great reassurance for passengers. And, of course, these mats could also display corporate branding.'

FUTURE FLYING HEALTHY

Looking ahead, there is talk of the need for individual digital health-certificates. In the early days of mass international travel there used to be an important medical document, in print-format on bright yellow cardboard, showing verified dates of various vaccinations e.g. for polio, small-pox and yellow fever. Passengers carried these documents with their passports, to present to border officials before clearing immigration.

It is likely that future health-certification programs will require multi-lateral agreements and protocols, and airlines will have to be central to the handling processes.


Courtesy Philippine Airlines.


Courtesy Philippine Airlines.


Courtesy Philippine Airlines.

As shown in this Case Study, AirAsia, Qatar Airways and Philippine Airlines were among the first airlines to provide HazMat-style uniforms for their cabin crew personnel, in 2020. Eventually, to totally simplify the Covid-19 travel situation, might authorities perhaps recommend that all airline passengers should wear a coverall version of HazMat-style suits, complete with hospital-type face shields? Not very glamorous, true, but this attire could be extremely efficient. Could this be a signal for a new generation of 'traveleisurewear'? As with their sleep-suit-pajamas, airlines could offer personal protective 'coverall-suits' in their own corporate colors, displaying marketing messages. High-fashionista retailers could market collections of astronaut-style 'coverall-suits' selling at various price points e.g. low-cost, single-use disposable garments or more durable options, washable and reusable, in heavier fabrics, suitable for longer-term use. It is normal to wear special outfits for surfing, mountaineering, fencing, playing football, ballroom-dancing, karate classes etc., so why not for air travel?

Yes, 2020 will go down in history as the year when the airline business, and consumer behaviour, conclusively changed.

END

LINKS TO CONTACTS MENTIONED IN THIS CASE STUDY

AirAsia

Airbus

Aircraft Interiors Expo

Airline Passenger Experience Association (APEX)

Alaska Airlines

Amsterdam Airport Schiphol (AMS)

Athens International Airport (ATH)

Aviointeriors

Boeing

Briotech Inc.

Caircraft

Canberra Airport (CBR)

The Chartered Institute of Logistics and Transport (CILTNA)

Counterpoint Market Intelligence

Crystal Cabin Awards

Dubai International Airport (DXB)

The Economist

Etihad Aviation Group

Factorydesign

Formia

Future Travel Experience (FTE)

GermFalcon

Anita Gittelson

Honeywell

Hong Kong International Airport (HKG)

JetBlue

Lantal Textiles

Las Vegas, NV, McCarran International Airport (LAS)

Pall Corporation

Philippine Airlines

Qatar Airways

RedCabin

Reed Exhibitions

Replin by Hainsworth

Sekisui Kydex

Richard Jeremy Stone MD, MBA, FRSA

tangerine

Tapis Corp.

Teague

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TravelPlus Awards

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