Who is Ahead of the Curve in this Time of Pandemic?

Nancy Patterson, MBA, B.Arch,
Director Design & Business Development, OpenAire
Designing for the “new normal”

During a global pandemic, business and building operators, owners and real estate asset managers of all types of commercial facilities are wondering where do we go from here? You may be asking yourself questions like:

“*When do we open up*”

“*What changes do we need to make to open in the future?*” or

“*How are we going to make the new “normal” financially viable?*”

Business teams, worldwide, are now actively discussing how to address these very issues and trying to assess where a pivot will be necessary.

Whether you run, own, operate, or have in your portfolio restaurants, recreation centers, health clubs, hotels, or any other commercial space where a volume of people gather, there are now health and safety concerns to address. If your facility is a seniors home or other space with vulnerable guests, this is even more critical.

**History as a guide for the Future.**

Pandemics of the past have, guided us in the design of city planning and modern infrastructure development (ie. the design of sanitary systems). Similarly, the COVID-19 pandemic seems primed to inform future design issues, most notably natural ventilation strategies. Investigation natural ventilation strategies started post SARS after the 2003 epidemic and has
been brought back to the forefront in 2020. From here on out, new standards aren’t temporary, they’re rewriting the future of health & building codes.

Locally mandated social distancing and capacity guidelines will be a key part of every businesses’ reopening plans. This includes things like mandated PPE (personal protection equipment) and controlled volume of patrons. But what about the space that they are in? What might need to be changed now, and the future?

As we all now know - times have changed, likely forever. Will a restaurant or gym that was “totally fine” last year be one that can generate the traffic needed to survive when patrons are nervous about being in close proximity to others? What are the items to consider as part of emerging design and renovation for buildings worldwide? What can we look at now when considering re-opening and for the future should another pandemic occur?

Here are a few things that come to mind:

1. **Cleanliness & Materials:** Global public health strategies now include frequent disinfection of surfaces and objects that are touched by multiple people, this is important to reduce the spread of infection. Easily cleanable materials are recommended.¹ The CDC states:

   *Another way to reduce the risk of exposure is to make long-term changes to practices and procedures. These could include reducing the use of porous materials used for seating, leaving some doors open to reduce touching by multiple people, opening windows to improve ventilation, or removing objects in your common areas.*²
2. **Ventilation:** During this pandemic, perhaps more than ever, natural ventilation and the use of fresh air are recommended to reduce the spread of airborne viruses.\(^3\) While there is little evidence that ventilation directly reduces the risk of disease transmission, many studies suggest that insufficient ventilation increases disease transmission.\(^4\) The WHO (World Health Organization) has extensive material about the benefits of natural ventilation in health care that can be applied to the commercial sector.

> Increasing ventilation rate is believed to reduce the cross-infection of airborne transmitted diseases by removing or diluting pathogen-laden airborne droplet nuclei. A higher ventilation rate can dilute the contaminated air inside the space more rapidly and decrease the risk of cross-infection. Natural ventilation is able to deliver large ventilation rates with a low energy consumption. Compared with mechanical ventilation, natural ventilation can provide much higher ventilation rates.\(^5\)

3. **Daylight:** There is undeniable evidence that day-lit spaces hold the potential to yield substantial benefits, including increased energy savings, increased revenue in retail applications, and improvements to human health and productivity.\(^6\) While the science isn’t precise, it’s clear that daylight affects our mood, our behavior and our productivity. It is therefore mandated by global building codes:
Daylighting is the controlled admission of natural light, direct sunlight, and diffused-skylight into a building to reduce electric lighting and saving energy. By providing a direct link to the dynamic and perpetually evolving patterns of outdoor illumination, daylighting helps create a visually stimulating and productive environment for building occupants, while reducing as much as one-third of total building energy costs.7

So where do you go from here?

We can’t tear all the buildings down and start over, so what do we do? Cities worldwide are closing streets and using them to encourage gathering and yet maintain social distances. We have all seen the photos of streets covered in tables that separate restaurant patrons.8 While this is fun during the summer and in warmer climates where vehicular traffic volumes are low, what do we do next?

Owners need to look at their spaces and assess what materials may need to change or be updated to ensure that cleaning and disinfecting of public spaces can be maintained. There are of course illumination and sound issues to contend with when porous materials are removed, so some additional baffling and other sound protection devices may need to be employed in areas beyond public contact.

Per the experts, using natural ventilation saves owners money and allows business owners to provide guests and staff with a safer and healthier environment which may
enable the reduced risk of virus transmission. So now might be the time to look at the walls and roof of your facility and see how they can be opened up. It is clear that the size of the openings matters, in other words, the bigger the better. Operable walls and roofs can be added onto new or existing (including historic) facilities. Now is the time to investigate what options for this can be explored.

New studies demonstrate the correlation between the transmission of COVID-19 in closed environments vs. open air circulation. In a recent Japan study, the odds of a primary case transmitting COVID-19 in a closed environment was 18.7x greater compared to an open-air environment.

The big benefit of adding large oversized skylights and operable walls is the increased daylight. Going forward you can expect to be able to reduce your reliance on and cost for artificial lighting.

This is a win-win for business owners, who can attract people more easily into a space that lets the outdoors in.
Fresh Air is back.

This pandemic highlights that facilities that have already implemented these trends are in fact, ahead of the curve. Ironically, natural ventilation was the main driver of architectural design before it was replaced with mechanical systems in the 20th century. Traditional buildings had a variety of shapes and layouts to promote ventilation by cross-breeze, stacking, wind towers, atriums, chimneys and more. Studies of “old” buildings with high ceilings and large windows for natural ventilation, show that they have greater ventilation than modern rooms of the same type.

It seems clear now, in hindsight, that while businesses remain closed, and only outdoor spaces are open, that we need to relook at buildings and how we design them. How can we turn the indoors to outdoors and vice versa? Gathering of ‘at risk’ groups will depend on the creative thinking of designers worldwide. Creating spaces that can transform and that can also meet the needs of northern climate weather patterns.

Architecture isn’t static. Designers worldwide are already back at the drawing board to look at ventilation models that use fresh air, easier to clean spaces and more daylight. Building codes that prevented enclosure of patios due to lot coverage may need to be revised. A bright ventilated yet enclosed patio may now be the “best” seat in the house. These are just some of the first of a few steps we will need to take to transform our spaces into ones that are safer and healthier for us all.

OpenAire has had the pleasure of building retractable roof enclosures and skylights and oversized motorized walls around the globe, challenging the stereotypes of traditional buildings and meeting the needs of global energy codes worldwide. Our mutual goal is always to help our clients lead the way in creating enjoyable, practical and beautiful spaces, making custom solutions to suit their exact spaces and needs.

With almost 1000 global projects, OpenAire is pleased to have projects in health clubs, restaurants, hotels, senior living, education, transport, retail & shopping. We have worked with
both the public and private sector and have extensive work with the not for profit community, ie the YMCA.

Contact us to see how we can support your vision, or assist in modifying your existing building to accommodate the future of improved daylight, hygiene, ventilation, and cleanliness.

**Footnotes:**


5 Ventilation control for airborne transmission of human exhaled bio-aerosols in buildings, Hua Qian, Xiaohong Zhong, School of Energy and Environment, Southeast University, Nanjing 210096, China, http://dx.doi.org/10.21037/jtd.2018.01.24

6 The Benefits of Natural Light: Research supports daylighting’s positive effect on building performance and human health. Kevin Van Den Wymelenberg. architecturallighting.com; March 19, 2014


