



Superior Indoor Air: Affordable Luxury

The [Center for Disease Control & Prevention](#) reports findings from the Institute of Medicine (IOM) linking exposure to indoor mold & dampness in indoor environments to:

- upper respiratory tract symptoms,
- cough & wheeze in otherwise healthy people
- aggravated asthma symptoms in people with asthma
- potential development of asthma
- hypersensitivity pneumonitis
- respiratory illness in otherwise healthy children
- general to shortness of breath



Additionally, environmental opportunistic infections, caused by pathogens (bacteria, viruses, fungi, or protozoa), are developing faster than ever before. Airborne infections circulated in homes & buildings can be relatively harmless in a healthy person but may cause severe problems for people whose immune systems are weakened or compromised & also for the very young, whose immune systems are still developing. According to ASHRAE, the potential for airborne transmission of disease is widely recognized.

Three issues are pertinent for engineers:

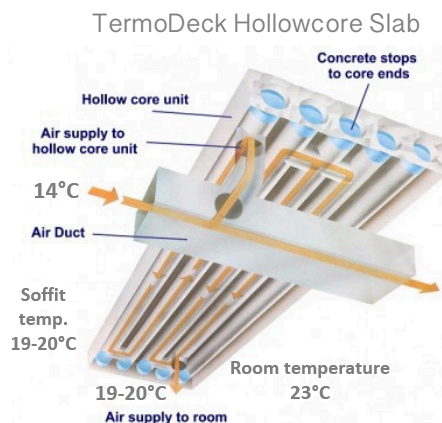
- impact of ventilation on disease transmission,
- disease for which ventilation is important for either transmission or control,
- control strategies are available for implementation in the buildings of interest.



In addition to general concerns about airborne illness in buildings such as homes, offices, schools & malls, mold has also been cited as a serious problem in all types of UAE buildings. "The scourge of mould is like a plague across the country, affecting an untold amount of households & creating unhealthy living environments... poorly ventilated flats that remained vacant for months while awaiting their next tenants & occupied residences with stagnant air & damp environments, dangerous fungus. Tenants fight losing battles, not helped by maintenance staff who employ ineffective solutions & fail to eliminate it." [Reported in 2015, The National Newspaper](#)

Homes For The Indoor Generation

We spend upwards of 90-95% of our time indoors. Today's generation was born in an age of information & digitization. They understand that human health is a measure of overall wellness and success. The global wellness market is a fast growing sector; an estimated 3.7 trillion dollar market. Offering consumers healthier homes provides architects, consultants & developers a USP that resonates with a more informed, health conscious demographic.



TermoDeck's HVAC system addresses the root of the problem by preventing mold, bacteria, yeast & fungus from entering the airspace. As concrete is totally inorganic & highly alkaline, and does not allow for the formation of standing surface water, it does not provide a suitable environment for bacteriological growth. There is almost no reliance on maintenance.

The system is designed to have a much higher fresh air component during peak hours that can reach to up to 100%. Continuously filtered fresh, cooled air is stored in and passed through concrete slabs, and diffused into occupied spaces. Radiant cooling is also healthier providing superior thermal & acoustic comfort.

TermoDeck also offers individual room control and fast response cooling as the switch flow can by-pass the slab and send cool air directly into occupied spaces.

TermoDeck lowers the carbon footprint and reduces greenhouse gas emissions, and has been recognized by the World Wildlife Federation as a Climate Solver for its contributions to sustainable construction. It is LEED, BREEAM and passive house certified, and in 2007 achieved the highest BREEAM rating ever recorded.



Award Winning Designs

High Occupant Health/Comfort: TermoDeck has earned awards for exceptional environmental performance, health & safety, and occupant comfort. TermoDeck's fresh air component is always much higher than conventional AC (overall air volumes are significantly less). Indoor air quality tests of TermoDeck projects show outstanding results. Dust/particulates are 69% lower and bacteria/mold up to 97% lower than prevailing standards.

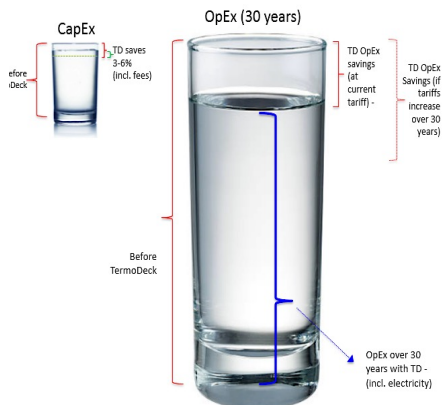
"A major issue with indoor air quality is wrong design & engineering. When there is a lack of fresh air supply, used air is just circulated and not filtered sufficiently, germs, bacteria, mould & dust are just redistributed in the room. Added up continuously, this is a major cause of respiratory diseases & allergies... Our experience shows that by far the majority of buildings in Middle East have very low air quality & comfort, and still this topic does not reach people enough."

Reported in 2016, The National Newspaper

About TermoDeck

TermoDeck Stores Cooling in Concrete Slabs: TermoDeck is not a product. TermoDeck is an innovative specialized engineering, design & supervision service for new build and select retrofits. TermoDeck modifies hollowcore slabs, or embedded ducts in in-situ concrete or post-tension slabs, to store energy (radiant cooling) and act as conduits for air supply (ventilation). Cooled/ dehumidified/ filtered air passes from the chillers/AHUs or FCU's through voids in the building's slabs overnight, and cooling energy is stored for use when temperatures peak during the day.

Our structural engineers offer support for designs already completed and can assist with designs from the outset to ensure your project vision is not compromised by our innovative slab modifications. Modifications can be made easily, at a low cost and on-site, supervised by TermoDeck engineers, in-situ or at the facility where the precast slabs are made.



Lower CapEx/OpEx: Our projects cost 3-6+% less to build (lower HVAC-related CapEx due to less mechanical equipment, low electrical load, etc.) and are 25-35% cheaper to operate & maintain (power/ electricity consumption, HVAC-related O&M), providing a solid return on investment. Energy costs are rising (high peak / low off-peak prices). As TermoDeck uses mostly off-peak power, OpEx savings can only increase further. Images to the left are to scale.

We are the only HVAC solution on the market proven to offer the added benefit of low energy consumption and superior indoor air, while also providing substantial capital & O&M cost savings to clients. Get in touch for a site visit to experience TermoDeck.

Selected Projects



For more information:

Dr. Ghassan Al-Nimry
Director
Mobile: +971.50.450.5831
gnimry@eco-structures.net