

# EmiratesGBC Technical Workshops

*by* nance

Indoor Environmental (Air) Quality & Energy Management

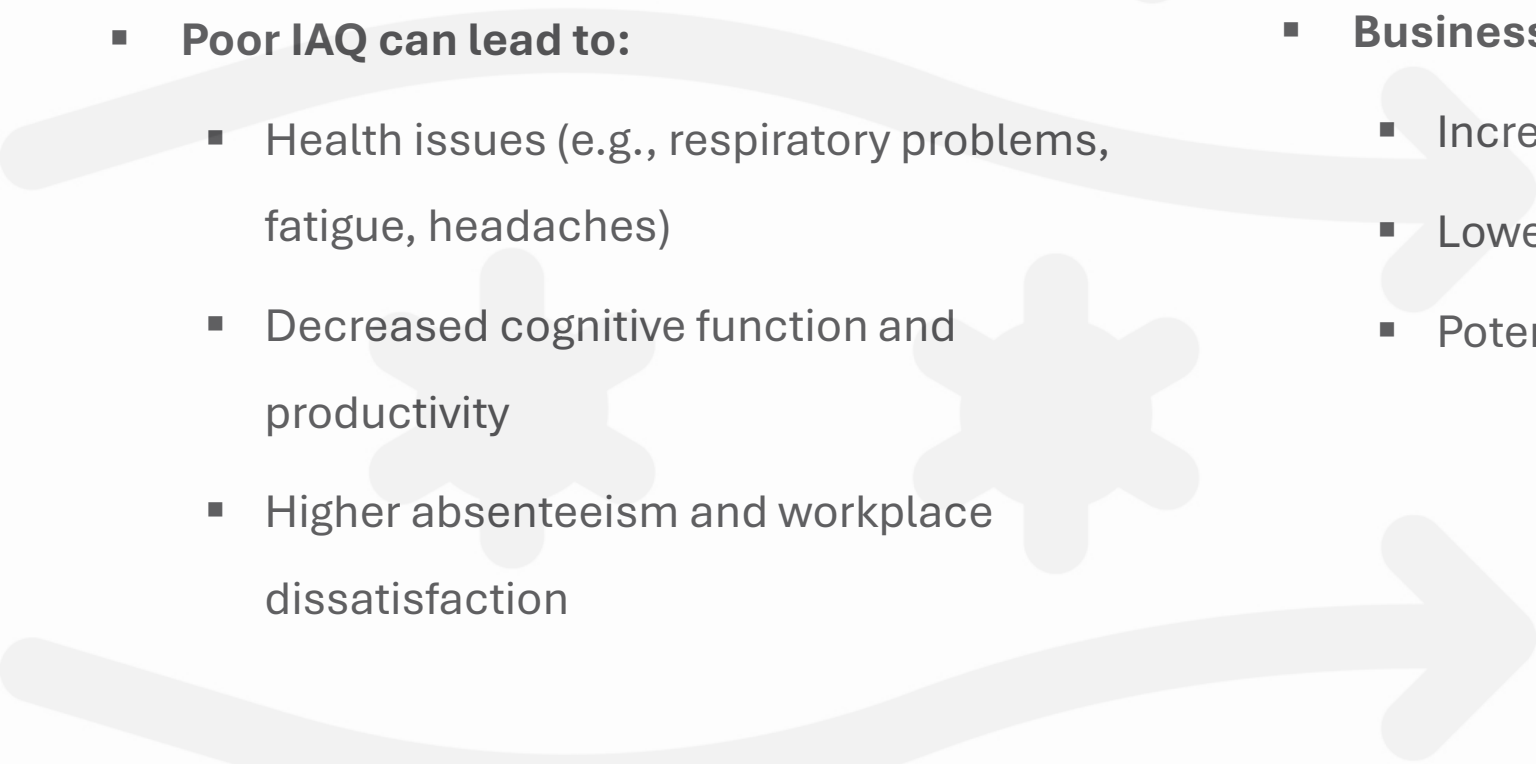
Presented by **Katrin Schoerhuber**, Director Business Development, Middle East and Africa and **Krishna Prasad**, CTO of Nance

14 of March 2025

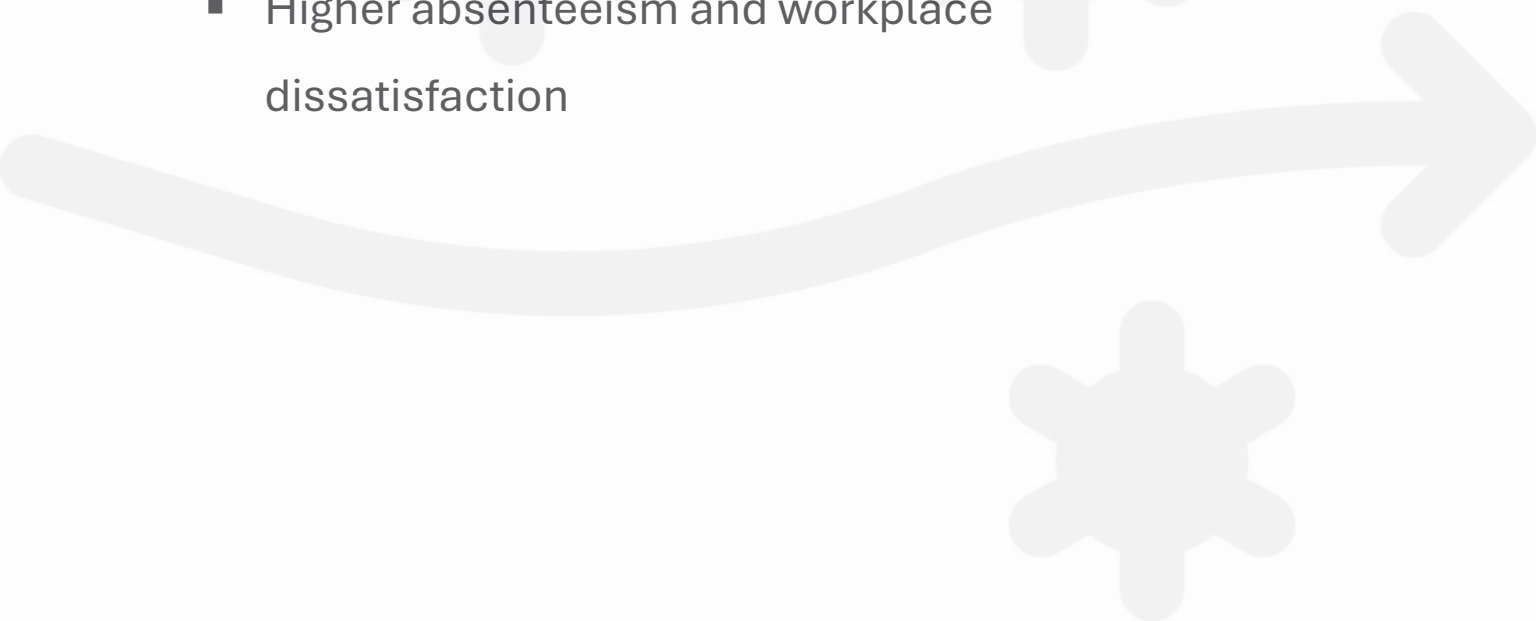
# WHY INDOOR AIR QUALITY MATTERS?



## ■ Poor IAQ can lead to:

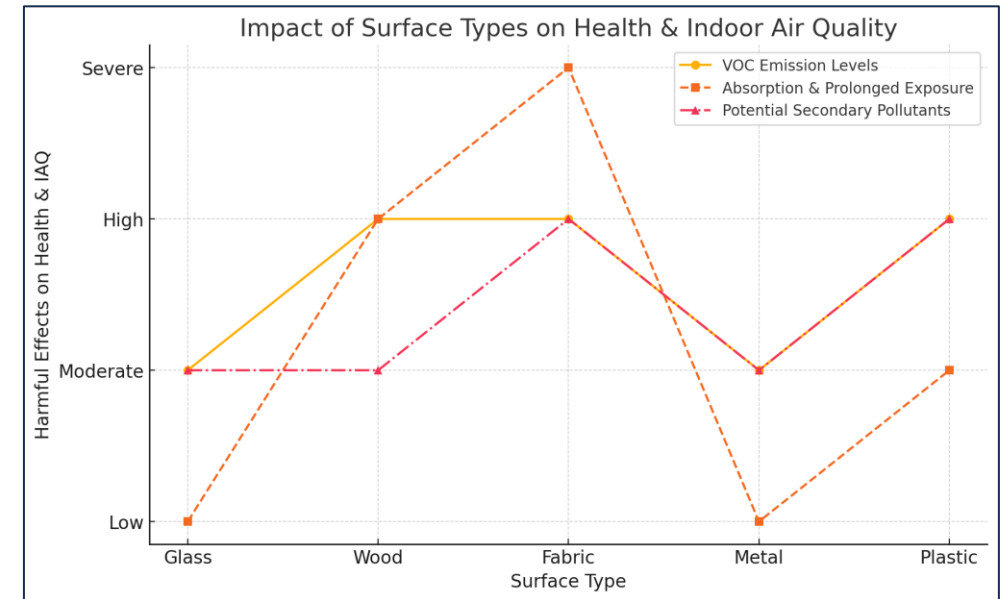
- Health issues (e.g., respiratory problems, fatigue, headaches)
  - Decreased cognitive function and productivity
  - Higher absenteeism and workplace dissatisfaction
- 

## ■ Business impact:

- Increased healthcare costs
  - Lower operational efficiency
  - Potential regulatory non-compliance
- 

# KEY AIR QUALITY FACTORS

- **Ventilation** – Essential for fresh air; poor ventilation raises CO<sub>2</sub>, causing fatigue and low focus.
- **Pollutants** – VOCs, dust, and mold from furniture, cleaning products, and HVAC systems impact health.
- **Humidity & Temperature** – High humidity promotes mold; extreme temperatures reduce productivity.
- **Cleaning Products & Surfaces**
  - Cleaning sprays release **VOCs**, causing respiratory issues.
  - **Porous surfaces (wood, fabric):** Absorb chemicals, prolonging exposure.
  - **Non-porous surfaces (glass, metal):** Allow quicker evaporation but still release fumes.
  - Some chemicals create **secondary pollutants** (e.g., formaldehyde, ozone).



# MONITORING AIR QUALITY – TOOLS AND TECH

- **Sensors & Real-Time Monitoring**

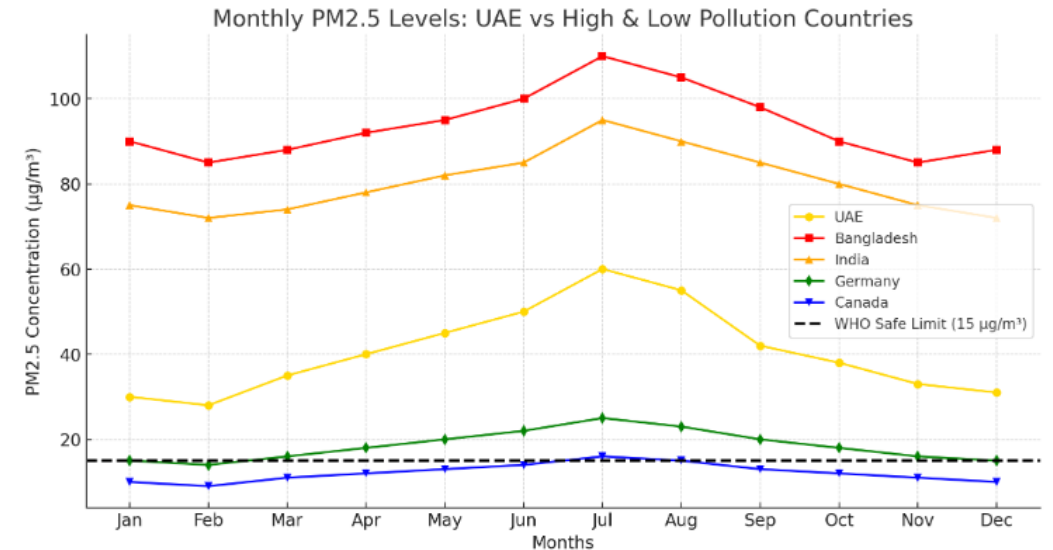
CO<sub>2</sub>, VOCs, humidity, temperature sensors

- **Integration with Building Management Systems (BMS)**

Automated ventilation adjustments

- **Air Purification Systems**

HEPA filters, UV-C treatment, activated carbon solutions, **air-purifying plants** or FRESH AIR from outside



# THE CONNECTION



## Smart IAQ = Energy Efficiency

- HVAC Optimization: Efficient air circulation
- Demand-Controlled Ventilation (DCV): Adjusts airflow based on occupancy
- Energy-Efficient Purifiers: Clean air, low energy
- AI-Driven Analytics: Optimize energy use



# NHANCE TWIN PLATFORM



PDS Towers
22.3° C
10:56:44 PM
30 Jul 2024

### Gallery

### Energy Consumption

223.06

kWh - TODAY 7.74%

|          |         |          |
|----------|---------|----------|
| 244.58   | 196.64  | 236.09   |
| LAST DAY | 7 D AVG | 30 D AVG |

### Energy Sources

●

- Board (222.95 kWh)
- Generator (0.00 kWh)
- Solar (0.00 kWh)

### Alerts

- ▲ High Humidity (73.50 %) - Male Washroom(Ground Floor) a few seconds ago | Smart Clean | F28FE654B6
- ▲ High Humidity (73.50 %) - Male Washroom(Ground Floor) a few seconds ago | Smart Clean | F28FE654B6
- ▲ High Humidity (73.50 %) - Male Washroom(Ground Floor) a few seconds ago | Smart Clean | F28FE654B6
- ▲ Invalid Data (No Data) - Meeting Room(Ground Floor)

### Total Occupancy

Legend: First Floor, Terrace Floor, Second Floor, Ground Floor

### Energy Consumption History

| Date  | Energy Consumption (kWh) |
|-------|--------------------------|
| 23-07 | 229                      |
| 24-07 | 240                      |
| 25-07 | 212                      |
| 26-07 | 218                      |
| 27-07 | 137                      |
| 28-07 | 100                      |
| 29-07 | 245                      |

### Energy Carbon Emissions

0.19

TONNES - TODAY 7.19%

|          |         |          |
|----------|---------|----------|
| 0.21     | 0.17    | 0.20     |
| LAST DAY | 7 D AVG | 30 D AVG |

### Booked Desks

Legend: Desks Booked, Desks Occupied

### Meeting Rooms

| Floor               | Booked                               | Occupancy                                 |
|---------------------|--------------------------------------|---|
| GF-MR-02            | <span style="color: green;">●</span> | <span style="color: green;">●</span> 0/6  |
| GF-MR-01            | <span style="color: green;">●</span> | <span style="color: green;">●</span> 0/6  |
| TERRACE MEETING POD | <span style="color: green;">●</span> | <span style="color: grey;">●</span> NA    |
| BLR-BOARD-ROOM      | <span style="color: green;">●</span> | <span style="color: green;">●</span> 0/12 |
| BLR-GOOG-MEET       | <span style="color: green;">●</span> | <span style="color: green;">●</span> 0/8  |

### AQI

|                  |                    |                   |
|------------------|--------------------|-------------------|
| 24.6             | 833                | 65.8              |
| Temperature (°C) | CO2 (ppm)          | Humidity (%)      |
| 30               | 911.11             | 0                 |
| TVOC (ppb)       | Air Pressure (hPa) | Illuminance (lux) |

First Floor - Reception

### Restrooms

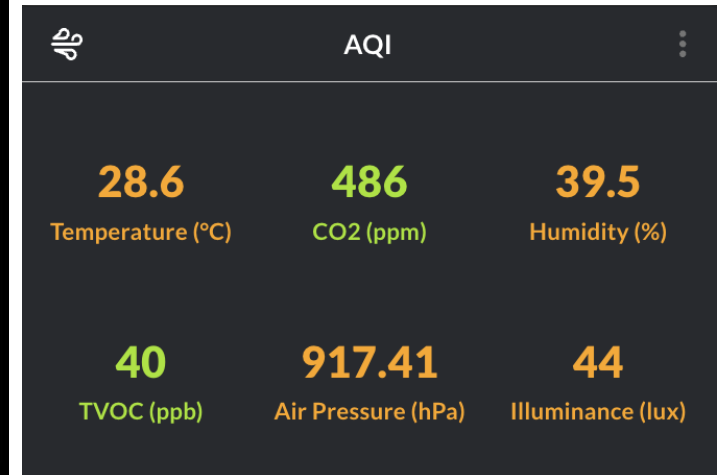
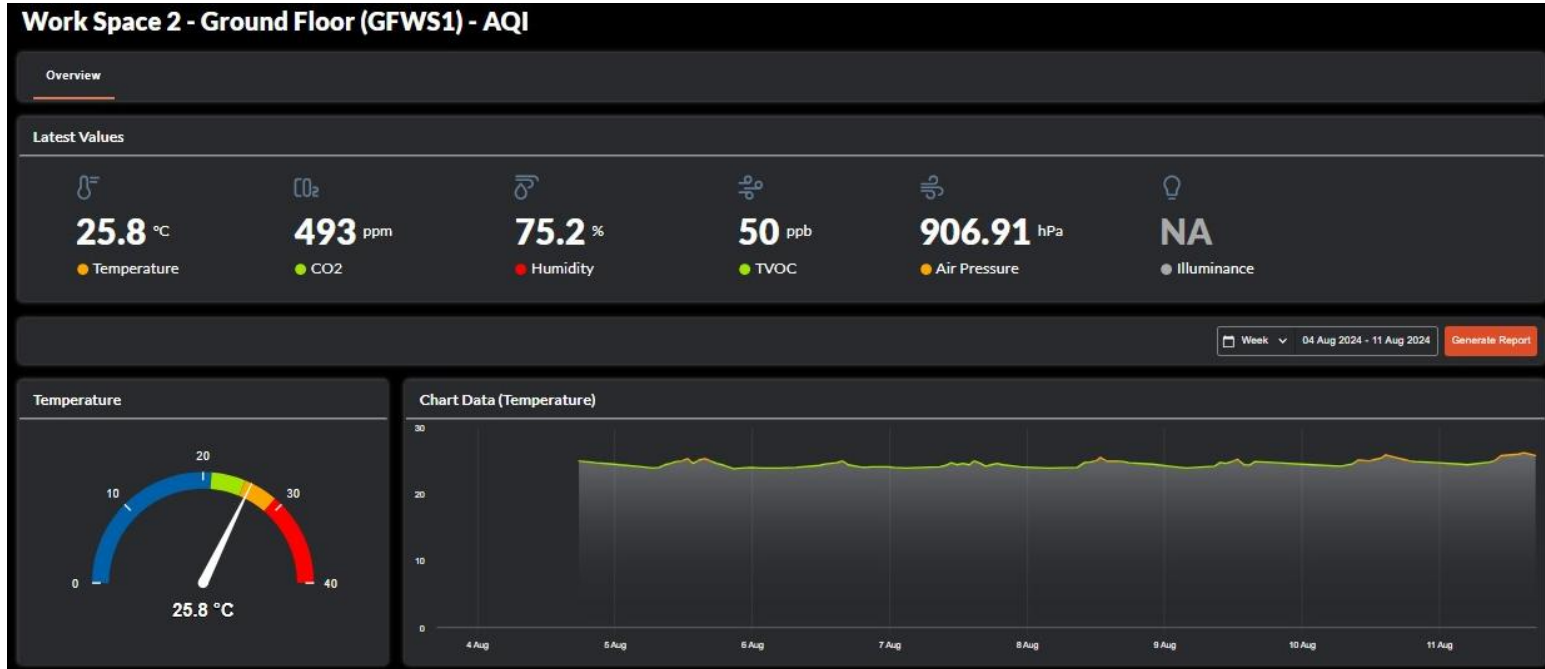
|             |           |     |
|-------------|-----------|-----|
| NA          | NA        | NA  |
| Temperature | Ammonia   | AQI |
| NA          | 100       | NA  |
| Soap        | Towel (%) | Bin |

Ground Floor - Female Washroom

### Fault Reports

- ▲ Not working - Not working as intended By: Reethi G | Work Space | 4 days ago
- ▲ HermanMiller\_Seating\_SayIWorkChairSuspensic Back - Its Broken By: Jackson Matthews | Work Space | 3 months ago
- ▲ IT equipment - Not working as intended By: Madhu SK | Meeting Room | 3 months ago
- ▲ BENE Rondo - Its Broken By: K | Reception | 3 months ago
- ▲ 19.1 degrees in work area - Not working as

# NHANCE TWIN PLATFORM – AIR QUALITY



# NHANCE TWIN PLATFORM - OCCUPANCY

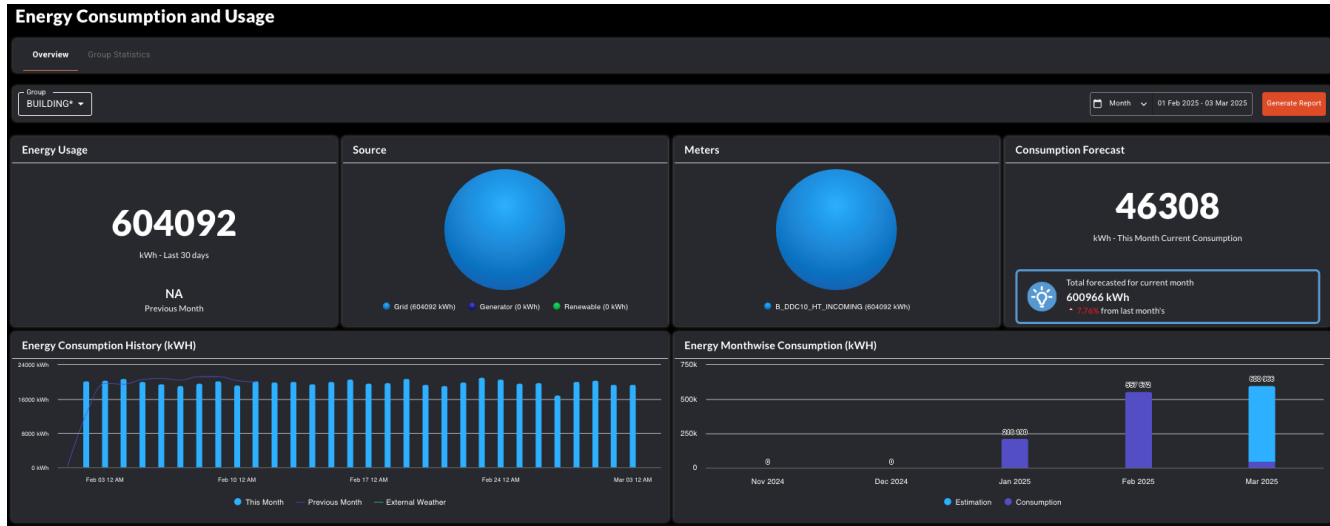


**Meeting Room Status**

| Name                      | Average Occupan... | Utilization |
|---------------------------|--------------------|-------------|
| Discussion Room 1.E.04    | 0.04               | 0.00%       |
| Meeting Room 1.F.02       | 1.24               | 18.48%      |
| Meeting Room 1.G.04       | 1.13               | 1.67%       |
| BMS                       | 0.04               | 0.00%       |
| Payroll                   | 0.04               | 0.00%       |
| Travel Desk - Vendor Room | 8.98               | 91.36%      |
| Meeting Room 1.X.01       | 1.24               | 24.09%      |
| Meeting Room 1.X.02       | 1.94               | 4.70%       |
| Discussion Room 1.C.03    | 1.95               | 1.82%       |
| Meeting Room 1.G.03       | 0.04               | 0.00%       |



# NHANCE TWIN PLATFORM - ENERGY



# CASE STUDY - IAQ & ENERGY SAVINGS IN ACTION



## Hamar Municipality – by Airthings, Norway

- Energy Savings: 1,500 air quality monitors installed, reducing energy consumption by 2 million kWh between 2021 and 2022.
- Cost Savings: NOK 6 million saved, with a payback period of less than a year.

## Commercial Real Estate building in India, by Nhance

- Energy savings of 20% by just monitoring the usage and switching off non essential loads in the first 60 days

## ADNEC Case Study, UAE

- Energy Savings: 40% reduction in energy usage for HVAC systems by understanding space utilization.

## Corporate HQ Implementation

- CO<sub>2</sub> sensor-driven ventilation reduced sick days by 30%.

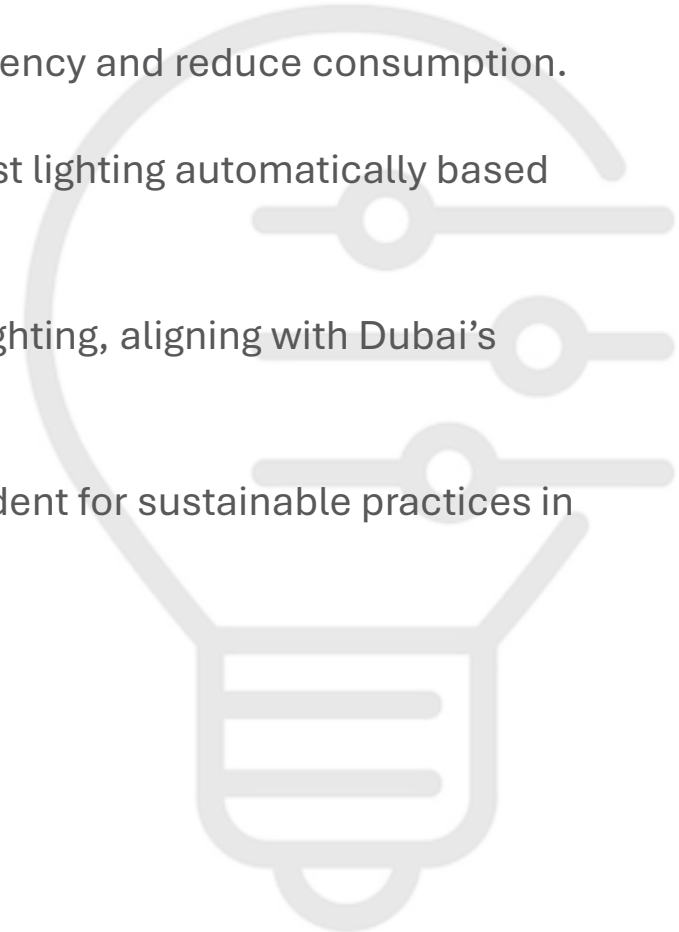


# SMART LIGHTING



## Smart Lighting Management at DEWA Headquarters, Dubai

- DEWA implemented a **smart lighting system** in their headquarters to optimize energy efficiency and reduce consumption.
- The system used **motion sensors, daylight harvesting, and occupancy detection** to adjust lighting automatically based on the building's real-time conditions.
- **Energy Savings:** The implementation led to a **50% reduction in energy consumption** for lighting, aligning with Dubai's ambitious sustainability goals.
- **Impact:** DEWA's smart lighting system not only **reduced energy costs** but also set a precedent for sustainable practices in Dubai's commercial sector.
- Key Features:
  - **Motion Sensors:** Automatically switch off lights when areas are unoccupied.
  - **Daylight Harvesting:** Adjusts artificial lighting to complement available natural light.
  - **Occupancy Detection:** Ensures lighting is only used when necessary, minimizing energy waste.



# BEST PRACTICES FOR ORGANIZATIONS

- Regular IAQ assessments & sensor-based monitoring
- Implement smart ventilation and demand-controlled HVAC systems
- Use low-VOC materials and eco-friendly cleaning solutions
- Train employees on IAQ importance and workplace wellness



## DISCUSSION & Q&A

- What IAQ challenges do you face in your workplace?
- How can IAQ improvements align with your company's sustainability goals?
- Are there specific air quality concerns unique to the UAE's climate?



# SOURCES



- <https://www.iqair.com/>
- [Air pollution](#) – WHO
- [Volatile Organic Compounds' Impact on Indoor Air Quality | US EPA](#)
- [VOCs in Cleaning Products | Indoor Air](#)



