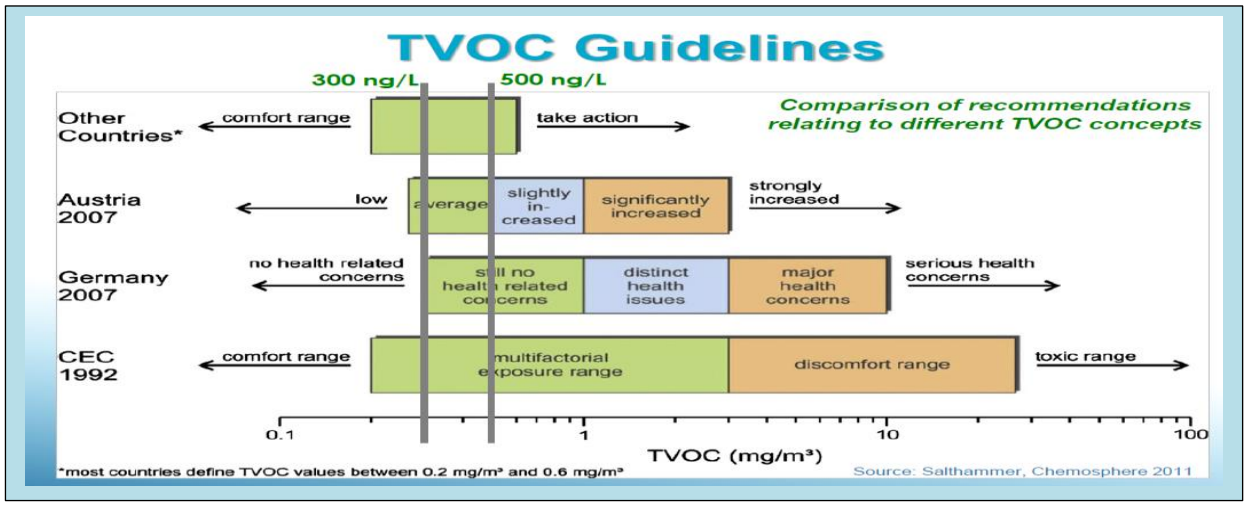
INDOOR AIR QUALITY MONITOR (WiFi/I-o-T)

(MODEL AR-IAQW-1)

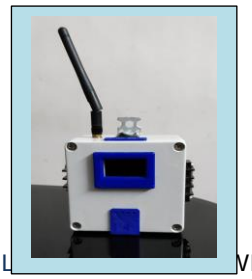
Years back, health agencies (ASHRAE, NIOSH, US-EPA etc) across the world have recognized the fact that high levels of CO2 (carbon dioxide) and VOC (volatile organic compounds) seriously affect human occupational health. Studies have also confirmed that cognitive ability of human beings decrease as much as 30 %.

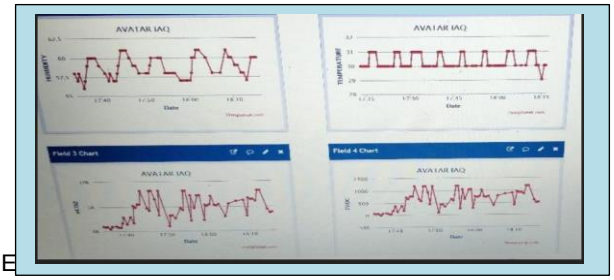


In view of this, there is a growing trend to have IAQ monitors installed in closed offices, houses, buildings, casinos, theatres etc.

AVATAR IAQ Monitor is state-of-the-art product that can work stand-alone or in conjunction with an existing HVAC system. It allows for,

- Efficient air quality management for conference/discussion rooms, office rooms, work-out gymnasiums etc by automatically turning ON fresh air supply when required.
- Remote management/reporting of air quality and thus maintain high working environment quality and health standards.





VT. L VE

The device features a local 1.3" OLED display as well as a WIFI module that can convey the monitored air data over the internet that enables remote logging and viewing. The product houses two sensors to monitor HUMIDITY, TEMPERATURE, eCO2 and TVOC. An embedded microcontroller processes the data to display and also energizes a relay when the eCO2 or TVOC levels exceed the set-point. This relay contact can be used to run a blower motor to supply fresh air so that the levels fall back to normal. The energization and de-energization of the relay is automatic based on the set upper and lower limits.

The high and low set-points for eCO2 and TVOC can be changed/set remotely through internet.

After initialization, the wifi network connection will take time ranging from few seconds to about a minute depending on the local signal strength. In case a connection is not achievable, then it temporarily bypasses the WIFI and continue providing the local data indication. The device automatically keeps checking and try connecting every 10 minutes.

The unit must be mounted taking into account the following factors.

1. The device mounting should be rigid and free from vibrations.
2. The sensor window must point to an area such that adequate ambient air flows over it without any obstruction.
3. Avoid splashing any liquid or expose the sensor to strong hydrocarbon vapors. This may permanently damage the sensor.
4. Avoid high humidity (>85%) which may cause condensation and could block the sensor window.
5. This is a thermally sensitive device and hence must be kept away from nearby hot objects.
6. Being a sensitive equipment, it must be mounted away from strong magnetic or electrical interference.
7. The device is not suitable for **out-door** use.

The humidity/temperature sensor has a built-in heater that gets activated when the humidity goes above 80 %RH and shuts off below 78%RH.

Optional dust sensor:
In addition to above, an optional particulate matter (PM2.5/10, 0.3-2.5-10 microns) sensor also is available.

Note:

1. The sensors are factory/manufacturer calibrated for the specified range and there is also an automatic baseline correction applied internally in the eCO2/VOC sensor to compensate for any drift.
2. At power-on, the device initializes for about 10 seconds and must allow approximately 20 minutes (sensor warm-up) for valid eCO2 and TVOC measurements.

3. Subjecting the sensor temporarily to over-range may take time for its recovery (few minutes).
4. VOC come from paints, synthetic carpets, solvents, deodorants, perfumes etc. Equivalent CO2 (eCO2) is a measurement made by the sensor based on the correlation it has with TVOC. It can be said that if the VOC concentration of a given space begins to slowly climb above baseline, it probably corresponds to room occupancy and an increase in CO2 (because humans exhale both CO2 and VOCs).
5. The default relay set-point levels are based on the ASHRAE standard SSPC 62.1 recommendations.
6. Pay attention to electrical safety while using 110-230 VAC main supply.

Warranty: There is no user serviceable parts and AVATAR RENEWABLES PVT LTD will provide 1 year warranty from the date of purchase for any device malfunction. This warranty will cover only if the device is operated as intended and not abused.

AVATAR RENEWABLES PVT LTD reserves the right to modify or change the product design as and when required. No effort shall be made by user or third-party to copy, modify or replicate the product.

Technical specifications		
1	Operating voltage/power	SMPS, 110-250 VAC +/-, <3 Watts.
2	Relay contact	NO/NC/COMMON, 230VAC, 2 Amps
3	Operating temperature	10 to 60 Deg C
4	Humidity	0 to 85% non-condensing
5	eCO2 (equivalent CO2)	400 to 8192 ppm (parts/million)
6	TVOC (total volatile organic compounds)	0 to 1187 ppb (parts/billion)
7	Sensor Life	>5 years
8	Sensor scan rate	@ 1 second
9	Display refresh	@ 3 Seconds
10	WiFi Refresh	@ 1 Minute
11	Alarm refresh	@ 1 second
12	Sensor fault	Error number/code indication
13	Display	1.3 " OLED
14	WiFi	2.4 GHz IEEE802.11 b/g/n
15	Optional dust sensor (optical scattering)	PM2.5/10 (0.3 to 10 microns)

Set points (defaults)		
eCO2	RELAY ON >= 1300 ppm	RELAY OFF < 1000 ppm
TVOC	RELAY ON >= 200 ppb	RELAY OFF < 150 ppb
Humidity	>= 80% RH Internal sensor heater ON	<78% RH Internal sensor heater OFF
Alarm	Respective "engineering unit" characters flashing	If Temperature>=50 Deg C or Humidity>=85%RH or eCO2>=1100ppm or TVOC >=200ppb