

City Talk



Patience is needed to allow air-conditioning to reach a steady state.

THE MYTH OF 25.5 DEGREES CELSIUS

As we approach autumn, the air is turning cool and we feel more comfortable.

Looking at the thermometer, it is still over 20 degrees Celsius, so why is it more comfortable in autumn, but not in spring, which has a similar temperature?

The answer lies in humidity. In the last month, the relative humidity (RH) fell from above 90 percent to below 70 percent. We no longer feel sweaty as perspiration evaporates freely, cooling our body. Please note the focus is on RH and not on temperature.

Air-conditioning, or refrigeration principles, reduces humidity in a closed room by lowering the temperature. As temperature drops, the amount of moisture that can be carried in the atmosphere reduces. Excess moisture can then be drained away.

The laws of physics dictate that this mode of moisture reduction only works in a particular temperature range, the upper limit being 25.5 degrees. Above that, the ability to reduce moisture becomes ineffective.

So now you know why, despite encouragement to set air-con thermostats to 25.5 degrees, it does not work in practice, and most people end up ignoring it.

If you are still not convinced, next time you are in a private car, check the thermostat. Nobody has been able to set a comfortable temperature in a car outside of 21 to 24 degrees, as in a small compartment like a car interior, air will circulate quickly.

Within this temperature range, we may feel a slight difference in coolness, but as long as the humidity level is below 70 percent, comfort can be maintained.

In industrial and large-scale commercial complexes, instead of using refrigeration, other means of dehumidification are also effective.

With the area enclosed and no ingress of moist air, accurate control of humidity can be maintained. This explains why when people



Nuts and bolts

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feel uncomfortable in an air-conditioned space, opening windows and doors only makes it worse, as this admits moisture and raise the RH.

I had the opportunity to debate this issue with somebody in high authority some years back. We were at lunch in a private room, and this lady challenged my professional stance, insisting we could be comfortable in a room with the thermostat set at the magical 25.5 degrees, as it is proven to work in other regions, and was unaware that they enjoy a lower RH due to climate difference.

I invited her to inspect the air-conditioning controls more closely. Indeed, the thermostat was set at 25.5 degrees, but the fan switch was set to "off".

I had to explain to her that the restaurant had cooled down the room before we arrived. With only two people in the closed room eating a light meal, the room remained dry during our lunch hour. If I had had a thermometer with me, I could have shown her that the room temperature was lower than the thermostat.

I can never stop smiling when I see people enter a room, feeling uncomfortable and adjusting the thermostat. Instead, they should leave it between 21 to 24 degrees, turn the fan to maximum speed and wait. The higher air circulation will help reach the desired temperature quicker.

Patience in allowing the air-con system to reach a steady state is necessary, and indiscriminately turning the thermostat up and down is a futile exercise. So please set your thermostat wisely, and you will enjoy comfortable conditions all year round.

Veteran engineer Edmund Leung Kwong-ho casts an expert eye over Hong Kong's iconic infrastructure