



# Are you comfortable?

As you read this book are you comfortable? Are you feeling warm? Are you sweating? Do you feel like opening a window? Is the room dusty? Is it too dry or too chilly? Is the draft from that open window irritating? Well, are you comfortable?

The airconditioning engineer takes each of the factors that causes discomfort, and conditions the air to give comfort.



*Too warm*

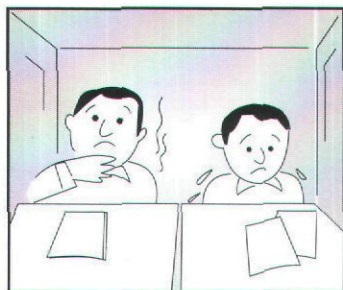


*Too cold*

What we say about discomfort	What the airconditioner does
"It is too warm"	The air is cooled
"It is too cold"	The air is warmed*
"It is too humid"	Excess moisture in the air is removed
"It is too stuffy"	The conditioned air is circulated gently
"It is dusty or smoky"	The air is filtered
"There is an unpleasant odour"	The bad air is exhausted and fresh air is taken in
"The air is stale"	The air is mixed with fresh outdoor air

\*Since the use of airconditioning in India is predominantly for cooling, we have not addressed the subject of comfort heating in this book.

**Comfort requirements change:** When all this is done one would expect to be comfortable. However, comfort can be different things to different people. A sherpa would be quite happy in the cold, whereas you or I would prefer more hospitable temperatures. Our own perception of comfort also keeps changing. For instance, our airconditioning needs while

*Too humid**Too stuffy**Too much smoke*

watching TV would be entirely different from, say working out at a gym. Airconditioning engineers realise this phenomenon, and therefore depend on detailed studies carried out by certain societies of engineers for guidance. It is an industry practice to use the research findings of the American Society of Heating Refrigeration & Airconditioning Engineers (ASHRAE).

Through its research involving studies of the comfort needs of thousands of people, ASHRAE has clearly defined 'Comfort' under different conditions, and has determined the parameters of a 'comfort zone' within which a majority of people would feel comfortable.

**Comfort Parameters in India:** In most of our cities the ambient conditions are quite uncomfortable. In summer the temperatures are high and because these high temperatures can support more moisture, the air is humid. The desired comfort temperature and **Relative Humidity\*\*** (RH) for India in Summer is 25°C and 55% RH.

\*\*Relative Humidity (RH) is the percentage obtained by dividing the actual weight of moisture present in a given volume of air, at a given temperature, by the maximum weight of moisture it can hold at the same temperature at saturation condition. For example if a pound of air at 90°F that can hold a maximum of 216 units of moisture, actually has only 108 units of moisture in it, the RH would be  $108/216 = 50\%$ .