

FAQs

1. Explain briefly about induced ventilation

- Passive cooling by induced ventilation can be most effective in hot and humid climates as well as in hot and dry climates.
- This method involves the heating of air in a restricted area through solar radiation; thus, creating a temperature difference and causing air movements or drafts.
- The draft causes hot air to rise and escape to the ambient, drawing in cooler air and thereby causing cooling. In effect, a solar chimney is created to cause continuous air circulation.

2. What is the principle behind Induced Ventilation?

- Curved roofs and air vents are used in combination for passive cooling of air in hot and dry climates, where dusty winds make wind towers impracticable. Suited for single units, they work well in hot and dry and warm and humid climates.
- A hole in the apex of the domed or cylindrical roof with the protective cap over the vent directs the wind across it. The opening at the top provides ventilation and provides an escape path for hot air collected at top.

3. What are the two methods for lowering earth temperature?

Two methods have been tried to lower the earth temperature:

- raising the building off the ground and encouraging evaporation from the surface either by irrigation or by feeding summer rains into the area below the building; and
- covering the soil with a layer of gravel, at least 10 cm thick and, in regions with dry summers irrigating it.

4. How does a Wind Tower work?

- In a wind tower, the hot air enters the tower through the openings in the tower, gets cooled, and thus becomes heavier and sinks down.
- The inlet and outlet of rooms induce cool air movement.
- In the presence of wind, air is cooled more effectively and flows faster down the tower and into the living area.

5. Explain case study of earth air tunnel

- The living quarters (the south block of RETREAT) are maintained at comfortable temperatures (approx. 20-30 degree Celsius) round the year by the earth air tunnel system, supplemented, whenever required, with a system of absorption chillers powered by liquefied natural gas during monsoons and with an air washer during dry summer.
- However, the cooler air underground needs to be circulated in the living space. Each room in the south block has a 'solar chimney';
- warm air rises and escapes through the chimney, which creates an air current for the cooler air from the underground tunnels to replace the warm air.
- Two blowers installed in the tunnels speed up the process.
- The same mechanism supplies warm air from the tunnel during winter.