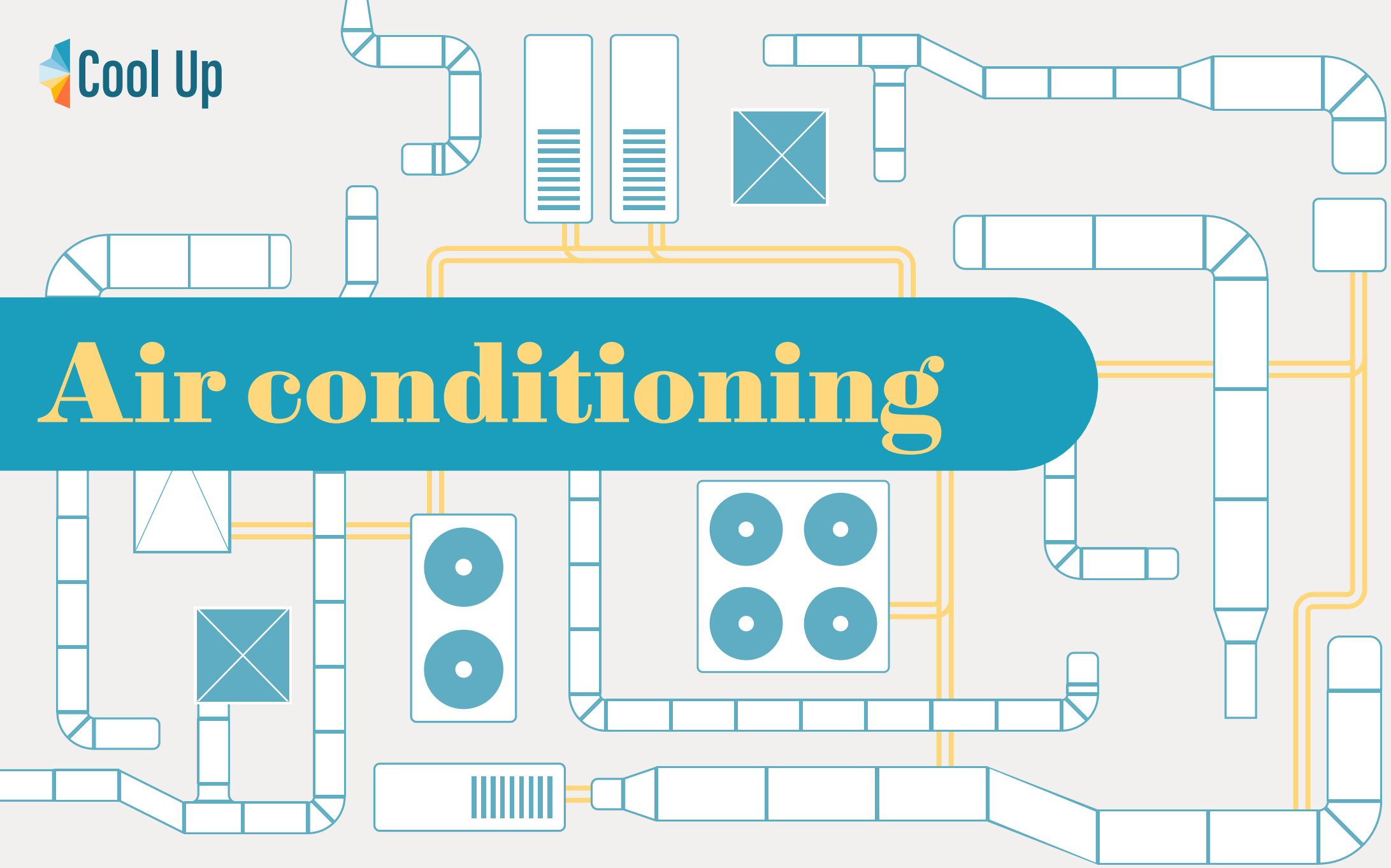
Cool Up

Air conditioning



Lowering the need for air conditioning

Reflective surfaces / paint

Certain materials, colours and types of paint reflect more of the sun's energy and stop the underlying material from heating up.

Solar shading

Physical barriers that blocks heat entering the building, most effective forms are automatically controlled movable shading.

Airtight construction

Better building techniques and use of sealants around windows and doors to reduce air leakage and subsequent energy losses.

Insulation

High R value insulation materials, slows heat from entering the building shell and better maintains internal temperatures.

Window glazing

High-performance windows (at least double glazing) with quality seals allows entry of light while blocking excessive outdoor heat.

Vegetation

Vegetation lowers temperatures of the local area through shading and transpiration, countering the urban heat island effect.

AC control and monitoring

AC systems can cool specific zones and be set at highest acceptable temperature. Larger buildings can employ a central automation system.

Maintenance & optimisation

Proper commissioning of building systems and regular maintenance checks can help guarantee peak performance and efficiency.

Geothermal or seawater

In case of central chillers: High system temperatures (cold water cycle) and low cooling water (e.g. by using geothermal energy or seawater)

Ventilation

Demand-controlled ventilation, including economizers and strategies such as night cooling, offers effective passive cooling.

Air circulation

Fans improve airflow, disperses heat, prompts skin evaporation, increases comfort and gives the perception of up to 3°C lower temperatures.

Internal load reduction

More efficient appliances and lighting reduce heat created within the building, reducing the overall heat load.

Window & door contacts

Sensors integrated to AC systems that detect whether a door or window is open and adjusts settings or switches them off.

Thermal mass

Strategic use of materials that can absorb and store heat can help maintain more consistent indoor temperatures from fluctuations outside.

Distribution system

Water-based distribution systems are more efficient than air. Well-insulated systems, both piping and ducts, reduce energy loss.

Passive cold transfer

Passive systems, like chilled ceilings and beams, need less energy than fan coil units or central AC.

More information

Full reports

This snapshot is based on the 2022 series of reports entitled:

Catalogue of Technical Solutions for Sustainable Cooling in:

- **Egypt**
- **Jordan**
- **Lebanon**
- **Türkiye**

AC technologies

- **Domestic air conditioning:** cooltechnologies.org/sector/domestic-air-conditioning
- **Commercial / industrial air conditioning:** cooltechnologies.org/sector/commercial-industrial-air-conditioning
- **Hydrocarbon technologies database:** hydrocarbons21.com

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