

Tekst 12

How air conditioning changed the world



- 1 Ways of cooling buildings have existed for millennia. The ancient Egyptians hung damp reeds over their windows and placed water-filled pots in hallways. The Romans collected snow in donkey carts and stored it in pits for the summer. In the mid-19th century, New York theatres used big fans to blow air over New England ice through ducts towards their audiences.
- 2 But the birth of air conditioning machines like the ones we use nowadays is usually dated to 1902, when a young engineer named Willis Carrier discovered that if you circulated air over coils chilled by compressing ammonia it would reduce humidity by condensing water vapour; it also, incidentally, made the air much cooler. Carrier sold his technology to manufacturers that wanted their air drier, such as flour mills and razor manufacturers. However, he soon realized that "comfort" applications were even more promising.
- 3 An early commission was to cool Philadelphia's masonic Temple. And from the 1920s on, he sold his "Weathermaker" to cinemas, department stores and restaurants and offices across America. In the past, cinemas had closed in hot summer weather. But from the 1920s on, the cool air became part of the attraction: the tradition of the Hollywood summer blockbuster dates back to this era; so, too, does the rise of the shopping mall.
- 4 Air conditioning changed architecture profoundly. Very high buildings — previously difficult to ventilate because wind increases with altitude — were suddenly a viable option, as were glass-fronted skyscrapers. And in the postwar period, smaller domestic air con units became available: houses no longer needed thick walls, high ceilings and sun porches.

Between 1962 and 1992 the proportion of US houses with air con rose from 12% to 64%.

- 5 Air con also changed the country's demographics. The Sun Belt — from Southern California to Florida — boomed from the 1960s; people and industry moved there as hot summers became more bearable; its share of the population rose from 28% in 1950 to 40% in 2000.
- 6 The economist William Nordhaus found in 2006 that the hotter the climate, the less productive its people; a study of US government typists in the 1950s found that typists do 24% more work if temperatures are kept low. The world economic system depends on it. Factories, offices and the server farms that power the internet all rely on air conditioning.
- 7 Its effects on our health are indisputable: recent decades have seen a dramatic decrease in the number of deaths during heatwaves in the US, and the strongest protective factor, as one study found, was "a working air conditioner". By filtering and dehumidifying the air, it also improves many respiratory and skin conditions.
- 8 Air con emits some half a billion tonnes of CO₂ annually. And the coolants used are even more polluting than CO₂. Air conditioners fuel a vicious cycle: they pump out heat, making the outside world hotter still.
- 9 Also, an air conditioned society has fewer free communal spaces, and more commercialized indoor venues, such as shopping malls. It has also ended traditions such as the siesta, and condemned its users to thermal monotony — a global standard of 22C°.
- 10 The evidence suggests the market will continue to grow inexorably. However, the hope is architects and designers will become less wasteful in their use of air con: "passive cooling", for instance, keeps temperatures low by non-mechanical means such as using insulation, natural ventilation and reflective surfaces. Japan's Cool Biz campaign, meanwhile, encourages businesses to raise workplace temperatures from 22C° to 28C°, and to allow staff to wear shorts and polo shirts.

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Lees bij de volgende opgave eerst de vraag voordat je de bijbehorende tekst raadpleegt.

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In deze tekst komen de volgende onderwerpen aan bod, maar **niet** in deze volgorde:

- a de nadelen van de moderne airco
- b de veranderingen die door de moderne airco mogelijk werden
- c de verwachtingen voor de toekomst van de moderne airco
- d het ontstaan van de moderne airco

2p **40** Geef van elk van deze onderwerpen (a, b, c en d) aan bij welke alinea dit onderwerp begint.

Noteer het nummer van de alinea achter elke letter op het antwoordblad.

Bronvermelding

Een opsomming van de in dit examen gebruikte bronnen, zoals teksten en afbeeldingen, is te vinden in het bij dit examen behorende correctievoorschrift, dat na afloop van het examen wordt gepubliceerd.