

„What do you hope to achieve with the PRO KLIMA campaign?“

„Which environmental impacts?“

„OK. So what can be done about it?“

„That's true! When I buy a car I want to know what it's going to cost me when I turn on the air conditioning.“

„Does this technology exist already?“

„And why are you in favour of natural refrigerants?“

„I like that!“

„We want to inform drivers about the environmental impacts of air-conditioning systems.“

„Air conditioning systems don't only help to provide pleasant temperatures in the car. They also increase the vehicle's fuel consumption and contribute to climate change.“

„We demand that customers are informed about how much additional fuel the vehicle uses when the air conditioning system is switched on.
A uniform method of measurement must be agreed upon.“

„Yes, and we also demand that car manufacturers only install energy-efficient air conditioning equipment. This significantly reduces additional consumption.“

„Yes, but so far there is a lack of political pressure on car manufacturers to use environmentally-friendly technology.“

„The car industry wants to fill air conditioning systems with an easily inflammable chemical in future. In the event of an accident this could be dangerous both for occupants and rescuers. That's why we advocate natural and non-inflammable refrigerants such as CO₂.“

Who are we?

Our **PRO KLIMA** campaign

- informs the public about **innovative air conditioning technology**
- explains the **consequences for our environment** to consumers
- holds **seminars and conferences** with experts from politics, industry and research
- develops the **necessary recommendations** so that politics and industry can rapidly introduce sustainable air conditioning technology
- provides a **forum** for environmental and consumer protection organisations, public institutions, administrations, interested companies, driving schools, vehicle fleet operators, and many others.

You can find more information about our campaign and further news on our website:

www.autoklimaanlage.info

How often do drivers use the air conditioning? What do you know about the environmental impacts of air conditioning systems? We have launched an online survey. **Participate at:**

www.umfrage-autoklimaanlage.de

Contact:

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Cartoon: Mario Lars



KEEP COOL!

**Protect the environment and save fuel:
What you can do with car air conditioning**

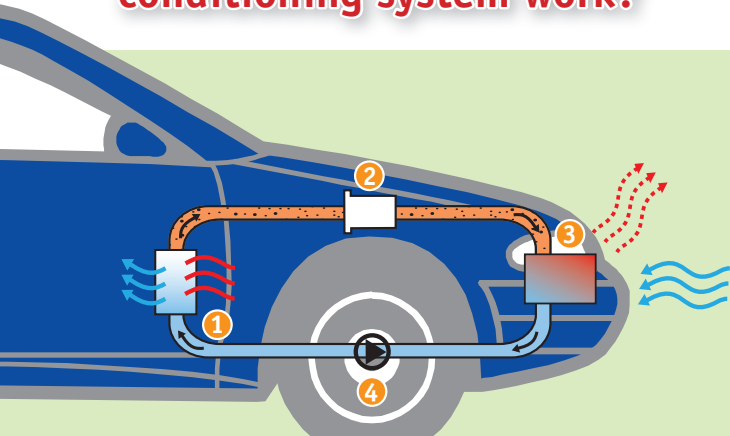
PRO KLIMA is a joint campaign of:



Deutsche Umwelthilfe



How does a car's air conditioning system work?



The air conditioning system in a car works like a refrigerator. The key technological element is the compressor. It circulates the refrigerant. With the aid of the refrigerant, the air from the vehicle interior is cooled.

What happens to the refrigerant in the cycle?

- The warm air from the interior is first fed to the **evaporator ①**. Here the cold, liquid refrigerant takes the heat from the air of the vehicle interior and becomes gaseous – the refrigerant evaporates. The cooler air is fed back into the car's interior.
- The **compressor ②** draws in the now gaseous and hot refrigerant. Here it is compressed and compacted like in an air pump. This makes it even hotter.
- A fan ensures that cold exterior air flows around the hot refrigerant in the **condenser ③**, cooling it and allowing it to discharge heat to the exterior air. After the refrigerant has passed through the condenser, it is cool and liquid again.
- Now the refrigerant flows through an **expansion valve ④** and cools down still further. Its pressure has dropped and it can once again absorb heat from the vehicle interior. The cold liquid refrigerant flows onwards to the evaporator and the cycle starts again.

Advantages and Disadvantages

An air conditioning system is a popular extra and is installed in almost all new cars. This means there are approximately 13 million new, air-conditioned vehicles in Europe every year.



Comfort

No one wants to miss out on cooling in a car when temperatures are high in the summer. Automatic air conditioning systems allow you to set the desired temperature directly in the vehicle.

Safety

A driver's concentration diminishes noticeably at high temperatures. Moreover, an air conditioning system also helps to clear misted-up windows in winter – an important condition for safety in traffic.



Health

If the air conditioning is set incorrectly or poorly maintained, it can result in colds and circulatory problems. Mostly, a pollen filter which can clean the atmospheric air from harmful substances is missing. Allergic persons have increased breathing difficulties.

Environment & Costs

The use of air conditioning increases fuel consumption and pollutant emissions. Depending on the vehicle model and type of air conditioning, this can be by 10 to 20 percent (up to two litres per 100 kilometres).

Car air conditioning systems are not completely closed systems like refrigerators. In just one year, the conditioning system loses 8 to 12 percent of the refrigerant through tubes and gasket rings at the compressor. That's how it is released into the atmosphere. The refrigerant with the name R134a is used in almost every car and is extremely harmful to the climate. It pollutes the atmosphere 1.430 times more than CO₂. Thus air conditioners contribute significantly to global warming.

Tips

Proper use of the air conditioning protects the environment, your own health and also saves fuel...



Ventilate the car well before each journey

Open all the doors before you start driving in the summer-time. This will lower the temperature of the heated car.



Estimate the length of your trip

For short trips, the air conditioning should be turned off – in order not to increase the fuel consumption.



After starting, keep all windows closed

Also necessary for manual systems: First set the fan to medium speed and turn on the recirculation mode. This prevents warm fresh air from outside being brought in when the system is switched on.



Do not set the temperature too low

The difference between the exterior and interior temperature should be as small as possible and not more than a maximum of six degrees. At an outside temperature of around 30 degrees, the interior temperature should only be cooled down to 24 degrees at most.



Set the fan correctly

It generally applies: The air flow should not directly aim at the body.



Climatecheck instead of cost shock

Experts recommend maintenance of air conditioning systems every two years - the reason is the enormous loss of refrigerant. If this cannot be compensated, the air conditioning system has to take a higher load and can be broken more easily. For maintenance, the refrigerant is drawn off the system and cleaned by external gases. After a function test, the system is refilled with new refrigerant according to the manufacturer's data. Not switching on the air conditioning system at all is not advisable as well: The refrigerant does not pass through the circulation anymore and thus it can't grease the components and moveable parts optimally.

Our air conditioning expert:



Axel Holler
www.klima-papst.de