High-efficiency cooling innovations

How Daikin is championing the use of inverter technology worldwide

As the world's leading provider of heating, cooling, ventilation, air purification and refrigeration (HVAC-R) technology, Daikin understands the importance to reduce the environmental impact of air conditioners to protect our planet.

That's why Daikin:

- Leads technology and product **development** of high-efficiency inverter air conditioners globally
- Invests heavily in **training** and developing HVAC-R installers, after-sales service engineers, employees and future talent on the **use** and **maintenance** of the latest high-efficiency cooling technologies and innovations
    - Partnering with governments and employment centres
- Expands **sales** and **service** networks continually around the world
- Provides the necessary support to countries worldwide for the introduction of **energy-saving regulations**
    - To facilitate the spread of high-efficiency inverter air conditioners, proper policies and regulations are necessary worldwide.
- Drives the adoption of inverter products in homes worldwide by:
    - Developing an inverter air conditioner at a relatively low price especially for the Asian cooling-only air conditioner market
- Leads the way in creating proper **evaluation and measurement standards** for the energy-efficiency performance of inverter products
    - Daikin worked alongside Japan's air conditioning industry to propose the adoption of seasonal energy efficiency ratio (SEER) as an indicator. This approach has been used in ISO standards since 2013.
    - In emerging countries, the use of SEER is starting to grow.
    - In Latin America, the Middle East and other areas, Daikin is working with governments and industry groups to introduce indicators and standards, and also energy labelling systems to support the creation of evaluation standards.

Key facts

High-efficiency inverter air conditioners reduce electric power consumption by more than 50% [1] compared to non-inverter air conditioners.

Today, air conditioners account for about 10% [2] of the world's total electricity demand.

Recent developments in emerging countries have led to an increasing energy demand for air conditioners by an average of 4% per year. [3]

[1] Calculated based on Daikin's demonstration testing
[2] Calculated by Daikin based on IEA/UNEP 'Cooling Emissions and Policy Synthesis Report'
[3] Sourced from the IEA Space Cooling Tracking report

Benefits of high-efficiency inverter technology

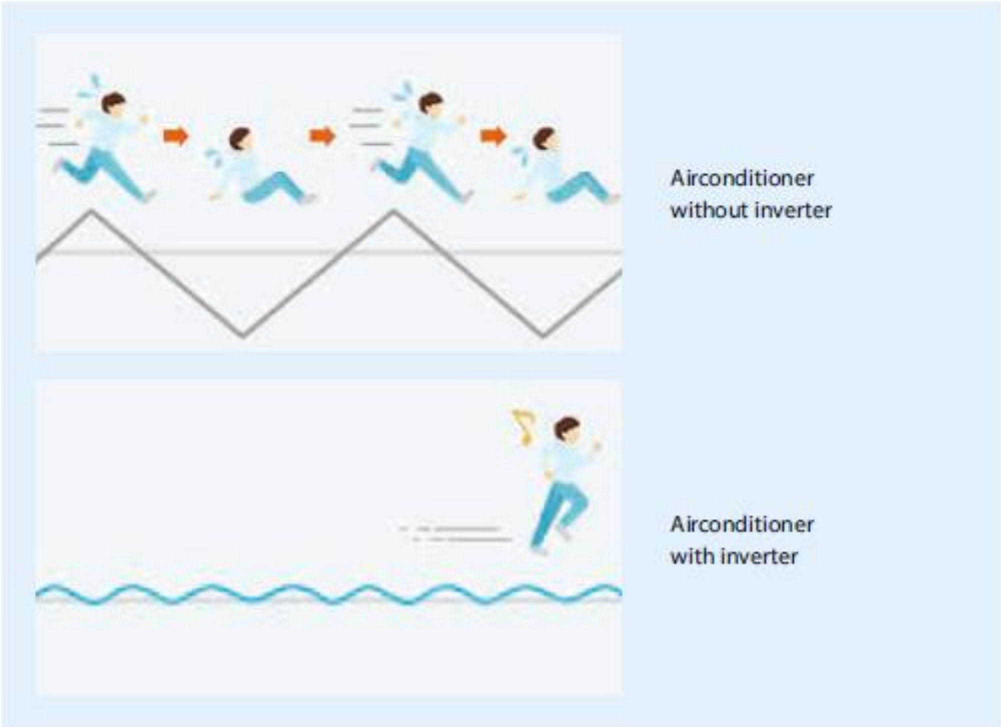
In a nutshell
Inverters are frequency conversion devices that control electrical voltage, current, and frequency. Inverters precisely control the compressor motor, the heart of an air conditioner.

In addition to having modified conventional motors and heat exchangers, inverter air conditioners use 50% less energy than non-inverter models.

In detail
When Daikin introduced inverter technology in 1984, this revolutionised energy efficiency in general. Inverter technology controls the rotation speed of the compressor motor on the outdoor unit. Instead of putting energy into starting and stopping, the inverter adjusts the speed of the motor so that it speeds up or slows down and runs more efficiently over time.

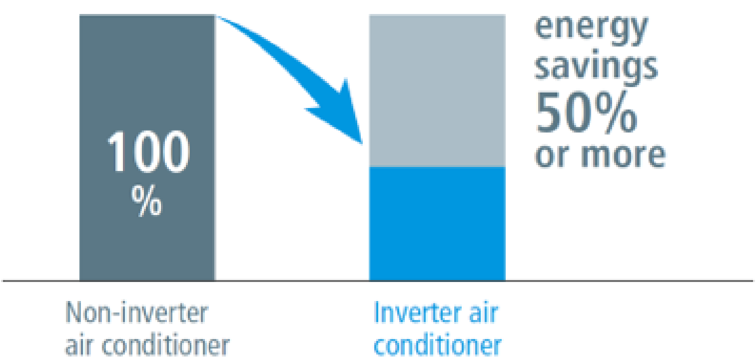
The energy-saving effect can be more than 50% compared to non-inverter units. The majority of residential units sold by Daikin worldwide are equipped with inverters, and the company actively promotes the use of inverter technology throughout the entire HVAC-R industry.

Images



In contrast to non-inverter units, which lose energy by starting and stopping the motor, inverter units save energy by constantly adapting the motor speed to a room's temperature.

Example comparison of energy consumption



*Calculated based on Daikin's demonstration testing.

Inverter products as percentage of all residential air conditioners worldwide

Market	Inverter percentage
Japan	100%
EU	100%
Australia	100%
China	97%
India	70%
Brazil	55%
Saudi Arabia	37%

Source: BSRIA World Air Conditioning Overview 2023

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