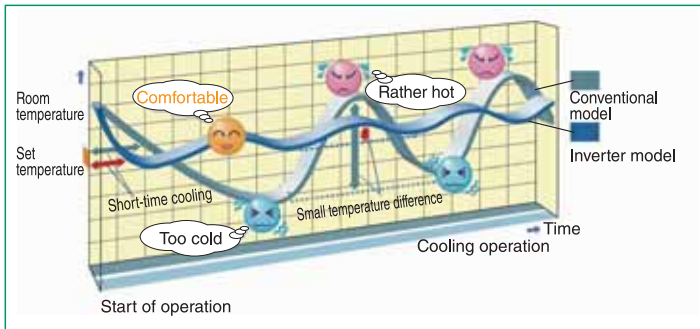


Considerable energy saving in air conditioning under inverter control

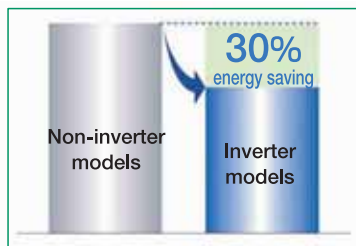
# Inverter-driven Air Conditioner

## Features

The inverter is a technology that is used to change the compressor rotation speeds of air conditioners flexibly, thus making it possible to operate the air conditioners according to the operation loads. Compared with conventional non-inverter air conditioner models, which turn on and off intermittently, inverter air conditioner models have little loss of power, thus contributing to energy saving. Furthermore, the fine temperature control of inverter air conditioner models is possible, which provides better comfort.



An air conditioner runs the motor at high speed until the room temperature becomes close to the preset target temperature and then starts saving energy by lowering the motor speed when the target temperature is nearly attained. The low-speed operation period of inverter air conditioner models is longer than that of non-inverter air conditioner models. That is the reason inverter models are much more effective in power saving than non-inverter models. The energy consumption of inverter models is 30% lower than that of non-inverter models according to a Daikin study (comparison data obtained from Daikin's 2.5 kW models).



## Overview (Technical principles, actions, etc.)

In order to make Daikin's inverter technology work more effectively, Daikin developed relevant energy-saving applications including high-efficiency motors, compressors of proprietary construction, and high-efficiency fans. As a result, the energy efficiency of the latest inverter model is approximately 50%\* higher than that of a conventional model (\*comparison between the latest FTXS25EVMA 2.5-kW model and the conventional FTXE25EVMA 2.5-kW model).

### Reluctance DC Motor

A reluctance DC motor equipped with a powerful neodymium magnet rotor renders high performance with low power consumption. The efficiency of the motor is considerably high in the medium- and low-speed operation zones, in particular, throughout year with improved efficiency in the high-speed operation zone compared with conventional motors, which enables a great reduction in power consumption.

Daikin provides energy-saving inverter air conditioners for a variety of applications, ranging from those for home use to store and building use.



Reluctance DC motor

## Introductory Track Record

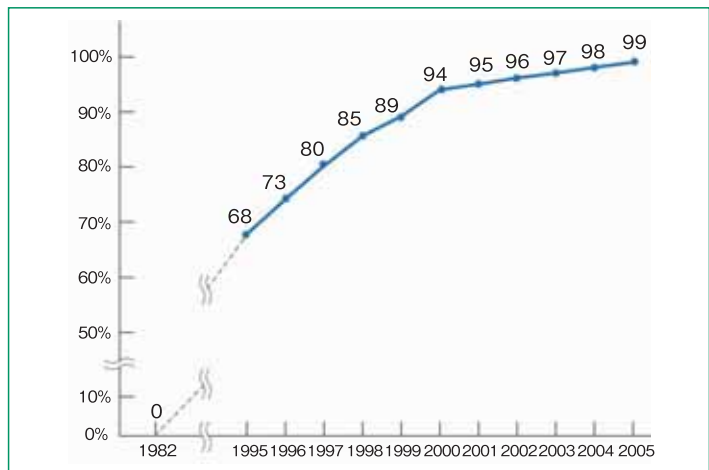
### In Japan

Early in the 1980's, the first inverter air conditioner was put on sale in Japan. As of 2005, 99% of home-use air conditioners are inverter models.

Besides, more than 80% of retail establishments seem to have switched their air conditioners to inverter models.

### Overseas

Inverter models are gaining popularity abroad. Their sales level, however, in Asian countries is still estimated to remain at several percent.



No. of home-use inverter air conditioners installed (Japan)

## Effects

- ① Inverter air conditioners make it possible to suppress energy consumption, thus resulting in a reduction of CO<sub>2</sub> emissions that power generation involves.
- ② If home-use air conditioners put on sale in China annually were all inverter models, they would cut CO<sub>2</sub> emissions of approximately seven million tons.

Calculation conditions:

- ① COP of a home-use air conditioner manufactured by a typical Chinese manufacturer: 2.9
- ② Power consumption per home-use air conditioner: 1,802 kWh/year
- ③ Energy saving percentage with inverter application: 30%
- ④ CO<sub>2</sub> emission basic unit from power generation in China: 0.723 kg/kWh
- ⑤ Number of home-use air conditioners annually shipped in China: 18.54 million

Applicable field  
Buildings (residences, retail stores, and offices)

Water

Energy saving/Energy recovery

ENERGY  
Energy storage/Energy creation

New energy

Waste disposal/  
Recycling/  
Resource saving

Air

Soil

Other