

EE Div Material Q & A

Oct 27th, 2021

(Qs Derived from Sep 30th dialogue)

Already sent by email separately on Oct 14th

Request:

We would like to compare the Brazilian IDRS (CSPF) with the Japanese efficiency limit set for the Top Runner, in order to check if the IDRS set for PROCEL Gold Seal is in balance with the Japanese Top Runner. It would also be interesting to compare this with the technological limit (considering that Daikin and Gree received the first price in the Global Cooling Prize).



Answer by Mr Koyama, DAIKIN:

The below CSPF(IDRS) value is reference purpose only.

Please note that temperature bin hours of cooling season referred to ISO16358-1 in this recalculation and; Japan is only two points testing with 35C full and half. We do not measure third point of 29C.

I added retailer's price that is also for your reference.

High Class in Japan market:

2.5kW CSPF 7.76

4.0kW CSPF 8.91 (for reference market price around 19.000 BRL) 5.0kW CSPF 7.61

Middle Class in Japan market:

2.5kW CSPF 6.74

4.0kW CSPF 5.92 (for reference market price around 5.000 BRL) 5.0kW CSPF 5.77

Questions (Professor Lamberts) : The answers made on Sep 30th is based on 2008 and 2010. We would like to know the latest status.



Answers (EE Div.) dated Sep 30th:

There is no uniform method in measuring new technologies. Therefore we'd like to share some examples with you for your understanding.

The following is the concept when the current standard values for air conditioners are set. (2010)

As for the target fiscal year, a period of five years has been set, as it is necessary to take into consideration the fact that significant improvements in consumption efficiency are generally made at the time of model changes, and that the development of new products for air conditioners usually takes about two to three years, so that at least one or two opportunities for model changes will be made available until the target fiscal year.

Furthermore, the target standard values at the time of enactment in 2008 were set based on the following approaches according to the said classifications.

- 1) For direct-blow wall-hung models, the following improvements are expected from the past Top Runner value:
 - Cooling capacity of 4.0kW and below: 3% and 4% improvement in efficiency for Standard Size and Free Size respectively.
 - Cooling capacity of over 4.0kW: 2% improvement in efficiency
(This is because the period required to achieve the standard value is relatively short compared to the period of below 4.0kW.)
- 2) For separate models other than the direct-blow wall-hung models, 3% improvement in efficiency was expected from the past Top Runner value.
- 3) For multi-type models, we set the Top Runner value with basically no expectation of technological improvement due to the downward trend in the number of units shipped and the slow model change cycle.

The examples shown in the above were determined based on various conditions such as dissemination status, industry hearings, and allowance of efficiency improvements in each case and at each time.

There is no uniform method in evaluating technical improvements to set the Top Runner value, and we appreciate your understanding of this point.

Answers (EE Div.) :

ACs for residential use

1) Direct-blow wall-hung models

The target standard values of 2010 are the latest.

2) Models other than the above 1)

The target standard values of 2012 are the latest.

ACs for non-residential use

The target standard values of 2015 are the latest.



Please see more info in the following pages.

The Latest Standard Years for Air Conditioners

1) 2010: Residential Use

Types	Exception	Cooling Capacity	Indoor equipment size	Category	APF
Direct-blow wall-hang	multi-type with automatic adjustable indoor equipment	below 3.2kW	Standard sizes	A	5.8
			Free sizes	B	6.6
		3.2-4.0kW	Standard sizes	C	4.9
			Free sizes	D	6.0
		4.0-5.0kW	All sizes	E	5.5
		5.0-6.3kW	All sizes	F	5.0
6.3-28kW	All sizes	G	4.5		

2) 2012: Residential Use

Types	Exception	Cooling Capacity	Indoor equipment size	Category	APF
Direct-blow	wall-hang multi-type with automatic adjustable indoor equipment	below 3.2kW	All sizes	H	5.2
		3.2-4.0kW	All sizes	I	4.8
		4.0-28.0kW	All sizes	J	4.3
Multi-type with automatic adjustable indoor equipment		below 4.0kW	All sizes	K	5.4
		4.0-7.1kW	All sizes	L	5.4
		7.1-28.0kW	All sizes	M	5.4

Actual Achievements of Top Runner Standard Values

Equipment		Improvement Ratio		Comparison		Period for Improvement	Standard Year
		Actual	Projected	Actual vs Projected			
Passenger Vehicles		48.8%	22.8%	214.0%		1995-2010	2010
Freight Vehicles		13.2%	13.2%	100.0%		1995-2010	2010
Air Conditioners (residential use)	direct-blow wall-hang below 4kw	16.3%	22.4%	72.8%	↓	2005-2010	2010
	direct-blow wall-hang above 4kw	15.6%	17.8%	87.6%	↓	2005-2010	2010
	other models	15.9%	13.6%	116.9%		2001-2012	2012
Electric Refrigerators (residential use)		43.0%	21.0%	204.8%		2005-2010	2010
Electric Freezers (residential use)		24.9%	12.7%	196.1%		2005-2010	2010
Microwave Ovens		10.5%	8.5%	123.5%		2004-2008	2008
Rice Cookers		16.7%	11.1%	150.5%		2003-2008	2008
Lightings (fluorescent)	fluorescent lighting equipment	14.5%	7.7%	188.3%		2006-2012	2012
	fluorescent light bulbs	6.6%	3.2%	206.3%		2006-2012	2012
Electric Toilet Seats		18.8%	9.7%	193.8%		2006-2012	2012
Television Sets (LC,PDP)		60.6%	37.0%	163.8%		2008-2012	2012
Videotape Recorders		73.6%	58.7%	125.4%		1997-2003	2003
Computers		85.0%	77.9%	109.1%		2007-2011	2011
Magnetic Disk Units		75.9%	75.8%	100.1%		2007-2011	2011
Copying Machines		72.5%	30.9%	234.6%		1997-2006	2006

As per the above chart, the latest standard years for Air Conditioners for residential use are either 2010 or 2012.

New technologies contributing to energy efficiency improvement of Air Conditioners appear to have reached a certain limit lately.

Although the deliberative Committee continues to examine the energy efficiency status of Air Conditioners, new standard years have not been set after 2010 and 2012.