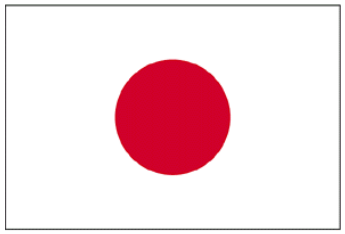
Japan – Brazil
Cooperation on Energy Efficiency and Conservation



Main goals for the cooperation:
Improvement in MEPS and Procel seal methodology

PROCEL PROGRAMA NACIONAL DE CONSERVAÇÃO DE ENERGIA ELÉTRICA

Eletrobras

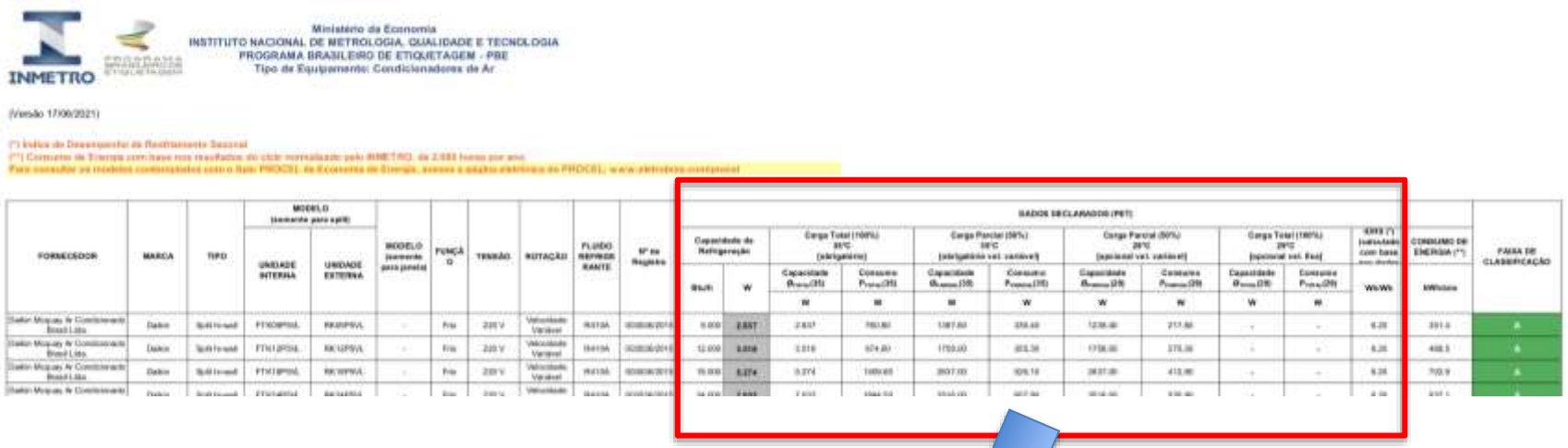
MINISTÉRIO DE MINAS E ENERGIA

PÁTRIA AMADA BRASIL GOVERNO FEDERAL

Inmetro Table-

Performance index for air conditioners

http://www.inmetro.gov.br/consumidor/pbe/condicionadores-de-ar-indices-novos-idrs.pdf


Ministério da Economia
INSTITUTO NACIONAL DE METROLOGIA, QUALIDADE E TECNOLOGIA
PROGRAMA BRASILEIRO DE ETIQUETAGEM - PBE
Tipo de Equipamento: Condicionadores de Ar

INMETRO

(Versão 17/09/2021)

DADOS DECLARADOS (PET)

Capacidade de Refrigeração		Carga Total (100%) 35°C [obrigatório]		Carga Parcial (50%) 35°C [obrigatório vel. variável]		Carga Parcial (50%) 29°C [opcional vel. variável]		Carga Total (100%) 29°C [opcional vel. fixa]		IDRS (*) (calculado com base nos dados	FAIXA DE CLASSIFICAÇÃO
Btu/h	W	Capacidade $Ø_{TOTAL}(35)$	Consumo $P_{TOTAL}(35)$	Capacidade $Ø_{PARCIAL}(35)$	Consumo $P_{PARCIAL}(35)$	Capacidade $Ø_{PARCIAL}(29)$	Consumo $P_{PARCIAL}(29)$	Capacidade $Ø_{TOTAL}(29)$	Consumo $P_{TOTAL}(29)$	Wh/Wh	
		W	W	W	W	W	W	W	W		
9.000	2.637	2.637	760,80	1397,60	336,40	1239,40	217,80	-	-	6,20	A
12.000	3.516	3.516	974,60	1758,00	355,30	1758,00	275,30	-	-	6,20	A
18.000	5.274	5.274	1409,60	2637,00	526,10	2637,00	412,90	-	-	6,20	A
24.000	7.032	7.032	1844,60	3516,00	697,80	3516,00	520,90	-	-	6,20	A

2 measuring point are compulsory and the third is optional

Criteria for Procel Seal and Gold Seal

- Around 44 performance tests results, specified by the ISO 16358-1 standard, were analyzed;
- Technical information on air conditioner models with the Procel Seal was analyzed;
- Technical information on models sold in the domestic and international markets was analyzed;
- In order to obtain the Procel Seal, the air conditioner model should have greater efficiency than the level “A” of the PBE;
- It was defined that Procel Gold Seal level should be greater than Procel Seal’s;
- The Procel Gold Seal must have different criteria for refrigerants than Procel Seal;
- 3 measuring point are compulsory for Procel Seal and Procel Gold Seal.

Using this measuring points for estimating the energy consumption

http://pbeedifica.com.br/cspf/

- With this interface, based on ISO 16358 we can calculate the energy consumption for different times of use (day or night) and cities with the weather file used for EnergyPlus simulations.
- How do you estimate the energy consumption for Splits in Japan? Average for all climates? 24 hours of use?

Questions

- Is the next fluid for air conditioners an HC?
- Is the technology research that Japanese companies carry out only for products sold in Japan?
- After the inverter compressor technology, is Japan studying other types of more efficient technology?
- Can other types of materials for the condenser and evaporator improve the efficiency of the air conditioner?
- How does the Top Runner Program set the amount of time required to achieve a target? It is known that this time is necessary to accommodate product development periods, investments and future technical developments. What are the studies necessary to obtain information on technical development to set the target fiscal year? Does ECCJ sponsor periodic market surveys? Are economic studies being analized in this process? What is the role played by industry, universities and society in this process?

We would like to:

- 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).
  - Calculations/simulations
- To understand how Japanese government estimates the technological advances that the market will achieve in order to define the efficiency target of the Top Runner Program. And also, how Japan estimates the technological limit of the equipment category.
  - Technical report
  - Webinar
  - Bilateral meeting
- To know if there is a change for a minimum standard when the equipment category under the Top Runner gets close to the technological limit
  - Technical report
  - Webinar
  - Bilateral meeting