

ascaso
BARCELONA
1962

ENERGY CONSUMPTION TEST



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1 Previous considerations

The objective of this test is to determine the energy consumption (always expressed in kWh) of a commercial coffee machine considering the standard DIN 18873-2 (Methods for measuring the energy consumption of commercial kitchen appliances – Part 2: Commercial coffee machines).

The result gives an idea about the energy efficiency of the machine in terms of loss of energy per day, considering the main functions of the coffee machines regardless the final use of it (cups per day).

1.1 Equipment identification

The manufacturer must be registered (in case of equipment not manufactured by Ascaso Factory), model, serial number and number of coffee groups (total and tested) of the equipment under test.

The specific information of the test must also be recorded, such as the date of completion, the set point temperature of the group and the pre-heater (if applicable), pressure of boiler (if applicable), maximum power of the machine and type of connection, and other power restrictions, like power limit, if applicable.

2 Preparation of the test

Before starting the test the machine must be disconnected and cooled down for a minimum period of time of 12h, so we make sure that when starting the measurement process, initial conditions are correct, which means that water inside the boiler(s) is at environment temperature, and that brewing units are not heated up.

The temperature of the brewing units and boilers must be adjusted (through direct adjustment or through pressure control) to the working parameters we want for the test before the cooling period.

It is important that machine is completely closed, including all covers, side panels and lids, before starting the test. This will allow us to make sure working conditions are the most similar to the real ones.

3 Test process

3.1 Test pattern

Test pattern is based on Din 18873-2 (Methods for measuring the energy consumption of commercial kitchen appliances – Part 2: Commercial coffee machines) and considers a standard usage pattern of the appliance.

Measuring steps are as follows:

- a. **Heating up:** This is the energy the machine needs to complete the heating up process. In a single boiler machine, it is the energy used to complete the heating up process of the boiler. In a multi boiler/group machine, it is the energy used to complete the heating up process of the coffee groups.

The time the heating up process takes on any case should be as specified in the instruction manual of the machine.

- b. **Ready for preparation:** This is the energy the machine needs just to be ready to make coffee during a concrete period of time (12h if there is no stand-by mode available, and 11h if there is). The final value is obtained from the real measurement of the energy used during 6h and then calculated to 11/12h accordingly.

Note that stand-by mode must be deactivated during the test. Otherwise, the energy measurement is considering only the time before the machine gets into stand-by mode, and then calculated to 11h.

- c. **Optional energy saving modes** considering the energy used by the machine to come back to working mode after being in stand-by mode. This value is measured for 1h (including reheating), completing the missing hour from 11 to 12 of the ready for preparation measurement.
- d. **Flushing procedures** considering daily output of 70 cups.
- e. **Cleaning process** according to the instruction manual specification for daily cleaning process. If there is no specification, it will proceed as follows: 3 seconds steam at each tube and flushing short cup each group without filter holder.
- f. **Switching off** process energy consumption.
- g. **Off mode** energy consumption, if any.

3.2 Interpretation of results

The sum of the measurements of points from a) to g) give us the value of the loss energy per day (kWh) of the coffee machine under test. The less is this value, the more is the energy efficiency of the machine.

Results are as follows:

	BARISTA PRO 2GR 2P	BARISTA T PLUS 2GR	BIG DREAM SPECIALTY 2GR
POWER	3.500 W	5.500 W	5.100 W
COFFEE GROUP	E-61 HX	TB	1.3 L SS SATURATED
STEAM BOILER	13 L SS BOILER	8.5 L SS BOILER	8.5 L SS BOILER

HEATING UP	1,45 kWh	0,13 kWh	0,19 kWh
READY FOR PREPARATION	7,55 kWh	3,85 kWh	2,67 kWh
OPTIONAL ENERGY SAVING MODES	0,00 kWh	0,30 kWh	0,91 kWh
FLUSHING	0,45 kWh	0,32 kWh	1,03 kWh
CLEANING	0,01 kWh	0,01 kWh	0,05 kWh
SWITCHING OFF	0,00 kWh	0,00 kWh	0,00 kWh
OFF MODE	0,00 kWh	0,10 kWh	0,10 kWh

DAILY REQUEST	9,46 kWh	4,71 kWh	4,95 kWh
ANNUAL REQUEST	2838,00 kWh	1413,00 kWh	1485,00 kWh

BARISTA T GR	-50,21%	-	-4,85%
BIG DREAM T 2GR	-47,67%	5,10%	-

Energy consumption comparison between models considering DIN 18873-2.

ANNUAL ENERGY COST	425,70 €	211,95 €	222,75 €
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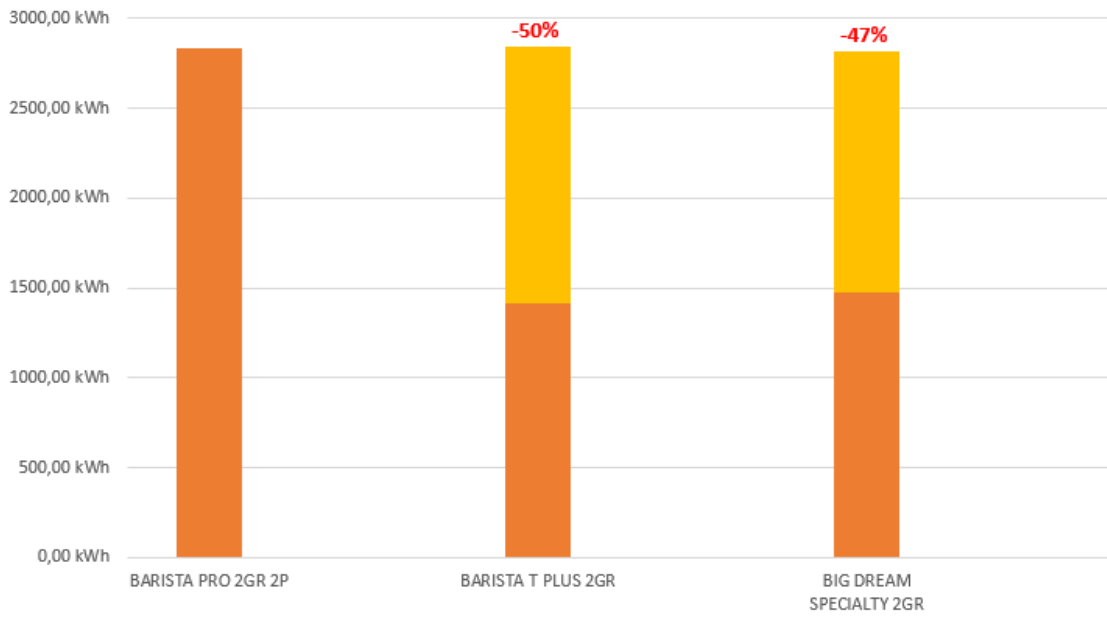
Energy consumption comparison between models considering DIN 18873-2. EA area kWh cost average for non-household users 0,15€

KWh cost depending on country available at

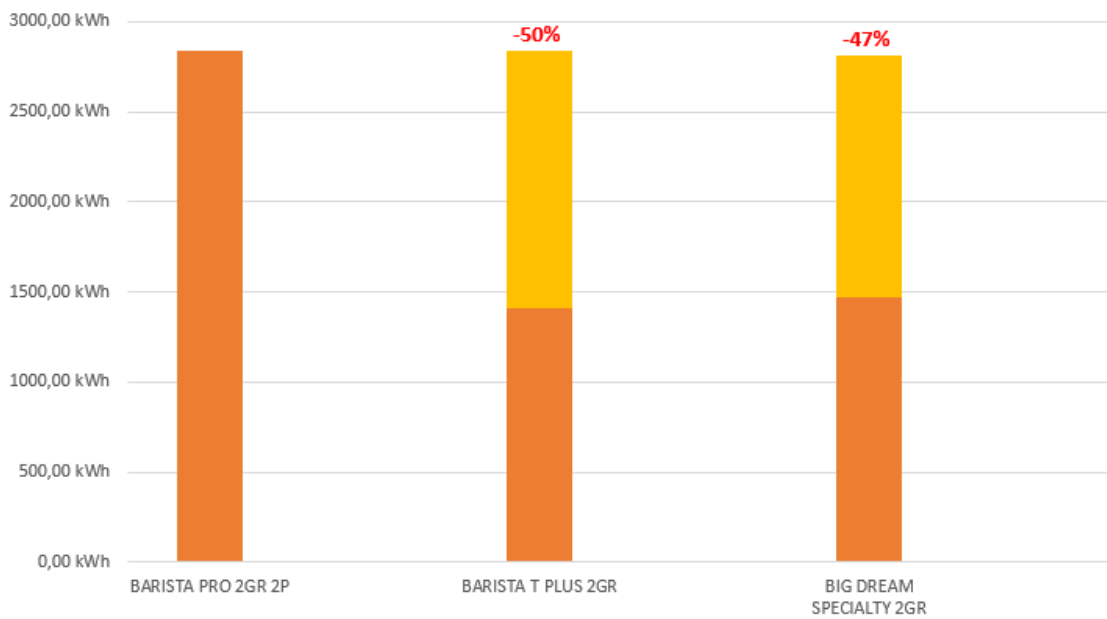
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electricity_price_statistics

https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a

ANNUAL ENERGY REQUEST



ANNUAL ENERGY COST



4 Economic valuation

Considering the most efficient of the 3 machines, which is Barista T, energy efficiency means energy savings of 4.75 kWh/day compared to a traditional machine based on HX system.

Considering 300 days of work per year, and a kWh cost (considering non-household users) of 0.15€/kWh for the EA area, we have an economic savings of 213,75€/year.

5 Curious data

We can translate the energy request of those models into CO₂ generation due to the energy being used to. Considering each 1.000 kWh being used generate 458 kg of CO₂, or which is equivalent, to cut 19 trees.

Translating data to those 2 parameters shows results as follows:

	BARISTA PRO 2GR 2P	BARISTA T PLUS 2GR	BIG DREAM SPECIALTY 2GR
ANNUAL ENERGY REQUEST	2838,00 kWh	1413,00 kWh	1485,00 kWh
GENERATION OF CO₂	1299,80 kg	647,15 kg	680,13 kg
CUTTED TREES	53,92 Trees	26,85 Trees	28,22 Trees

Also considering energy request differences between models and base HX one, can also try to translate these differences into something common for all of us, for example the energy request of a fridge. Considering the annual energy request of a fridge is around 175 kWh, the differences between the BT and BD S models and the HX one would allow user to completely cover the energy request of this appliance, as follows:

	BARISTA PRO 2GR 2P	BARISTA T PLUS 2GR	BIG DREAM SPECIALTY 2GR
ENERGY REQUEST DIF.	2838,00 kWh	1425,00 kWh	1353,00 kWh
FREE FRIDGES PER YEAR	-	8,14	7,73