

Microprocessor ovens

Written by PaoloGabriele

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Laughing and joking, one can see some smart electrical appliances i.e. the one that can communicate in a certain meaning of the term: boiler starting when they receive an SMS, refrigerators making the shopping list, ovens giving you recipes searching the Internet to find some with the food in the refrigerator, after the refrigerator itself talked to the oven to tell what food there is and asked an opinion to the boiler about the ideal temperature... They talk together! What a thing.

But what they say during all the day? Are they like some old man sitted on the bench talking in clichés or commonplaces?

"Eh, we don't have the server we had once upon a time!"...

"There are no more half seasons!" (a typical Italian cliché) the boiler says...

"We don't find more genuine products we had once upon a time!" the refrigerator to the oven...

"Hey, if you could see what prices in these little shops! It's sure they go under..." again the refrigerator shopping...

"And the telephone fees? What a theft for a SMS!" the boiler goes on...

"But it's a Government negligence, not to do nothing to encourage internal market and save the little shopkeepers!" (uh! also electrical appliances know it!).

I'm out of theme: I didn't wanted to talk about that, just its opposite. We talk about an **oven with integrated computer**

, but it seems to me that in this last period there there are many

computer with an integrated oven

! I better explain myself (said the parachute). The

computer's prestational increment is due to its components one

. Among the most relevant causes of this, there is usually an increment of the operational speed and a greater number of the components a device has (generally transistors on silicon chips).

Even if they work with

low voltage

, this components use quite big currents (around and over the AMPERE), due both to the great total transistors number and to the hig number of transistor in cascade: i.e. connected one behind one. In this case to correctly drive the last one in the chain, it is necessary to impress a big current to the first to compensate the energy losses along the path).

From the moment that **Mr. Ohm** (una **Volt**, tanto tempo **Farad**...)¹ saw that **a current through a matter generates heat**

, more is the current, more the heat generated. All this current goes through a chip (a silicon slice of less than a millimeter thick with some million dozens of transistor like cherries on a cake) of extremely small dimensions: a processor's

pècage

(package, as it sounds in Italian) is about 2 x 2 inches, while the processor itself inside is moreover little. So we have to dissipate big power on very small matters.

Other devices too, "extraneous" to big currents passing in their chips participate, in other ways, to **grow the heat** into the computer's **chéis** (**case**, as sounds in Italian): the fastest **àrdisc** (hard discs, as sounds in Italian) work with an high angular speed (10.000 rolls per minute and above)... and

heat up like a stove

.

This is the point: **so much heat** is generated that many **new components** need to **be cooled** to evitate

critical temperature

leading to

matters melting

and

devices breakdown

. This process can be done passively, with heatsinks or actively with fan coil blowing air on some heatsinks (again). Technologists have gone wild and now we have many

thermo-technicians designing CPU's cooling

! It's a joke, but with some truth: heatpipes, heatsinks, vapour chambers, liquid cooling (put **paraflù**

²

in your PC), big fancoils, great whirlpools, the Great Mazinger...

The fact is this: the big **heat** rate to cool down leads to **bigger heatsinks**, with nowadays over 2.2 lbs of weight, but a

innovative design

! I would like to see... how designers spend their time otherwise? 2.2 lbs of winged and piped copper but with some spatial and new shapes... and over it some charming-look fancoil...

FAN COIL

³

, or

FAN COOL

⁴

, I say! (... to make some subtle irony!). What irritates me is - beyond the heatsink's technical design - the very expensive cost of these solution, a bag of euro, justified only on the look. In the most cases (in all

sense

, ih ih ih...) they are closed into the computer's chassis and so you can't see them... so, how many justifications you have to find for the look of a thing that you don't see! I search some of them in the Internet... you can find of all kind and for all sakes! I'll put some of them in another article (titled "Dissipa

tori

e dissipa

mucche

"

⁵

).

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The technological contraddiction is the coupling of those opposites: integrated smaller and performing devices with steam turbines heatsinks (that are enormous)!

The bigger current request for the good working of the components forming a computer has as a consequence the bigger current the feeder must give, which reached power rates comparable to some real ovens. We are beyond 1.000 W (with negative consequences in the electrical bill).

Hence: we have the power size. We have (artificial) intelligence. We have heat... oh! we all have a little smart oven (like some kinds sold in Italy to make pizza at home not long ago).

My dears, let's organize yourselves and use this wasted energy!

You can **use the PC to make popcorn, heat up the breakfast, little pizzas...** Or connect the PC's liquid cooling system to the house heating one and save some money and reduce global warming... Or add some Stirling engine and convert the heat generated by electrical power again in electrical energy (but always less than the starting one, as the second thermodynamics principle teach us).

"Well..." one can say, "...you joked, you described the problem, you criticized those energy wastes. But what you suggest as solutions? What you can do? What we can do?"

From a technological point of view, nothing. Live and wait the upgrade of those devices, that becoming smaller and smaller will have less power consumption. The ecological aspect of processor design is nowadays well considered (maybe it's a trend, but I don't think so).

From a practical point of view, one shouldn't buy devices consuming too many energy, especially if the performance increment isn't comparable with the price and the consumption ones.

From a sustainable point of view, one should not leave these appliance in stand by or powered

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when not necessary.

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1. Una volta, tanto tempo fa = Once upon a time, long long time ago. But volta (time) is similar to Volt (the voltage unit) and fa (ago) is similar to Farad (the capacity measure)... An Italian words game.

2. Paraflù: famous Italian refrigeration fluid for car engine

3. Fan Coil: in Italian sounds like F**K OFF, an invitation to go to... that place.

4. Fan Cool: sounds further like F**K OFF and sends always to the same place.

5. Dissipatori e dissipamucche: another Italian words game. Dissipatore is the heatsink. Heatsinks are dissipator

i

, that sounds like "bulls heatsink" (contains the word "tori" = bulls). And so dissipamucche is "cows heatsink" ("mucche" = cows). The article title sounds like "bulls heatsink and cows heatsink".