

Watts Going on here ? – (Use HTML settings to read)

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BlankWatts = Volts x Amps

Watts is a unit of power having the dimensions (energy per unit time):

ML^2 / T^2 divided by $T = ML^2 / T^3$

Note: A kilowatt-hour is a 1000 watts times one hour = an energy unit.

Volt is a unit of force ($F=ma$):

ML / T^2

So that Amps have the dimensions:

L / T

Now, this is a velocity? What is going on here? This begs some explanation.

I was unable to find an explanation on the web after two hours of searching.

There are too many documents on the web with the same "overview" type information. So I did what I usually do & figured it out myself.

The true "dimension" of amperage is, of course, $1 / T$, i.e. "x" number of electrons pass through a wire in so many seconds. The extra L we need to make power (ML^2T^{-3}) is the length of the wire which is left out of the calculation because it is held "constant" for the purpose of teaching. So if you screw in a 100 watt bulb the little filament in the bulb is a constant as is the length of your household wiring. Now if you increase the length of the filament (- + -) you increase the wattage of the bulb (like screwing in another 100 watter) ... but ... if you put two filaments together (=) you get less resistance instead of more wattage. And less resistance means lower wattage.

The complete equation for watts is:

Watts = Volts x Amps x k (one unit length of wire)

If you have a current running in some wire, it has some length ... get it?

.... but since this is true in any case whatsoever, why put it in the

equation? So, if I double this "any" length, does the power consumption go

up to double? Yes, even if there is no light bulb on it ... but the amps and

volts remain the same? Yes, the voltage will remain the same ... if you're

talking about the power company. They will ramp up their power output to

match demand. If too many people put too much "extra lengths" in the circuit

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.... and they can't ramp up ... you get a "brown out" which is, lowered voltage.

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