Resistance, Power, and Voltage Examples

Analog Electronics, 2026-01-19

Power and Resistance

$$1\,\mathrm{W} = \frac{1\,\mathrm{J}}{1\,\mathrm{s}}$$

$$P = 1\,\mathrm{kW}$$

$$1\,\Omega = \frac{1\,\mathrm{V}}{1\,\mathrm{A}}$$

$$\mathscr{V} = IR$$

How Much Power Does a Resistor Consume?

A blow drier makes heat by pushing current through a resistor. Let's figure out what more precisely what must be inside it. Of course there is a fan to push the heat out and onto your hair.

For simplicity, let's assume that the wall socket that the blow drier is plugged into delivers 100 V. It actually delivers "AC voltage" or "AC power" and we will get into alternating current later. Assuming the wall socket just supplies 100 V regardless of what you plug into it is good enough for the moment.

We will do this specific example and the general case in class together, not in the handout, so again, whoever is bringing Lance up to speed has some work to do. By the end we will have a new formula!

Conclusion