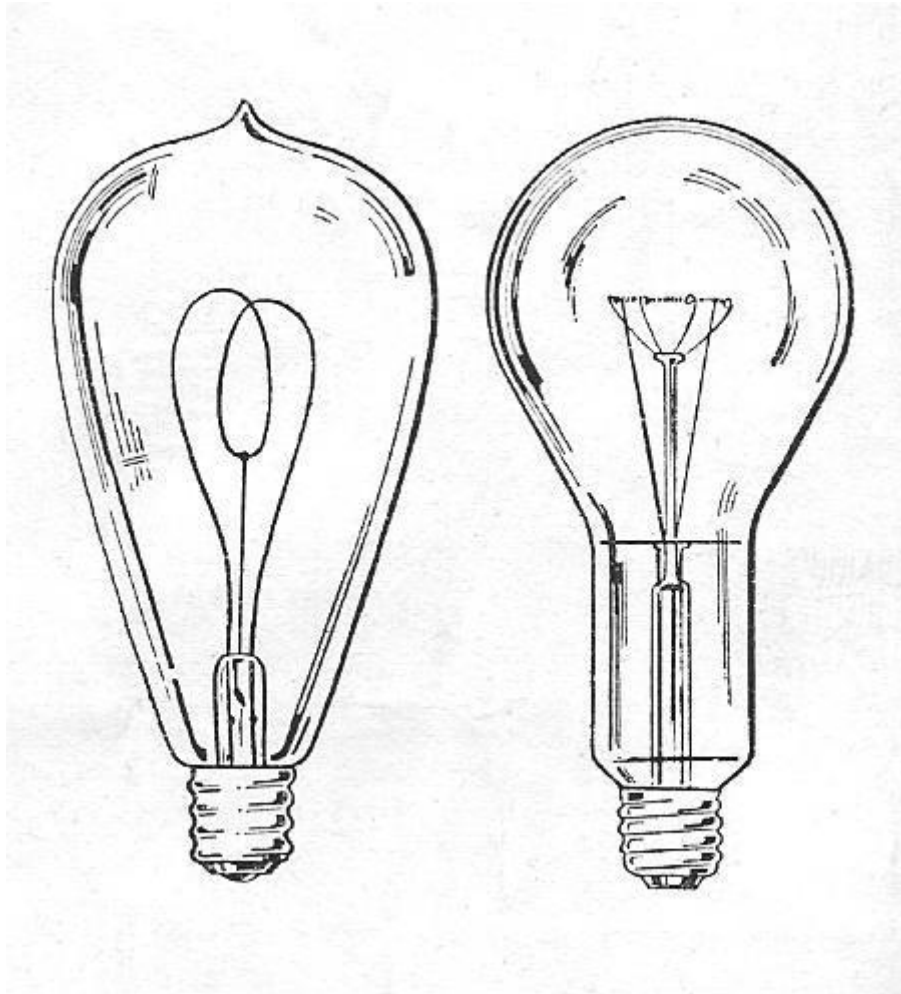


Light Bulb Efficiency Comparison



A 120 watt carbon filament lamp and a 100 watt gas-filled tungsten filament lamp are about the same in size. As you have probably noticed, the 100 watt tungsten lamp not only emits more light, but it gets hotter. It appears to give out more heat, although using less power. Can you explain this?

A lamp converts part of the electric energy that it receives directly into heat, a part into light, and the rest into heat-waves that do not appear as heat until observed by some body that they strike. The carbon filament lamp produces less light than the gas-filled tungsten lamp but it radiates much less energy in the form of heat-waves that pass readily through its vacuum and are barely absorbed by the glass of the bulb. The gas-filled tungsten lamp emits a considerable amount of light and less radiant heat but its bulb gets hot by convection or circulation of the gas surrounding the filament. The total amount of light and heat for the gas-filled lamp tungsten lamp is actually less than for the carbon lamp.