Both types run on power from your electric utility, from 110 to 600 volts AC. Both use the frequency of the incoming power to vibrate the electrode to make and break the arc; an AC machine at 50 or 60 times per second; a DC machine at 120 times per second. The difference is in how AC and DC machines provide “burning” power to the arc.

An AC machine’s power supply steps the voltage down to form the arc. The Heat Selector adjusts the voltage to the electrode.

The power supply in a DC machine steps down and rectifies the incoming power to provide full-wave DC power to the arc. The electrode is connected to the negative side of the power supply; the work piece to the positive side. The Cutting Power selector adjusts the voltage to the electrode.

DC power can provide higher momentary arc current levels that can sustain a larger arc, but also causes a different quality of material erosion. The result is the capability to use larger electrodes like square or hex-shaped carbon to burn faster or make larger holes.

But power comes at a price. The components in a DC machine cost more than those of a similar-size AC machine, and weigh more.

Which machine is best for you depends on what you need to accomplish on a daily basis.