



Power Sources

- When choosing between AC or DC power, and between constant current (CC) or constant voltage (CV), we must consider which welding process is appropriate for the task
 - The Lincoln welders we use in the shop have numerous different settings with digital readouts and options to provide great versatility
 - Can be used either AC or DC, as well as either CC or CV

- Welding power sources are rated according to their current (amperage), output, voltage and duty cycle
 - Current output means the maximum current a machine can generate
 - Duty cycle is the percentage of a ten-minute period that a machine can operate at a given output setting before it must stop to cool down
 - Example: a machine with a maximum current of 210 amps with a 40% duty cycle at 125 amps means it can weld for 4 minutes at 125 amps and then must rest for 6 minutes. See below

PRODUCT DESCRIPTION

POWER MIG® 210 MP					
Assembled in Mexico THE LINCOLN ELECTRIC CO. CLEVELAND, OHIO U.S.A					
			IEC 60974-1 IEC 60974-5		
20 A / 10.8 V to 175 A / 17 V					
	U ₁ = 120V		U ₁ = 230V		
	X	40%	100%	30%	100%
U ₀	I ₂	125 A	90 A	175 A	100 A
56V	U ₂	15V	13.6V	17V	14V

Power Conversion

- Typical industrial outlets provide between 120-480 volts
- Most arc welding processes only require 15-80 volts
- To operate a welding machine (power source), the high-voltage, low-current power coming into the machine must be converted to low voltage, high voltage power. The machine has a transformer to reduce to high-voltage incoming AC power to low-voltage
 - The electricity then flows to a reactor that raises the current to high-current
 - When DC power is required, the current passes through a rectifier that converts AC to DC (rectifiers cause current to flow in only one direction)
 - Rectifiers also allow the welder to adjust the polarity (direction) of the current
- Inverter power sources are a newer option for converting electrical power
 - Relies on newer technology to perform same functions as traditional power sources, and are much lighter and more energy efficient than transformers