



Considerations for Welder Generator Selection

BY JOHN LEISNER

Using a welder that also provides air and AC power can cut both clutter and costs.

HELD TOGETHER BY THOUSANDS of pounds of weld metal, many of today's structural steel buildings are built under the guidelines of codes established by the American Welding Society, specifically AWS D1.1-D1.9. These codes dictate specific welding processes and techniques for everything from moment frames to floor deck and handrails, but there are variables to take into consideration when selecting a welder generator for structural applications.

Process Versatility is Key

The two most common processes in structural welding are stick and flux cored. Both are self-shielded and offer less chance of contamination in outdoor applications compared to a solid wire with a shielding gas because wind blows away the shielding gas. Stick has the simplest equipment, the lowest cost, and is relatively easy to use. Flux cored is advantageous in high-volume applications as it is more efficient and has higher deposition rates, although it requires a wire feeder. The wire feeder requires a constant current (CC) or constant voltage (CV) welder. A CV welder is required with wires designed to meet specific codes/requirements, such as AWS D1.8. Such wires are not designed to run with a CC welder.

Most contractors choose a machine that performs stick, flux cored, MIG, TIG, carbon arc gouging, and are even compatible with spool guns for MIG welding aluminum (for use on handrails and other internal/finishing components). Machines ranging from 250-300 amps provide more than enough power to meet the demands of most structural electrode diameters and codes. The higher amperage machines are preferred where high production capacity with heavy wire is desirable.

Power Generation and Air Capabilities

Engine drives offer power generation capabilities ranging from 5,000 to 20,000 watts. Choosing the right one depends on the tools you run and if you need to simultaneously weld and run other tools. Knowing the wattage needed to run tools such as grinders (1,800 watts), cut-off saws (up to 2,400 watts), air compressors (8,200 starting watts) and plasma cutters (10,000 to 12,000 watts) will help you pick the right unit.

Needing to move just one unit from job to job can result in labor and fuel savings—a combination unit doesn't take any more fuel to run than just a stand-alone welder. But having fewer pieces of equipment on the job site also can reduce clutter and decrease the risk of theft by simplifying how much needs to be secured overnight.

Another factor to consider when choosing a welder generator is whether it has enough generator power to sustain both

a welding arc and power tools. Some models currently feature independent welding and generator power, while others offer enough generator power so that interference is not a concern. Interference with the welding arc leads to reduced penetration, an unacceptable compromise in structural steel welding.

Manufacturers now build air compressors into welder generators to create a powerful three-in-one tool especially useful to structural steel welders. Contractors can now weld, and run power and air tools simultaneously off one central unit.

For example, one person can power a shear wrench from the welder generator while another is using a pneumatic button punch and a third is welding, all at the same time. All that is required is a centrally located unit and sufficient power cords, air hose and welding lead. And again, because there is no longer a need for a compressor and a welder, contractors save the cost of transporting two machines and the fuel to run them.

Fuel

What type of fuel do you need? The most popular engine drives are available in gasoline, diesel and even LP. Gas engines offer a lower product cost, reduced weight and a smaller size while diesel engines use 20% to 35% less fuel, have longer engine life and are required on some sites. New electronic fuel-injected (EFI) gas welder generators further reduce fuel use by as much as 27%—a major benefit as many contractors are prohibited from storing fuel on site. Where that is the case, the cost of refueling goes beyond the price of the fuel to include the time spent going off site, getting the fuel, and bringing it back. Using welder generators with increased fuel economy can represent significant time savings.

Several additional factors enter into your equipment planning process. Consider portability before you choose a machine. Are you working on a single-story building or a 10-story high rise? Will a machine on a trailer or running gear suffice, or do you need to add lifting points for a crane/hoist? Noise consideration may also be a concern depending on where you work. Generally, keep machines simple. Structural welding is straightforward—bells and whistles may over-complicate the process.

MSC

◀ A diagonal moment brace being welded using the flux cored welding process. Flux cored is preferred for wire welding in the field for its high deposition rates and self-shielding.

John Leisner is a product manager with AISC member firm Miller Electric Mfg. Co., Appleton, Wis. Leisner got his start in welding doing repairs and light fabrication on his family farm, and has spent 20 years with Miller in training, engineering and product management/development.

