

Engine-Driven Welders:

WHAT'S THE RIGHT MACHINE FOR YOUR SERVICE TRUCK?

If your job takes you out of the shop and into the field, it's likely that an engine-driven welder is an important component in your overall arsenal of equipment. Of course, with so many engine driven options in the market, it can be hard to know which one is best for you and your specific applications and needs.

Whether you're buying or renting, there are many factors to consider – size, weight, fuel type, power requirements and more. Here are some tips to help you make your way through the research and selection process.

FUEL

One of the first questions to consider: What type of fuel do you need? The answer is directly connected to power output and size and weight considerations.

Most engine-driven welders are available in two fuel types, gasoline and diesel. Your choice could depend largely on the type of welding you expect to do with the unit – and the power output that that type of welding would require. Gasoline engine drives typically operate around 300-amps or less, while diesel engine drives will be on the higher end of the power output spectrum – 300 amps or more. This heavier, higher-output equipment is also where the multi-function units are more prevalent.



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This makes the 300-amp range where you have the most flexibility in the decision-making process, as both gasoline and diesel are equally viable fuel options. In addition, machines in this output range tend to be lighter in weight and smaller in footprint, which could make them the more fuel- and space-efficient option for your truck and truck bed.

Fuel costs will also have a bearing on your experience of gasoline versus diesel, but those are based on fluctuations in the oil and gas market that can neither be predicted nor controlled, so your best bet is to focus on the output/weight equation.

Think of your engine drive options as being on a scale or part of a spectrum. The higher end of weight and power output is going to be diesel and the lower end is going to be gas. Midway between the two, right around the 300-amp space, you have some flexibility to go with either option.



POWER REQUIREMENTS

The discussion of power requirements in engine-driven welders hinges on two basic factors: welding output and generator output.

Welding Output

Consider what you'll be welding with this machine, and what your go-to process in the field will be. Will you be doing larger and more demanding jobs like pipeline or rail, or will you be doing smaller jobs related to maintenance and repair? If you intend to remain primarily in stick welding, 200 amps will be sufficient output. If you're thinking of a wire process or gouging, you're more likely to operate in the 300-amp output range.

Engine drives are also frequently used for arc gouging. The larger the carbon rod, the more welding output is necessary. For example, 1/4-inch carbon rod will require a 300-amp machine.

Not all engine-driven welders are designed for multi-process use, but most machines with a 225- to 250-amp output will enable you to do just about any type of welding on any thickness of metal with the proper welding procedure. The question is how quickly and efficiently do you want to complete those

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welds, and how smoothly do you want to transition from one process to another? More power will enable you to get the welding done faster, and it will give you greater versatility and flexibility by enabling you to transition from one process to another more efficiently.

This is especially important for applications in which time is an important a consideration. If you're working against the clock and you need to put in high-deposition welds, you'll be better equipped to do this with a higher-output machine. If you go with a lower-cost 200-amp machine, you're likely to sacrifice the ability to weld faster and put down more metal over time vs. a 300-amp machine.

Generator Output

The discussion of generator output starts with the question: "What am I running in addition to the welder itself?"

Engine-driven welders generate auxiliary (AC) power that can be used to run lights, pumps, power tools and other devices – including additional welders or plasma cutters. More refined output power – often referred to as clean auxiliary power – enables the user to run sensitive electronic equipment. This clean power feature is available on Lincoln Electric's Ranger 260MPX and Ranger 330MPX units.

The typical components on a service truck include an air compressor, a crane and a welder/generator. Depending on your array of components and their combined power demands, you may need anywhere from 5,000 to 10,000 watts of generator output power, and possibly more depending on your anticipated applications.

As with welding output, it's important to review machine specifications closely to ensure a true comparison. With so many different types and ways to rate the auxiliary (AC) power of your machine – peak, continuous, three-phase, single-phase – things can get very confusing. Here are a few things to remember that will help you get the amount of power you need:

PEAK POWER VS. CONTINUOUS POWER

The peak power will always be higher than continuous power, but can only be sustained for a short time (about 30 seconds or less). Peak power is needed for certain applications, such as starting pumps or other inductive loads, which can require a large in-rush current to get running. After that initial surge, it settles into the lower, continuous power rating. Continuous power is the power available at a 100% duty cycle.

Always be sure you are comparing peak ratings to peak ratings and continuous rating to continuous ratings.

SINGLE-PHASE VS. THREE-PHASE

Single- and three-phase auxiliary power are fundamentally different due to the design of the AC circuit. As a result, these two types of output cannot be directly compared. More importantly, jobsite

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tools may require one over the other. For example, most hand-held tools are single-phase, while many pumps, welders and plasma cutters require three-phase power. Furthermore, the available three-phase power will be higher than the available single-phase power.

Once again, be certain to compare available three-phase with three-phase, and single-phase with single-phase.

SIMULTANEOUS WELDING AND AUXILIARY POWER

Just like the weld output ratings, the auxiliary power ratings are the maximum output the machine can give you. These machines are designed to provide both auxiliary and weld output at the same time, but there is some give and take. The following table is an example of this.

[table needed]

When you increase the weld output the available auxiliary power decreases, and vice versa. It is important to understand the needs of your jobsite and application before you buy or rent.

TRUCK BED SIZE/AVAILABILITY

In addition to reviewing the various features and benefits of the engine-driven welder itself, consider them in the context of the available space on your truck bed – and in the context of the various other pieces of equipment that you'll be storing and transporting in that same space.

How much weight can your truck bed handle? With advances in electronics and design pushing a trend toward smaller and more compact machines, your choice of machine could create an opportunity to reconfigure your truck bed to maximize space. It might even enable you to switch to a lower vehicle classification, which could in turn reduce costs relative fuel, maintenance and repair, as well as licensing requirements.

Familiarize yourself with storage modifications that could be retrofitted to your truck, either on the bed itself or on either side of the vehicle. These modifications might create more options in terms of the size and weight of the engine-driven welder you can rent or buy. With space being such a valuable resource, the ultimate goal is to reduce the size and weight within the truck bed.



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APPLICATIONS: Features for flexibility

Chances are, you're probably already pretty clear about the welding processes you intend to run on whatever engine-driven welder you choose. But there have been advancements in recent years with functionality that can increase flexibility and make your job and your life much easier.

For example, a direct-connect spool gun can plug directly into the machine and auto-calibrate without the need for any extra modules. Likewise, if you want to switch from stick welding to MIG, flux-cored or some other wire-fed welding process, there are external wire feeders that automatically connect and calibrate to set up with Lincoln Electric engine drives.

In addition, technology now exists – such as Lincoln Electric's patented CrossLinc Technology – that enhances flexibility by giving the operator more control over voltage and wire feed speed while working at a distance from the machine. CrossLinc technology also enables remote monitoring via digital displays that track precise information about voltage, amperage, wire feed speed and other information right over the welding leads, without additional, costly control cables.

SOUND

Some engine-driven welders run quieter than others, due to a variety of factors: size, power output, design, built-in noise-insulation features and more. Sometimes noise reduction is a personal preference, while other times it's a workplace requirement. Either way, a machine's sound level is an important consideration in the selection process for two reasons: work environment and worker safety.

Quieter residential areas may have more restrictions related to noise, while industrial environments or remote locations will likely have fewer if any such restrictions. However, in both cases, a quieter machine can improve communication for workers positioned near the machine. In addition, decibel levels past a certain threshold will warrant hearing protection for the operator according to OSHA regulations.

MULTI-FUNCTIONALITY

There are many multi-functional units on the market, all of them designed to minimize size and weight concerns, and at the same time maximize flexibility and versatility by incorporating as many functions and features as possible.

A welder generator from Lincoln Electric combines best-in-class welding capabilities combined with compressors and pumps from leading manufacturers.

Investing in a quality machine that's designed for the work at hand will ultimately give you optimal results.

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RELIABILITY/PEACE OF MIND

Your experience with an engine-driven welder extends well beyond the initial rental or purchase process. Look for a product whose manufacturer has a presence in your area and provides optimal support in terms of warranty, maintenance and service.

Most machines are covered by two warranties, one on the welding side and the other on the engine side. It's important to understand the parameters of both. Are you buying from a widely recognized and reputable manufacturer that offers good coverage for both and maintains a broad and well-established network of factory-certified service locations?

But even before it's time for a trip to a service facility, the operator will need to adhere to a regular maintenance routine. A machine that provides the operator with regular reminders about changing out engine filters, sparkplugs and other regular wear components will simplify maintenance. It will help keep you up to date on regular service and maintain peak performance, avoiding potential issues down the road.

Plan ahead to find out if these components are easily accessible from your local retailer, and whether that retailer carries components that match the engine brand. In some cases, the OEM will offer a service kit to make ordering easy.



Conclusion

When shopping for an engine-driven welder, don't limit your thinking. There are many factors to consider and many new technologies to make the job easier. This will help you choose a machine that will continue to perform when you need it.

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