

# UPS Basics: Uninterruptable Power Supplies

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[0m:0s]



[0m:4s] Hi I'm Josh Bloom, welcome to another video in the RSP Supply education series. Today we're going to be talking about UPSs, or uninterruptable power supplies. A UPS is an electrical device that provides backup power via a battery to a load when regular utility power has been lost. Depending on the UPS, some can provide protection against voltage spikes or power surges that help protect any equipment that is connected to the UPS. UPSs are not intended to be used for long periods of time. Typically, they are only used for short periods of time to provide critical backup power until an alternative power source can be provided.

[0m:41s] So, now that we know what a UPS is let's talk about why we really need UPS protection.

[0m:46s] First and foremost, they allow any electrical equipment connected to the UPS to continue to run in the event of a power outage. This can be very important when we're relying on electrical equipment to continue to run and we can't afford a power outage. Some examples of this might be when we are needing to keep a control cabinet in an industrial application running to make sure that we are monitoring and controlling critical functions that that cabinet is responsible for. Also, it'll allow us enough time to save critical data on a computer, for instance,

[1m:17s] that might be in jeopardy due to a sudden power outage. If the UPS we are using does have surge protection that can assist in protecting that equipment against any power surges that can damage that equipment, which can be very expensive and time consuming to replace.

[1m:31s] It can also act as a bridge while the backup generator is coming online and synchronize with our electrical system. So where should we use UPSs?

[1m:41s] Really, it's very simple. Anywhere we want to provide protection for any equipment that we want to make sure continues to run in the event of a power outage or protection against a surge. So how do UPSs actually work? Depending on the type of ups that we actually use, they can function a bit differently.

[1m:58s] The first kind of UPS we're gonna talk about, and typically the most common, is what's referred to as an offline UPS or a standby UPS. In this type of UPS, the connected equipment is typically energized by normal utility power. When the voltage being received by the UPS falls below a certain level, the UPS switches the connected equipment to the inverter connected on the UPS.

[2m:22s] At this point, the UPS will begin providing backup power from the battery.

[2m:27s] The next type of UPS we're going to talk about is commonly referred to as an online UPS. In this type of UPS, the connected equipment is constantly drawing power from the battery through the inverter

[2m:39s] so no switching is actually necessary. So in this case, utility power is only being used to keep the battery charged. This allows for much more seamless power usage during an outage which allows us to better protect, the electrical equipment we're connected to. Keep in mind that these are just two of the most common types of UPSs, however there are various other types of ups that can provide many other functions. Now let's talk about some things we want to consider when we're actually selecting a UPS.

[3m:6s] When making a selection, it's important that we try to size the UPS for our specific application. When selecting a UPS, it is important that we size the ups correctly, and this can enable proper protection for all connected equipment.

[3m:20s] This can be done by looking at the total wattage of all connected equipment and ensuring that the UPS we select can cover at least that much wattage, preferably at least 20% more. UPSs can be used in both AC and DC applications, so it's important that we pay attention to our specific application and make sure that we select the proper UPS for that power type.

[3m:42s] One last thing to consider is the capacity that the UPS can actually provide. While most UPSs are only intended to run for a few minutes, depending on the size of the UPS and the battery within that UPS, we can have that UPS run for longer periods of time.

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