

# Redundant Power Supply Basics

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[0m:0s]



[0m:4s] Hi I'm Josh Bloom, welcome to another video in the RSP Supply education series. If you find that these videos are helpful to you, it certainly helps us out if you could give us a big thumbs up and subscribe to our channel.

[0m:17s] In today's video, we are going to be talking about a key piece of hardware that is used in many different applications ranging from industrial, commercial, and residential.

[0m:28s] The hardware I am referring to is a power supply.

[0m:32s] A power supply is an electrical device that supplies electrical power to an electrical load. The primary function of a power supply is to convert electrical current



[0m:43s] from a source to the correct voltage, current, and frequency to power the load.

[0m:50s] If you have not already seen our other video in which we talk about the basics of power supplies, we will link it in the description below.

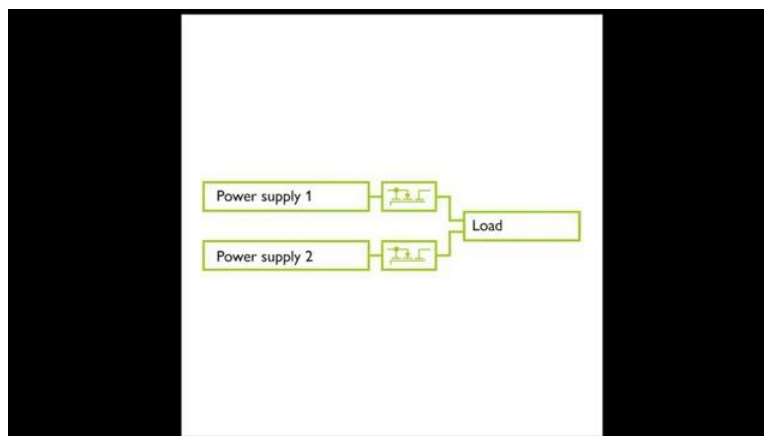
[0m:58s] For the purpose of this video, we want to focus on situations where the power that is being supplied is critical,

[1m:6s] and the loss of power could be dangerous or cause a lot of problems.

[1m:11s] In these types of situations, it is necessary to use two power supplies. One of the power supplies would be a primary supply and the other would be used as a backup in case the primary supply fails.

[1m:24s] This configuration is referred to as a redundant power supply.

[1m:28s] By the end of this video, we hope you have a better understanding on how these redundant power supply systems function,



[1m:35s] and in what scenarios they are most commonly used in, and what hardware is necessary in order to achieve the the redundancy that is needed. Please keep in mind that the information that is provided today is meant to provide basic guidelines and is not intended to replace proper electrical instruction.

[1m:53s] With that said, let's look at some situations where we might see these types of systems being used and also how they work.

[2m:2s] A standard power supply works by taking a certain kind of power and converts and conditions it, then providing the correct voltage level to a specific situation.

[2m:12s] One very common example of this would be a scenario and where you have 120 volts AC and convert that to 24 volts DC, which is used for more sensitive equipment, such as a PLC, an Ethernet switch, and radios. There are some situations which we mentioned before where the loss of power to some of these types of components, such as a PLC would be devastating to a critical process.

[2m:37s] Examples of these types of situations would be in oil refineries where the loss of power to critical infrastructure and control equipment could potentially jeopardize the safety of workers in the plant.



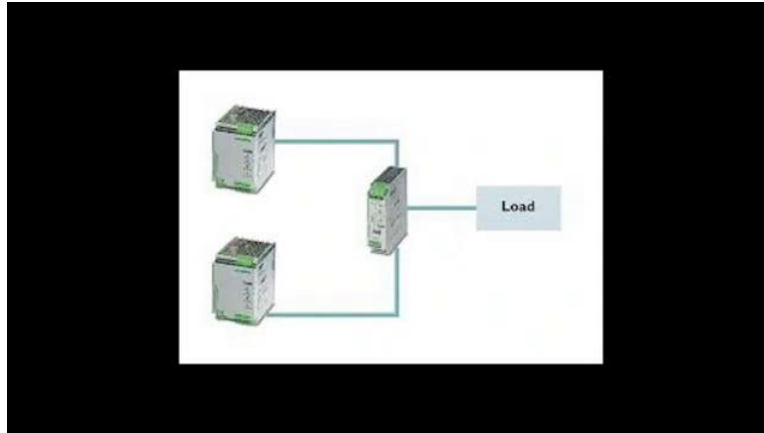
[2m:50s] Another example could be a scenario where a city is pumping water to a water treatment facility

[2m:57s] in which the city is very dependent on that treated water and any shutdown could place a huge burden on the people in the city and the treatment facility as well. In these types of scenarios, it is imperative that power is not lost to the important electrical equipment.



[3m:14s] Therefore, redundant power supplies are almost always used.

[3m:19s] So, how these redundant systems function?



[3m:22s] First, let's talk about the hardware that is actually needed for one of these types of systems.

[3m:27s] As you might imagine, two power supplies are required.

[3m:31s] It is important to make sure that the power supplies are the same.

[3m:35s] While it is possible to set up a redundant system with differing power supplies, too many issues can potentially arise by doing this.

[3m:43s] So, it is important that both power supplies are the same.

[3m:47s] Now, depending on the type of power supply that is being used,

[3m:51s] will dictate if any other hardware is needed.

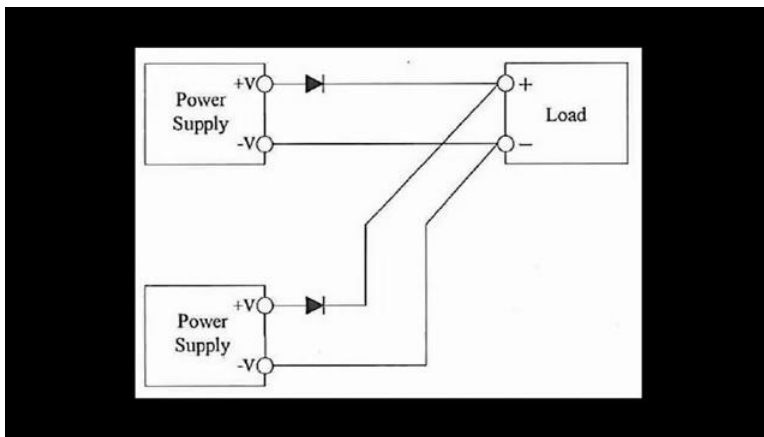
[3m:55s] If standard power supplies are being used, then an additional diode redundancy module will also be needed. If the power supplies are designed for redundant use, then they may already have the necessary diode redundancy hardware integrated into their circuitry. So, when selecting power supplies for a redundant set up, pay attention to what is needed. In either case the diode circuitry is critical to the function of the redundant setup.





[4m:26s] This module is able to monitor the power that is being supplied by the primary power supply.

[4m:33s] If the voltage that is being supplied changes enough either up or down to a point where it could potentially alter the function of the hardware it is supplying power to,



[4m:45s] then it will switch from the primary supply to the secondary backup supply. It makes this change

[4m:52s] seamlessly without any loss of power to the critical hardware in the system.

[4m:58s] This diode module will constantly monitor power. Once the primary supply voltage has been regulated, the diode module will then switch power back to the primary supply. Another advantage of using this type of system is that it can provide the ability to hot swap power supplies, or, in other words, allows you to change one power supply unit for a new one while continuing to power the necessary hardware in the system. These are just a few of the main advantages of using redundant power supplies. Redundant power supplies are widely used in many of our most critical plant environments and allow seamless operation of the hardware in these types of systems all across the world. Armed with a little knowledge and understanding selecting the correct power supply and setting

up one of these systems can be very simple. For a full line of industrial power supplies and thousands of other products, please go to our website. for more information or other educational videos, go to RSPSupply.com, the Internet's top source for industrial hardware. Also, don't forget:

[6m:6s] like and subscribe.



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