What is "Fail Safe"?

[0m:0s]

[0m:4s] Hi I'm Josh Bloom, welcome to another video in the RSP Supply education series.

[0m:9s] 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. In today's video, we are going to talk about an electrical concept that is often used in control situations.

[0m:23s] I am referring to the fail safe concept.

[0m:26s] For the purpose of this video, we want to talk about what fail safe means,

[0m:32s] and how you might achieve this state when working with various types of electrical equipment.

[0m:38s] We also want you to talk about some situations where you might see this fail safe practice being used so that you might be able to gain a better understanding of the practical use and applications of this method.

[0m:51s] We hope that by the end of this video, your knowledge of this topic has grown and you can safely apply this practice to the various electrical applications that you may encounter.

[1m:2s] As always, the information provided in this video is intended to provide only a basic overview of this topic

[1m:9s] and should never take the place of proper electrical instruction.

[1m:13s] If you have questions about your specific scenario, it is recommended that you seek the help of a qualified person that can further assist you. With that said, let's take a closer look at what fail safe means. The dictionary definition of the term fail safe

[1m:31s] is as follows: to cause a piece of machinery or other mechanism to revert to a safe condition in the event of a breakdown or malfunction. For the purpose of this video, we are going to focus on electrical hardware, but please understand that the fail safe concept can apply to any piece of machinery or hardware. So, based off the definition that we just read, we know that to fail safe means to ensure that a piece of hardware stops or breaks down, it will revert back to a safe state.

[2m:7s] In regards to electrical equipment,

[2m:10s] what is a safe state? In most cases, this would be a state where no power exists on the equipment in question. In other words, when the device fails, power would no longer be running to that piece of equipment. So how is this done? Let's use an example of an electrical motor because it is one of the most common use cases for this kind of application.

[2m:33s] In most cases, an electrical motor will be switched on and off with some kind of motor starter.

[2m:39s] This motor starter will commonly consist of a contactor, which is a normally open set of contacts capable of providing the necessary power to the motor,

[2m:50s] as well as an overload protection device.

[2m:53s] The overload is designed to monitor the power and ensure that any overcurrent event does not destroy the motor or allow the contacts on the contacter to be welded shut. Also, upstream of the motor starter will be some kind of circuit protection device, commonly a breaker or fuse.

[3m:13s] This device also protects against overcurrent but offers additional protection against large spikes and voltage like a lightning strike or power surge. With all of these devices upstream of the motor, if the motor were to begin to overheat, for some reason, the overload would cause the contacts on the contactor to open if wired properly, switching power off to the motor. In this instance, the motor failed, but did so in a safe manner, or safe state. This is just one example of how a fail safe situation can be achieved. However, there are many different ways a fail safe state can occur.

[3m:51s] It all depends on the specific situation and the hardware that is being used. Just remember that when working with any type of electrical equipment,

[4m:1s] it should be designed in such a way that if something were to go wrong with that piece of equipment, it would not be stuck in a state where it can damage itself or harm any people in that area.

[4m:13s] With a little knowledge and proper understanding about this topic, you can ensure that your electrical hardware functions safely and as expected.

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