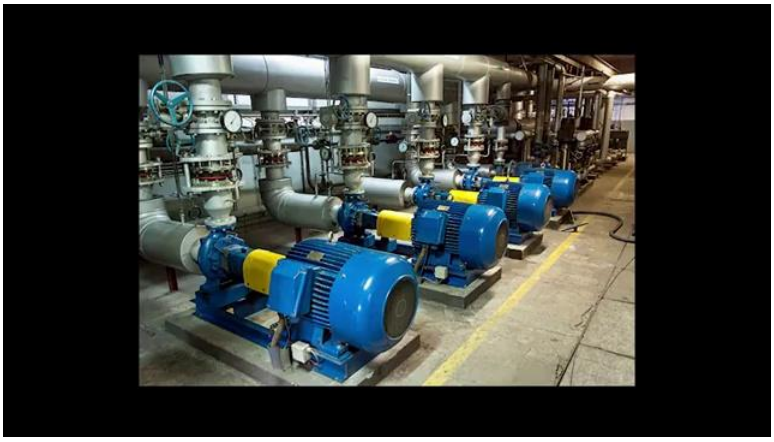
# Motor Control Basics

[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 give us a big thumbs up and subscribe to our channel. In today's video, we will be talking about an electrical concept that is one of the most widely use practices in the world today. It is a critical function to everything from large industrial plant environments, too much smaller residential applications. I am referring to motor control.



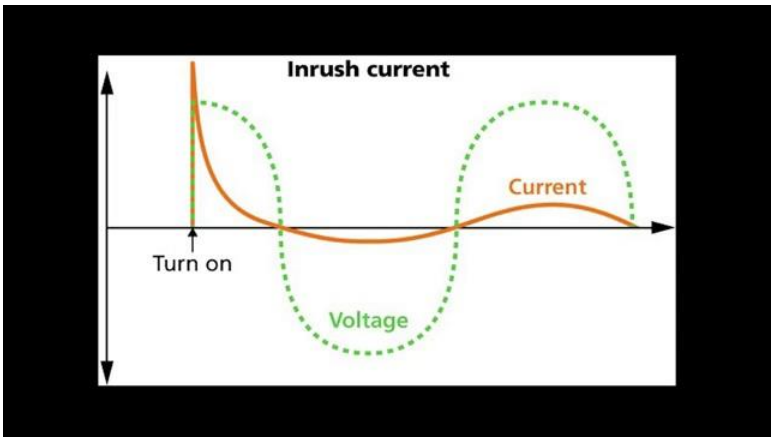
[0m:35s] In this video we will discuss what motor control is and how it has evolved over the years.

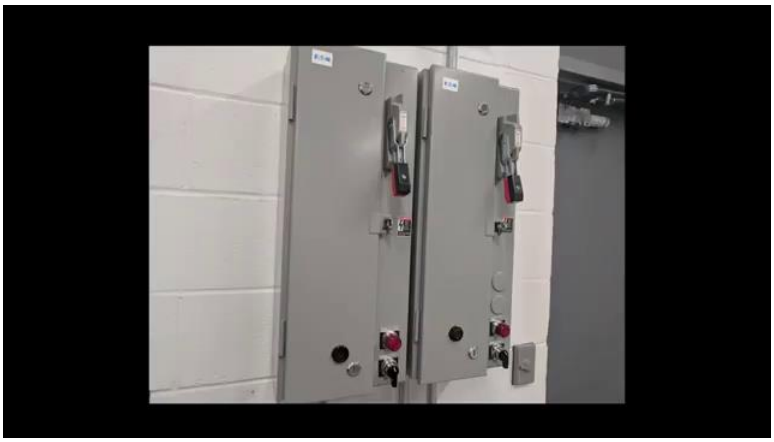
[0m:41s] We will discuss some of the most common types of hardware that are used in motor control circuits so that you might better understand what is required for the different types of Motors and control scenarios that exist today. We will also talk about why it is important to use motor control hardware and some of the safety benefits.

[1m:2s] As always, the information shared in this video is intended to provide only a basic overview of this topic and should never take the place of proper electrical instruction. With that being said, let's take a closer look at what motor control circuits are and why we use them. So, what is motor control?

[1m:21s] While the answer is quite simple, motor control is simply a way that we can operate electrical motors in the various environments that they exist in.

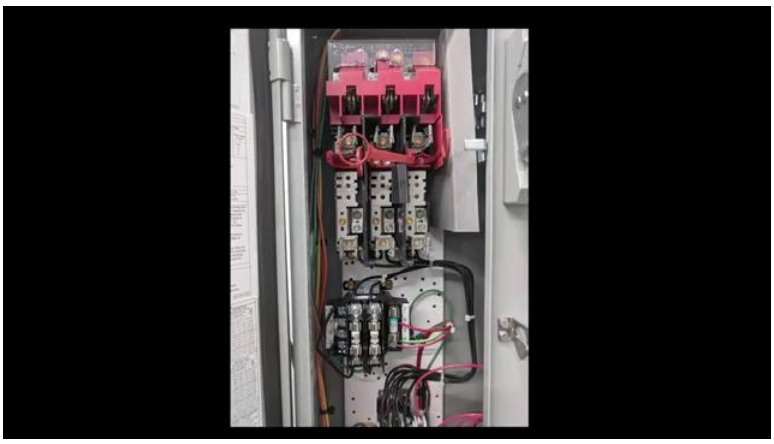
[1m:31s] However, it is not as simple as just turning on and off a motor, even though that is very important and maybe the primary function of a motor control circuit. Motor control circuits, first and foremost, provide a safe way to operate electrical motors. Back when motor control circuits were in their infancy, it would have been common to see a simple disconnect switch that would be used to turn on and off a motor. Depending on the size of the motor and how much voltage was required, operating this disconnect could potentially create quite the hazard. The potential for arching or electrocution would have been very high. Not to mention that when the disconnect was actuated, the large amount of inrush current could damage the motor over time. It is because of some of these early hazards that we started changing how we control these motors. In today's motor control circuits, there are a few very common pieces of hardware that will be used.



[2m:36s] However, depending on the type of motor and what its intended function is can dictate what type of motor control hardware you might use.

[2m:46s] For example, if you are simply wanting to turn on and off a motor, a few pieces of hardware will most likely be used. First, there will be some kind of circuit breaker that will protect the motor and any hardware downstream of that breaker. Next, you would most likely see a contactor and an overload relay.



[3m:7s] These two devices are connected to one another and function in tandem to allow for the remote and safe operation of the motor. The contactor functions much like a relay, allowing for a smaller electrical circuit to remotely close the motor contacts, allowing for the motor to start. The overload relay is designed to protect the motor

[3m:29s] in case of a prolonged overcurrent event.

[3m:32s] These two devices are normally wired in series, so that if the overload relay does, in fact, detect an over current event, the contactor will open the motor contacts, thus shutting off power to the motor. These three pieces of hardware make up the most common types of motor control circuits, but there are many others. The other two most common types of motor control hardware would be a soft start and a VFD, or variable frequency drive. Both of these devices will function in a similar way to the circuit that we just described, but with some added functions.

[4m:10s] The soft start is designed to reduce large inrush current to the motor upon startup.

[4m:16s] This soft starting of the motor will prolong its life and allow for safer operation. The VFD also performs the soft start functions, but also allows for speed control of the motor. This speed control is critical in many different environments and has made VFDs one of the most common and safe to use motor control circuits today. This speed control is critical in many different environments and have made VFD is one of the most common and safe to use motor control circuits today.

[4m:49s] VFDs can provide safe operation on some of the biggest motors all of the way down to small residential motor applications.

[4m:58s] While there are other types of motor control hardware as well, the ones we discussed today are the most common.

[5m:5s] With the advancement in hardware in this space, we can now safely operate almost any motor in almost any application safely while also providing the expected functions that the motor was designed for. For a full line of motor control hardware as well as thousands of other products, please go to our website.

[5m:25s] For more information or other educational videos, go to RSPSupply.com, the Internet's top source for industrial hardware. Also, don't forget,

[5m:34s] like and subscribe.