Industrial Control Panel Testing

[0m:0s]

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

[0m:9s] If you find you like these videos and they're helpful to you, it certainly helps us out if you could give us a thumbs up and subscribe to our channel.

[0m:15s] In today's video we're going to discuss the importance of performing testing on a panel before it is installed on site and actually brought online.

[0m:24s] This testing is commonly referred to as a factory acceptance test or FAT.

[0m:31s] We will also discuss some of the hardware that is used to perform these tests as well as a few different techniques that can be used to ensure that the panel is performing as intended. When performing an FAT, or fat test, it is important to try to do this in a controlled environment so we can ensure that everything can be checked and double checked to ensure that the test goes as expected. If the panel is going to be a UL listed panel, the test needs to occur in the actual manufacturing facility it was built in.

[1m:4s] The purpose of this test is to ensure that all the different components within the panel function as expected.

[1m:10s] This includes, but is not limited to, the power distribution throughout the panel, including all circuit breakers and fuses etc.

[1m:19s] Voltage should also be checked throughout the panel to make sure the components are seeing the proper amount of voltage where and when it is expected. This is also a good time to check to ensure that any communications equipment is functioning properly as well. This would include the network switch and radio.

[1m:35s] During this testing, it is also important that any local HMIs are being tested with the panel to ensure that they function as expected.

[1m:43s] This is also the time that every single IO point on the panel should be checked.

[1m:48s] This includes any digital and analog inputs and outputs, as well as any other signal types that you may have in your panel.

[1m:57s] You should also check to make sure all the hardware and wiring have been labeled properly

[2m:2s] and that labeling matches the drawings that are being provided with the panel.

[2m:7s] It is also a good idea to make sure that all wires have been properly secured. It is also important to double check that the hardware is properly being secured to the back plane

[2m:18s] so that it will not become loose over time because of a poor or loose connection.

[2m:23s] As you can see, there is a lot that needs to be tested and verified during the acceptance test, so it is critical that the test be documented.

[2m:32s] Everything that we have covered today should be accounted for in your testing documentation.

[2m:37s] Everything that passes the test should be checked off to show that it is passed, and everything that fails should be documented and possible solutions to fix the problem should also be listed so that when the test is concluded, there is a very clear set of guidelines that could be followed to fix any problems that you may have encountered during your testing.

Documentation is critical to any factory acceptance test and is often required by the client of the panel it is intended for. So, how do you actually perform the test? What equipment is being used? In some cases, custom testing hardware has been developed to test many of the electrical components within the control panel. This testing hardware will often have the ability to simulate different signal types throughout the panel as well as assist in testing the power distribution throughout your panel.

[3m:25s] While some panel shops have access to this type of hardware, many do not. In most cases, though, the panel can be tested with the help of a multimeter.

[3m:35s] In order to simulate analog signals, however, a process meter may be required.

[3m:40s] Just like fancy testing hardware, the multimeter has the ability to check and test almost all the electrical circuits within the panel to ensure proper functionality.

[3m:50s] While checking and the electrical systems is very important, it is not everything. Some other tools may be needed to perform a proper factory acceptance test such as a torque screwdriver to check termination connections. Also, in most cases, a computer will be used to monitor the PLC throughout the testing process and can help simulate output commands coming from the PLC.

[4m:13s] Many times, though, the most important tool during the test are the individuals actually performing the test checking to make sure that everything works, that the hardware is secure, and that everything looks the weight is intended to.

[4m:26s] There's a lot that goes into this testing, but if all necessary preparations have been taken, the test should go off without a hitch.

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