

Instrumentation: Elements & Transmitters

[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 some devices that are commonly used in industrial settings to measure various states that can range from temperature, pressure and flow just to name a few.

[0m:32s] While the names of these devices will vary depending on the function they perform,

[0m:37s] typically in an industrial environment, they are simply referred to as instrumentation.

[0m:43s] This instrumentation is what is used to collect the important pieces of data throughout the process environment you want to monitor. Again, these types of instruments are most commonly found in industrial settings but can be used anywhere, depending on the specific need or use case.

[1m:1s] For the purpose of this video, we want to take a broad look at this equipment and clarify some of the critical features that are commonly found in this type of hardware. More specifically, we want to talk about the measuring element portion of the instrument,

[1m:17s] and also the transmitter portion of the instrument. We want to provide some basic information about these two pieces that often make up the instrument itself.

[1m:28s] We hope that by the end of this video, you have a better understanding of both the measuring element and the transmitter portion of this hardware. Please remember

[1m:39s] that the information provided in this video is intended as a basic guideline. It is in no way intended to replace manufacturer specifications or proper instrument training. If you ever have questions regarding the hardware you are working with,

[1m:55s] please consult with a qualified person or the original manufacturer specifications and instructions. With that said, let's talk more about the different parts commonly found in industrial instrumentation.

[2m:10s] As mentioned before, it is very common to see various instrumentation that has two critical pieces of hardware that perform different functions. Let's first talk about the instrument element or measuring element.

[2m:22s] This is really the most important part of the hardware that is being used, because it is the portion that actually performs the task of measuring what is needed. For instance, in a flow meter, the element is the portion of the meter that actually measures the flow.

[2m:39s] In a pressure Transducer, the element is the portion that is actually lowered into a tank or vessel that will take a pressure measurement.

[2m:48s] For temperature measurement, we commonly use RTDs or thermocouples.

[2m:54s] Both of these devices would be considered the measuring element portion of the instrument hardware. So, as you can imagine, the measuring element is critical to getting the necessary information that may be needed to monitor a specific process scenario.

[3m:11s] However, in modern control systems, it is not enough to simply have the measuring element only. There needs to be a way to get the information that is gathered by the measuring element to whoever needs to access it.

[3m:24s] So how is this done?

[3m:26s] This is where the transmitter portion of the instrument is vital. Without the ability to transmit information, it would be necessary to have instrument data collection take place at the same location where the measuring element is gathering information.

[3m:42s] In some cases, this still happens. For instance, it is not uncommon to see local pressure gauges being used without any kind of transmission hardware.

[3m:52s] This information is still very helpful, but you must be located close enough to the element to view the gauge. In most modern control systems, this information is collected and sent to a central control location.



[4m:7s] In order to collect the measuring data and send it to where it needs to go, you need to use an instrument transmitter. The transmitter will interface with the measuring element and can interpret the information that is being collected. The transmitter will then send that information to an RTU, PLC, or some other type of control unit.

[4m:29s] In many cases, the transmitter has the ability to communicate the information that is being collected via multiple communications protocols which may be necessary because the measuring element may not send the type of signal that is needed by the controller monitoring that specific process.

[4m:50s] For example, it may be necessary to convert a temperature reading coming from a thermocouple to a 420 milliamp signal that can be received by a local PLC. This type of transmission and data conversion is very common and happens all of the time in regards to the collection of information coming from all types of measuring elements. These are just a few examples of instrument data transmission. What is important to remember is that in most cases there are two pieces of hardware that are being used in modern day instrumentation. First is the measuring element that actually performs the task of measuring whatever process is needed. Second

[5m:36s] is the transmitter

[5m:38s] which will collect and interpret the data that is being measured and send it to a controller, such as a PLC. Just a reminder: it is not necessary to transmit this data in all cases. Some scenarios exist where local element displays such as pressure gauges can be used. It all depends on your specific situation. For a full line of industrial hardware as well as 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:14s] like and subscribe.

