Choosing Sensors and Parameters for Mapping

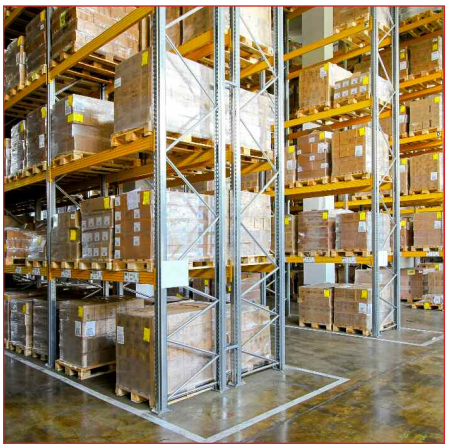
Frequently Asked Questions

Q. What are the parameters I need to map?

A. The parameters you choose to map will depend upon your particular situation. Typical parameters for mapping are temperature, humidity, pressure, light and vibration. You must first determine the environmental parameter(s) critical to your system, process, and product. Assuming you are operating in a regulated environment, the critical parameters are most likely already documented in your cGMP files.

Q. What are important issues to consider when choosing a sensor for a mapping project?

A. Choosing the wrong sensor may lead to mapping study frustrations and failures. The mapping environment for the sensor is very important. The sensor's range specifications for such things as temperature or pressure should be checked to ensure that it falls within the environment to be mapped. The effect of this environmental range on the accuracy of the sensor should also be known and documented. A sensor's accuracy is crucial in the sensor selection process. If your specification for the environmental temperature is ± 0.5^0 C and



a sensor is selected with a ± 1.0^0 C accuracy, the data collected is dubious and will most likely be rejected by regulatory officials. If it is not rejected, you may be asked to conduct further studies, theory, or provide a detailed explanation.

Q. What are the potential consequences of choosing the wrong sensor?

A. In many cases the sensor type selected is key to both the accuracy and overall durability. The sensor should last at least as long as the mapping study. Replacement of a sensor during a study may be possible, but it increases the overall length of the study due to the replacement time, documentation requirements, and calibration support. Data may also have to be "bridged" from the original sensor and the replacement sensor with critical data missing during the "down time". In many cases the mapping study will have to be

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discarded, and restarted from the beginning. In environments where chemicals or vapors can come in contact with a sensor, attention should be paid to the sensor's compatibility with the environment. A sensor may fail completely, or have the accuracy of the reading come into question over time in an environment that is incompatible with the sensor material. The durability of the sensor, or lack of it, can cause you to lose valuable time, increase costs, and make the collected data questionable.

Q. What is an appropriate measurement frequency for my mapping study?

A. The measurement frequency should not be shorter than the response time of the sensor. For example, if you wanted to collect data every 1.0 minute, a sensor response time of 5.0 minutes will not be sufficient for your study. Consider that response time isn't always simply the response time of the sensor, but it may also include the response time of the environment itself in combination with the sensor. Analyzing the environment and sensor requirements before the mapping begins may take some time, but it certainly can save additional time spent after the fact due to sensor failures and questionable data processes and quality.