Not Every Sensor is Perfect

It is critical to remember that no sensor is perfect. Here are some instances you need to look out for:

1. Any sample manufacturing variation means that two sensors produced from the same manufacturer may yield slightly different readings.
2. Sensors that are subjected to heat, humidity, cold, shock, etc., while being stored or shipped and/or during assembling may show a change in response.
3. Differences in sensor design may mean that two different sensors may respond differently in similar conditions. This holds true of 'indirect' sensors which calculate a measurement based on one or more actual measurements of some different, but related parameter.
4. There are some sensor technologies that don't age well and get obsolete. This means that the response of sensors will naturally change over time, thus requiring periodic re-calibration.

At the same time, you must remember that the sensor is just one component in the measurement system. Let us look at some examples:

1. Along with analog sensors, the ADC is part of the measurement system and subject to variability as well.
2. The light and color sensors can be affected by the spectral distribution, specular reflections, ambient lights and other optical phenomena.
3. The temperature measurements are subject to thermal gradients between the sensor and the measurement point,
4. The inertial sensors could be sensitive to alignment with the system being measured.

Two Factors Affecting a Sensor's Performance and Accuracy:

Hysteresis: Some sensors exhibit hysteresis which means that the sensor tends v with an increasing signal and high with a decrea common problem with many pressure sensors.

Look out for these two factors and get in touch with lab calibration services to calibrate the sensors accordingly to ensure that the overall performance is not affected.

Here are four adjustments that can be a result of a good calibration:

Offset

All the voltages need to be measured with respect to a reference. All the devices operate at some operating voltage and any displacement in these voltages will produce consistent errors, affecting all measurements. Offset corrections make these errors as small as possible.

Gain

The voltage that is measured is not really the voltage that is present on the sensor device. The amplifiers and attenuation between the sensor and the digitizing convertor will change the signal level. In order to recover the sensor information, you must restore the data to the original level as accurately as possible. Uncorrected gain errors might produce measurement errors that change consistently across the operating range.

Linearization

The relationship between the measured voltage and sensed temperature will be nonlinear and dependent on the physical properties of each sensor type. Over

This converts the results to a common and useful representation. For instance, presenting all the temperature measurements in degrees C.

About Us
Careers
Industry Sectors
Newsroom
Privacy Statement
Legal
