Manual: 8.7. Sensitivity

The concept of sensitivity is closely related to that of correlation in that we ask how closely two tags are related. Correlation is usually used in the context of a linear relationship whereas sensitivity is usually used in a general, i.e. linear or non-linear, context. Particularly, sensitivity is used in the context of a mathematical model.

If we have a formula such as $y = f(a, b)$, then we might ask: How much will y vary as a or b vary? If it turns out that y varies a lot as a varies but not very much at all as b varies, then we might think that we could simplify the formula by excluding b from the formula.

Sensitivity thus plays an important role in an attempt to simplify models or to reduce the number of variables in a model. It also plays an important role in gauging how much influence one might have over y. If, for example all the tags that have a high sensitivity with y cannot be controlled, then it will be difficult to exert control over y. In this case y is dominated by its environment. If, on the other hand, one or more tags that have high sensitivity can be controlled, then it may be possible to use the model for advanced process control.

The models built in IHM and ISS indicate the sensitivities of the independent variables and thus provide some insight to the user either in an effort to simplify the model or to decide how useful the model is.