

AMERICAN SOCIETY FOR QUALITY

*Cleveland Section 800
Polaris Career Center
4314 Mahoning Avenue, N.W.
Middleburgh Heights, Ohio 44130*

At the February 2009 ASQ Section 800 meeting, held at the Polaris Career Center in Middleburgh Heights, Ohio, Robert Skillman, a Certified Lean Six Sigma Master Black Belt and Lean Sensei, gave a talk on “*Demystifying Capability Indexes.*”

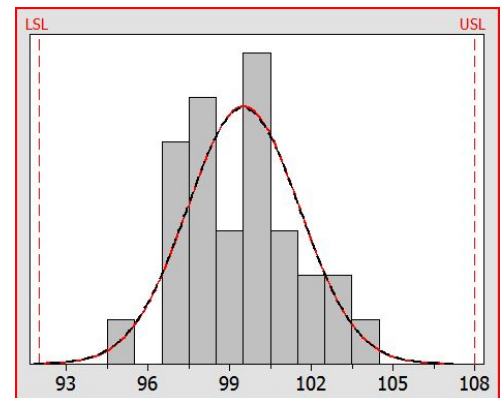


Robert Skillman

Bob introduced capability indexes as having two things in common; the voice of the customer (tolerances) and the voice of the process (data studies).

The **L**ower **S**pecification **L**imit (**LSL**) and the **U**pper **S**pecification **L**imit (**USL**) define the voice of the customer (VOC). The vertical bars and curve define the voice of the process (VOP).

Bob went on to say that in order to do a capability analysis the data collected (VOP) needs to meet certain key requirements (gates) in order to produce valid results.



Capability Chart

These requirements include:

A Capable Measurement System

Bob described how Measurement System Analysis (MSA) studies are used to determine the amount of variation introduced by the measurement system. Specifically, he introduced **Repeatability** (variation due to the measuring device) and **Reproducibility** (variation due to the operator).

Data is Free of Special Causes

Bob described how control charts can be used to identify **Special Cause** variation (excursions beyond the control limits).



IN THE CLASSROOM

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Data is Normally Distributed (Symmetrical)

The Anderson Darling test was introduced as the accepted method for determining whether or not the data is normally distributed. Data transformation techniques and subgroup sampling strategies can be used when the data is not normal.

Lastly, Bob introduced the various capability index calculations (C_p , C_{pk} , P_p , and P_{pk}). He defined each one, describing how and when they are used to compare the VOP with the VOC as well as interpreting the results.

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