Conformance Quality

Data Science for Quality Management: Understanding Process Variation

with **Wendy Martin**

Learning objective:

Discern between conformance to specification and conformance to target

Conformance As A Historical Basis for Defining Quality

Because all parts and products vary due to common causes of variability, we do not expect every part to be exactly the same (whether or not we can actually measure the variability present).

Conformance As A Historical Basis for Defining Quality

Engineering requirements as related to critical product characteristics, derived from measures of form, fit, function, use, or safety (and hopefully in concert with the translation of customer/consumer needs and expectations)….

Conformance As A Historical Basis for Defining Quality

…are described in terms of a **Nominal** value, and a unilateral Specification Limit (**SL**) or a bilateral set of Specification Limits (**USL** and **LSL**).

Conformance As A Historical Basis for Defining Quality

Nominal values represent the optimal value that each quality characteristic would have if we could produce every part or service identically.

Conformance As A Historical Basis for Defining Quality

Nominal values are stated engineering requirements and should not be confused with **Targets**.

Conformance As A Historical Basis for Defining Quality

Target values take actual process variability into account and may or may not be equal to Nominal values.

Conformance As A Historical Basis for Defining Quality

Products falling within specification limits are referred to as conforming units.

Conformance As A Historical Basis for Defining Quality

Products falling outside these limits are referred to as nonconforming parts or units and are considered unacceptable.

Conformance As A Historical Basis for Defining Quality

Note that some use the terms defective and nonconforming synonymously. This is not recommended. Defective units are those which are unacceptable due the presence of one or more nonconformities (defects).

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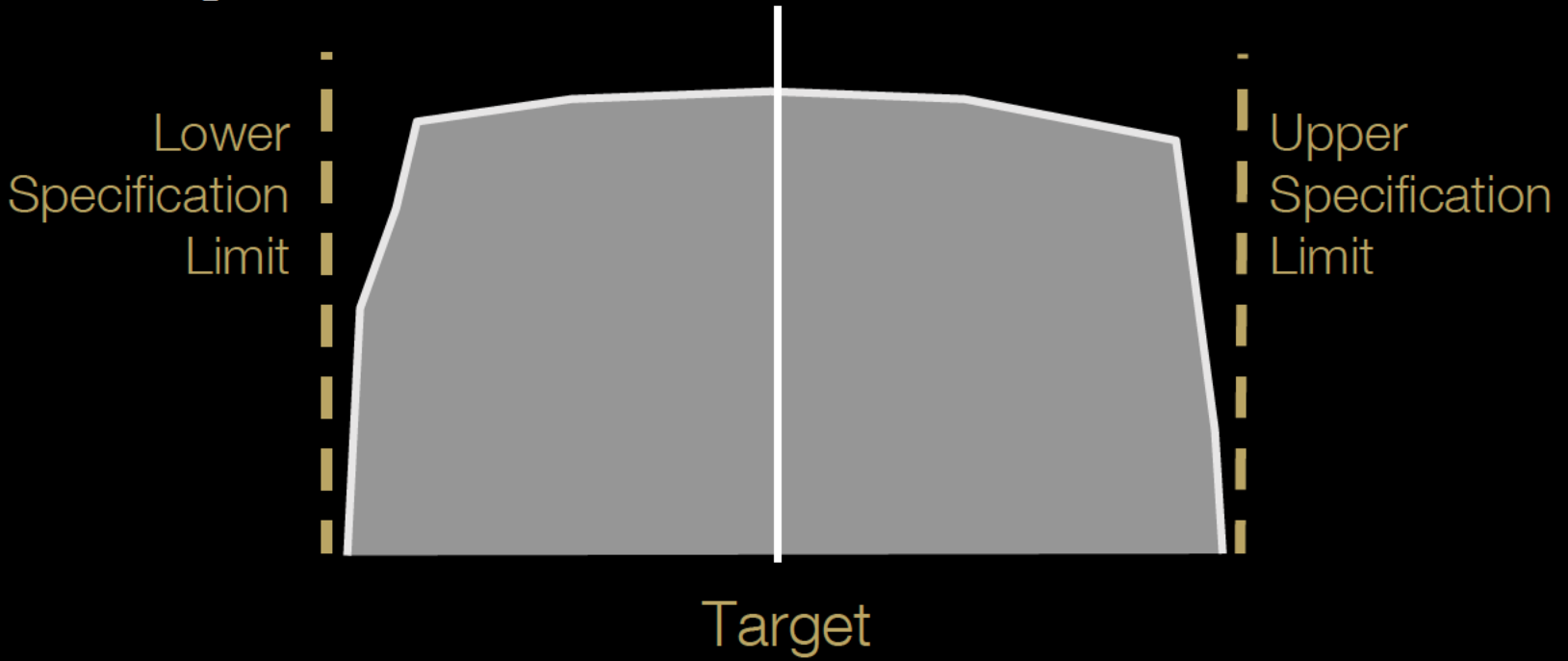
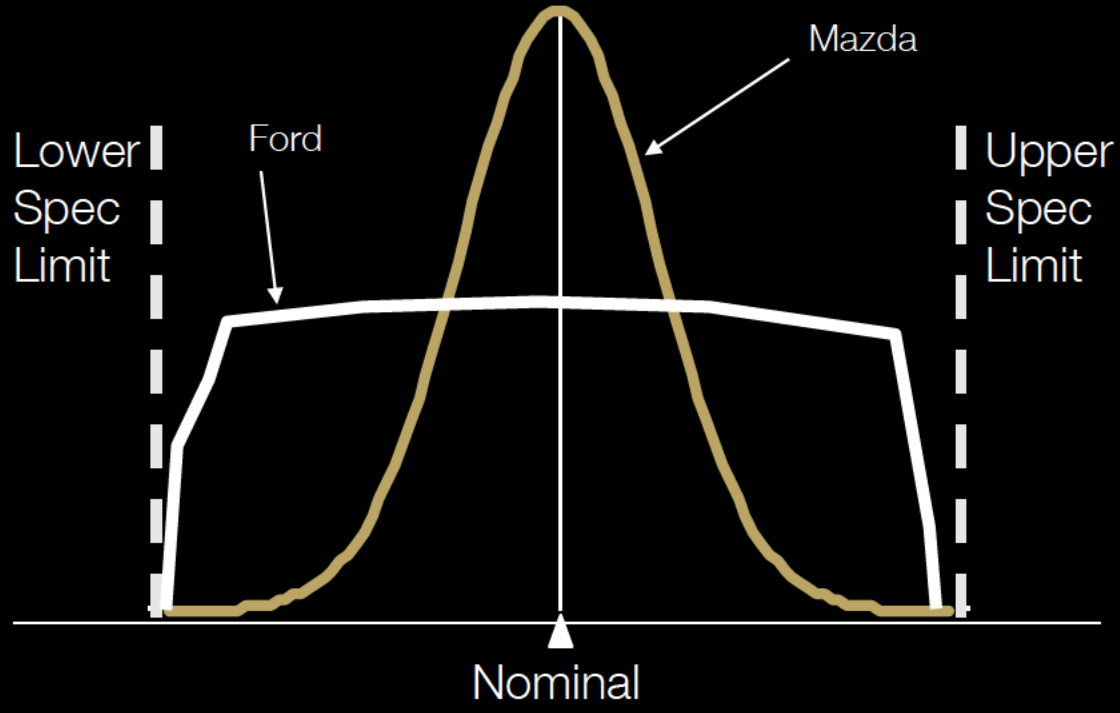
Quality Defined as Conformance to Specification



Mazda vs. Ford – The Batavia Transmission Study



The Modern Basis for Defining Quality

Regardless of product specifications, **any** departure from a target or nominal value results in a loss of productivity.

Sources

The material used in the PowerPoint presentations associated with this course was drawn from a number of sources. Specifically, much of the content included was adopted or adapted from the following previously-published material:

- Luftig, J. An Introduction to Statistical Process Control & Capability. Luftig & Associates, Inc. Farmington Hills, MI, 1982
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- Ouellette, S. Six Sigma Champion Training, ROI Alliance, LLC & Luftig & Warren, International, Southfield, MI 2005