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What's the concept of quality losses got to do with maintenance? More than you might have thought.

The Quality profession has lost another icon: Genichi Taguchi died on June 2, 2012. Along with Deming, Juran and Ishikawa, Dr. Taguchi was a true pioneer of the modern Quality movement.

Born in Japan in 1924, Taguchi served in the Astronomical Department of the Navigation Institute of the Imperial Japanese Navy during World War II. From the 1950s to the '70s, he

worked for the Japanese government and several companies in developing what became known as the Taguchi Methods: statistical approaches for improving the quality of manufactured goods. Interestingly, Taguchi Methods were largely unheard of outside Japan for many years. It wasn't until the 1980s that they became established elsewhere.

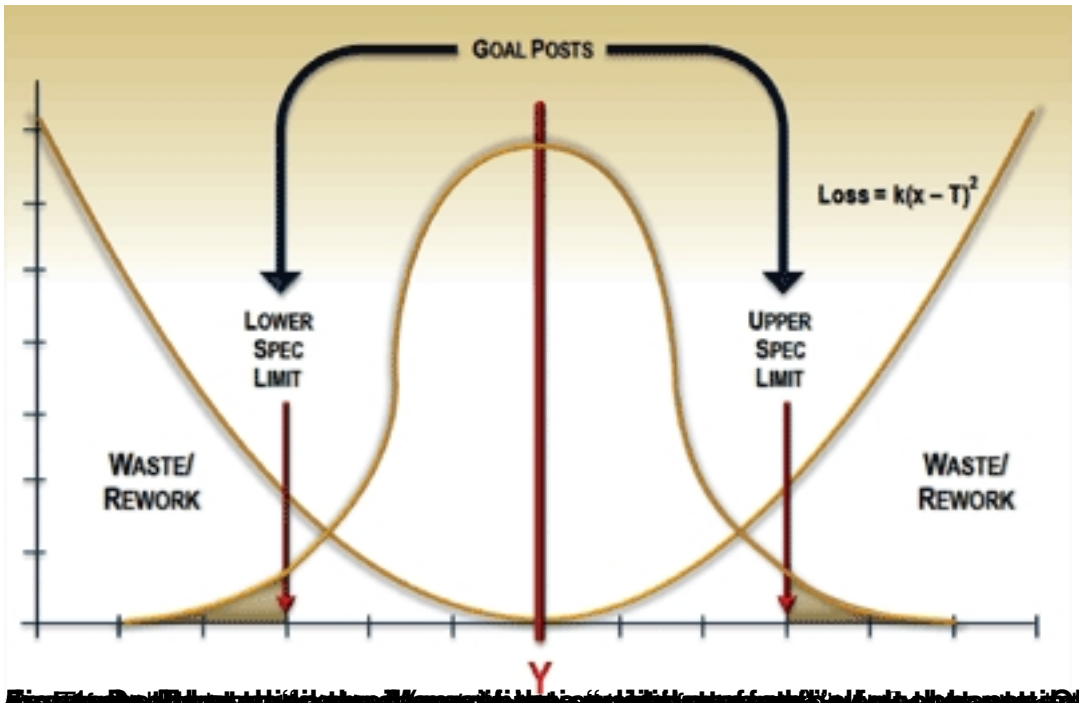
At this point, you may be asking, "What does all this have to do with the maintenance profession?" My answer: "Plenty."

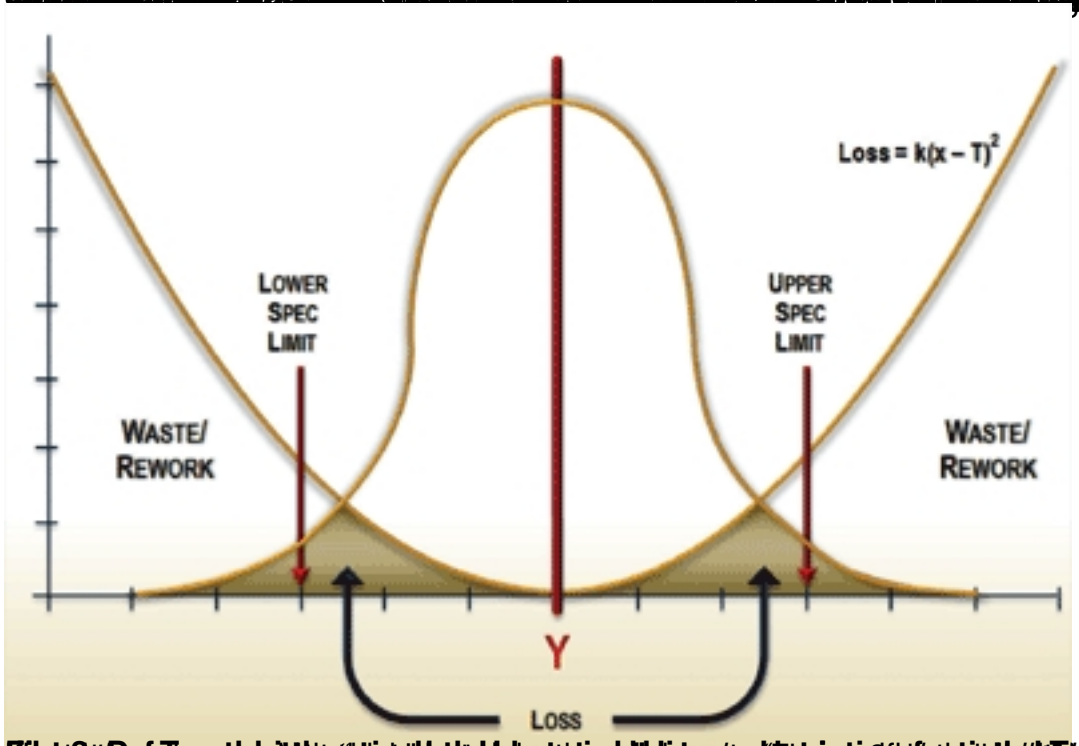
Putting things in context

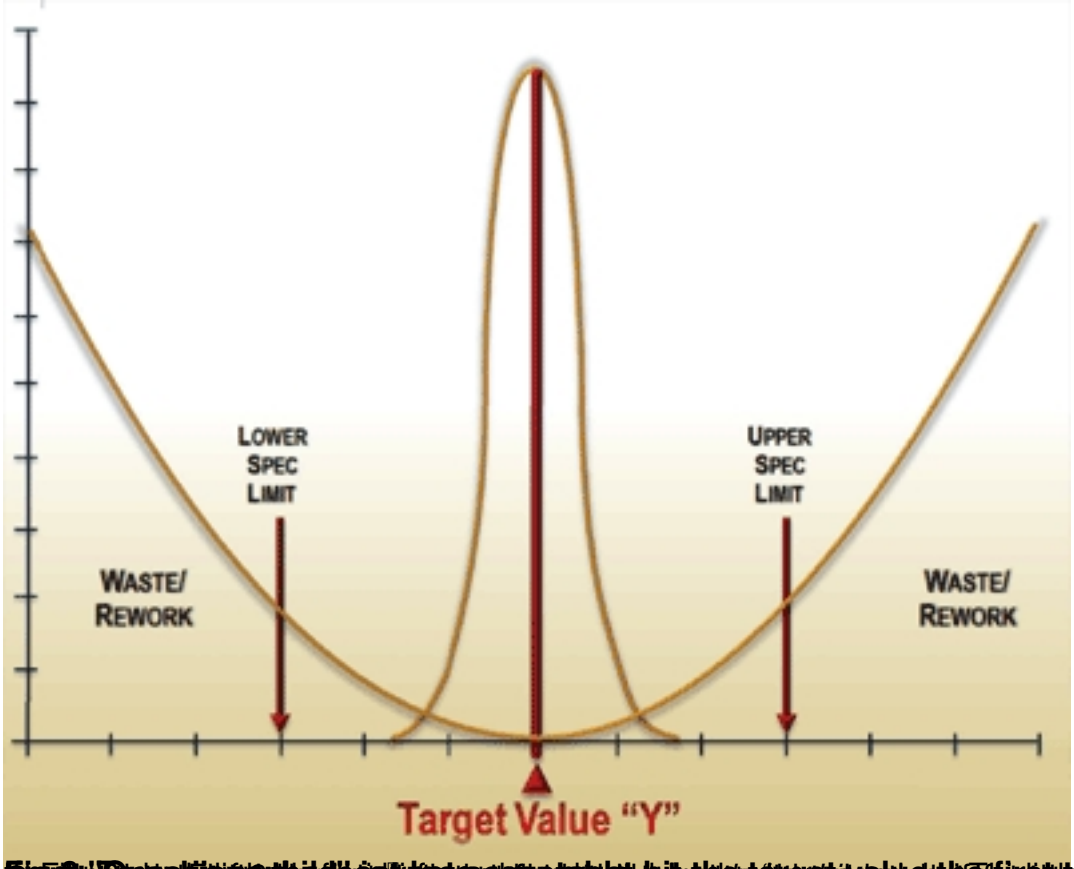
Working as a maintenance supervisor early in my career, I became fascinated by Quality Engineering. In the early 1990s,I attended a workshop at the California Institute of Technology in Pasadena, to hear Dr. Taguchi speak on the Taguchi Methods. Listening to him, I found myself captivated by the Quality Loss Function he developed in the 1970s. This graphical depiction of "loss" describes a phenomenon affecting the value of products produced or manufactured by a company: It establishes a financial measure of the end-user's dissatisfaction with a product's performance as it deviates from a target value.

Taguchi's quality loss concept showed us that quality does not suddenly nosedive when, for example, a machinist exceeds specification limits prescribed in the design blueprints. Instead, "loss" in value progressively increases as variation increases from the intended target value, which is much more rigorous. This was considered breakthrough thinking in describing quality losses. It subsequently helped fuel the continuous-improvement movement that has since become known as Six Sigma and Lean Manufacturing.

Dr. Taguchi likened the specification limits to goal posts used in football. Old-school thinking suggested that to score (achieve quality targets), you only needed to kick the ball between those posts (specification limits). Many in the quality profession were happy to get the "value" somewhere between the specification limits or "goal posts." To them, that would be "good enough" (see Fig. 1).


GOAL POSTS
Loss = k(x – T)²
LOWER SPEC LIMIT
UPPER SPEC LIMIT
WASTE/ REWORK
WASTE/ REWORK
Y


Loss = k(x – T)²
LOWER SPEC LIMIT
UPPER SPEC LIMIT
WASTE/ REWORK
WASTE/ REWORK
Y
LOSS



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