

## Taguchi Methods in Quality Control

Lecture XVII  
[Chapter 11 in textbook]

## Taguchi Methods in Quality Control

*Taguchi Philosophy*  
*Taguchi Methods*

## Taguchi Methods in Quality Control

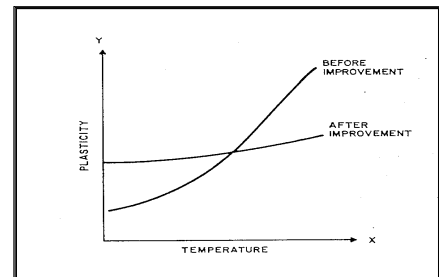
*Deming's Contribution*

~~Inspection~~ Process Control

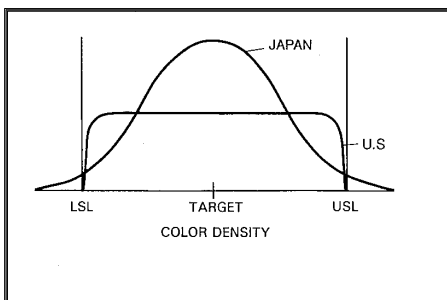
*Taguchi's Contribution*

~~Process Control~~ Robust Product & Process

## Robust Quality



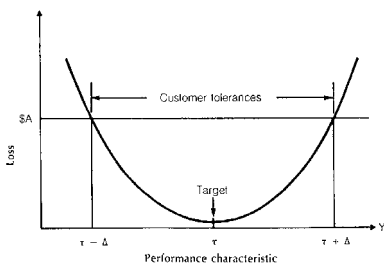
## Being "on target" rather than just "in-spec"



## Taguchi Use of Design of Experiments

Product Design  
Process Design  
Manufacturing

## The Loss Function



## Calculation of the Loss Function

$$y = (k - y)^2$$

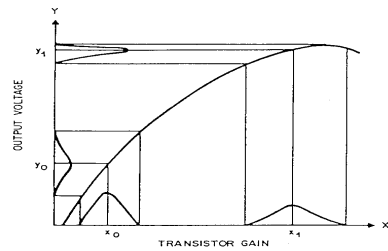
*Separation from the target*

## Use of the Loss Functions

Find a product design with a response that is:

*On Target*  
with a  
*Minimum of Variance*  
and  
*Least Cost*

## Optimization Based on Robustness



## Signal-to-Noise Ratios

$$Z = 10 \log (\bar{y}^2 / s^2)$$

## Four Groups of Factors

Influence on the the target only  
Influence on the signal-to-noise ratio  
Influence on the variation only  
No Influence



### **Taguchi Philosophy**

Experimental Design  
is a  
Poor Substitute  
for  
**System Knowledge**

### **Johnson Philosophy**

A person with a lot of common sense, but little technology, may not come up with the optimum solution;

However; a person with a lot of technology and no common sense is *really dangerous*