Signal to Noise (S/N) Ratio Approach
to Process Control and Optimization

Abstract:
Any process can be viewed as a black box that converts inputs (raw materials) into customer desired
product(s). Control factors and noise factors play a role in this conversion. While control factor settings
(called process parameters) chosen by the process engineer are acting on the inputs, the noise factors
introduce undesirable characteristics. As a result, the customer gets the output that is not at the best
level desired by the customer.
This presentation is focused on development of new products that exceed customer expectations. The
process parameters are generally developed in R&D setting based on the engineer’s experience and
research. Different levels of process parameter settings are tried out to find out the optimum settings
that give the most desirable output. During these trials the noise factors are well controlled and their
impact is minimized. When the process is released to the production department there is performance
degradation (in terms of meeting the customer specifications). This is generally blamed on operator
errors. The real problem is that the chosen levels of process parameters were never optimized to
address the influence of inevitable noise factors that are always present. Parametric design approach
introduces a new concept called Signal to Noise ratio (S/N). Controlled noise is internationally introduced
during R&D trials while experimenting with different settings of the process parameters. This approach
gives insight in the robustness of the process parameters that are immune from the production
department’s noise factors.
This presentation discusses one hypothetical example that explains the process optimization approach
based on Signal to Noise (S/N) ratio. Even though this approach is ideally suited for new product
development, it can also be used for existing products.
Speaker information
 Shrikant has 45+ years of experience in the manufacturing environment with a focus on process control
and process optimization. He is a certified Six�䠀ss isSix�䠀mԐङ頲䜃馓鐈✡醙荡ፙ顙䍡ፙ顙䍡ፙ顒褆　　a arԠl朘者뀀aracter. Mgeign᠀�c&桵䀀chugatcwion
�G�X�U�L�–���b‘�€`€e���0`��R�S�W�L��L�U����X��H�V��S�D�U�D�L�J)4@��J��