

USING SIMULATION FOR IMPROVED QUALITY & THROUGHPUT

Ramana Kappagantu, Ph.D. Sr. Technical Specialist, Siemens

ABSTRACT

In this paper the author proposes a simple model to simulate a production machine with rolling units. The model is built to mimic a nominal production behavior with a throughput of x parts per minute. The model is later exercised with changing speeds for improved throughput. The potential poorer product quality caused by the vibrations and resonances in the structure is captured in these simulations and is presented. Diagnostic metrics like the operational strains and modal contributions are studied and used to propose counter-measures. The model changes are simulated and results discussed. In the latter sections of the paper, the author proposes a noise model to capture the changing vibratory behavior of the machines and the ensuing noisiness which could have detrimental effects on the operator hearing. The cases of a single unit and multiple units in an assembly line context are considered for these noise models. Also considered is the efficacy of some counter-measures on the noise propagation.