

Robust design principles for reducing variation in functional performance - DTU Orbit (08/11/2017)

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This paper identifies, describes and classifies a comprehensive collection of variation reduction principles (VRP) that can be used to increase the robustness of a product and reduce its variation in functional performance. Performance variation has a negative effect on the reliability and perceived quality of a product and efforts should be made to minimise it. The design principles are identified by a systematic decomposition of the Taguchi Transfer Function in combination with the use of existing literature and the authors' experience. The paper presents 15 principles and describes their advantages and disadvantages along with example cases. Subsequently, the principles are classified based on their applicability in the various development and production stages. The VRP are to be added to existing robust design methodologies, helping the designer to think beyond robust design tool and method application, towards forming product variation management strategies.

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Authors: Christensen, M. E. (Intern), Howard, T. J. (Intern)

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