Technical University of Denmark

Popular science summary of the PhD thesis

PhD student	Srinivasa Murthy Boorla
Title of the PhD thesis	Zero Variation Manufacturing (ZVM) - A strategy for robust products with zero perceivable variation
PhD school/Department	Konstruktion og Produktudvikling – DTU Mekanik

Science summary

* Please give a short popular abstract in English (approximately half a page) suited for the publication of the title, main content, results and innovations of the PhD thesis also including prospective utilizations hereof:

We are all customers, purchasing and using products every day. However, it is often the case that the product performance does not match exactly that promised by the manufacturer. Product performance deviates due manufacturing variations, causing inconsistency and in turn, dissatisfaction to the consumer society.

Robust design and total quality management techniques developed past few decades pushed manufacturers towards a Zero Defect Manufacturing (ZDM) paradigm, where they are able to maintain product performance within specific limits of variation.

The PhD study proposes a paradigm shift from ZDM to Zero Variation Manufacturing (ZVM). To achieve ZVM, it is required that products are produced with ZERO perceivable difference in their performance from experience of the customer/user. However, this does not require that no variation exists at the part manufacturing level. In fact, it is possible to meet ZVM with greater customer satisfaction whilst loosening tolerance demands in manufacturing! The study investigates each stage of manufacturing, developing the methods of understanding variations and ensuring ZVM feasibility in the final production.

Along with opportunities, challenges and gaps with current industry are discussed. This research sought of change the current industry view that “variation needs to be tolerated” to “variation should not be experienced”. This allows quality engineering companies to compete not on cost or number of functions offered, but on another quality paradigm – the robustness of the product.

Please email the abstract to the PhD secretary at the department