# Overview of Morton Effect Related Simulation and Experiments

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This phenomenon prevents some industrial machines such as compressors and turbines from attaining their design speeds and loads due to increasing levels of vibration at a constant speed. The mechanism for this anomaly is shaft bow occurring at fluid film bearings as a result of asymmetrical heating of the journals due to synchronous vibration. The authors have compiled and extensive publication record for their analytical, simulation and experimental work related to the Morton effect. The results show that extensive, high fidelity modeling is required to reliably predict the Morton effect and devise means to suppress it. This include modeling of tilt pad bearing pad flexibility and thermal expansion along with journal centrifugal and thermal growths, and thermal deflection and vibration of complex shafting. Morton effect involves both long (thermal) and short (vibration) time constants which poses a special challenge for keeping code execution under practical limits for industrial applications. The presentation will present modeling methods, computation algorithms to reduce run time, experimental results and correlations with predicted results.