

Random effects applied to the study of deterioration models

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Abstract. Models that describe the deterioration process of the components that make up a system are key to determining the system's lifetime. These models also play a fundamental role in predicting the system reliability and planning the system maintenance. Although the units may be identical, in most systems there is heterogeneity among the degradation paths of the units. To account for the intrinsic inter-unit variability, random effects models are introduced through the use of random coefficients. A condition-based maintenance policy with periodic inspections is applied to a degrading system to reduce the impact of failures and optimise the total expected maintenance cost.

Keywords: heterogeneities; condition-based maintenance; Cox process

References

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