

Abstract

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Reliability and Maintainability Parameters Estimation under Imperfect Repair and Maintenance by a Genetic Algorithm

The determination of reliability and maintainability (RAM) is important for maintenance planning. This work estimates the RAM parameters of a component under the condition of imperfect maintenance. The problem is formulated as a nonlinear optimization model with the likelihood function as an objective function to be maximized. Genetic algorithm (GA) approach is used to solve the model to determine the values of coefficients of virtual age after preventive and corrective maintenance and to determine scale and shape factor of Weibull distribution of time to failure. A case study was applied and the GA method showed satisfactory results.