

Imperfect repair models with planned preventive maintenance

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Abstract

The aim of this paper is to present a general framework for the simultaneous modelling and assessment of the efficiency of corrective maintenance actions and planned preventive maintenance actions for complex repairable systems. The framework proposed generalizes classical Kijima's virtual age models and involves a large number of existing models where preventive maintenance is done at fixed time, age or failure intensity. The main features of this general modelling are derived: distribution of the next failure time, marginal and joint distribution of time and type of next maintenance, likelihood function. Several particular cases of maintenance effects are proposed, based on a virtual age idea. Finally, an application to a real data set issued from electricity production systems is presented.