

ABSTRACT

Prediction of the reliability for repairable system after maintenance actions is usually based on mathematical models, which can be classified as parametric and non-parametric models where the parametric model is required a prior specified life time distribution while non-parametric model is that relaxes of the assumption of the life time distribution. Nonparametric life time models are including proportional hazard model and proportional odd model. In this study we develop repairable reliability model concentrates on generalized repairable model (GRM) that indicate the mixture of proportional hazard model and proportional odd model. A proportional hazard-proportional odds (PH-PO) model for the purpose of improving the repairable reliability to obtain accurate estimation of reliability for repairable industrial boiler system at normal operating conditions depending on transformation parameter of reliability prediction for repairable system that represents Beji industrial boiler in power plant. The transformation parameter value used in this study is form 0 to 1 which makes the generalized model suitable for failure time data. The results show the odd model is better than hazard model for repairable system after preventive maintenance in order to estimate a reliability which depends on time to repair where transformation parameter (C) equal 0.0525094 it is closer to odds model than hazard model.

In addition, reliability of industrial boiler in case without temperature effect is better than reliability with temperature effect by using exponential model where we note that the reliability at 500C° it is worse state where decreases more than $(400,450)\text{C}^\circ$, for example reliability critical (R_0) at 500C° equal (0.5) at time (800)hr while in case 400C° reliability critical (R_0) at time 1009hr, but 450C° reliability critical (R_0) at time 950hr. This mean whenever the greater temperature the reliability is decreased.