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Accelerated Life Testing of a Knock Sensor Using Arrhenius-Weibull Life Strength Relationship

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Abstract: Nowadays, modern and reliable products capable of having a long life have caused a need for models capable of predicting the life of products using accelerated life Testing. This paper presents a single-stress reliability model using Arrhenius-Weibull relationship for prediction of the life of products. Application selected is a knock sensor. In this paper is investigated the Arrhenius model with the use of Weibull Distribution on the study of Accelerated Life Testing (ALT). Statistical inference is done in order to estimate the parameters involved in the model and predict reliability of the accelerated life test. The Weibull distribution was tested in order to determine if the model is properly used. Finally, estimation of reliability of the knock sensor is presented using the estimated parameters.

Keywords: Reliability Analysis, Accelerated Life Testing, Arrhenius-Weibull Model, Knock Sensor