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(k_1, k_2, \dots, k_m) -out-of- n system and its reliability

Serkan Eryilmaz

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(k_1, k_2, \dots, k_m) -out-of- n system and its reliability

by

Serkan ERYILMAZ*

Abstract

This paper is concerned with a system consisting of multiple types of components and having (k_1, k_2, \dots, k_m) -out-of- n structure. The (k_1, k_2, \dots, k_m) -out-of- n system is a system consisting of n_i components of type i , $i = 1, 2, \dots, m$, and functions if at least k_1 components of type 1, k_2 components of type 2, ..., k_m components of type m work, $n = \sum_{i=1}^m n_i$. The exact and approximate expressions are obtained for the survival function of the system under concern. The weighted- (k_1, k_2, \dots, k_m) -out-of- n system is also defined and studied. This weighted model is applied to evaluate the wind power system that consists of two wind plants.

Keywords. Dependence; k -out-of- n system; Reliability approximation; Wind power system

* Atilim University, Department of Industrial Engineering, 06836, Incek, Ankara, Turkey, e-mail: serkan.eryilmaz@atilim.edu.tr, Fax: +90 312 586 80 91

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