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Reliability Assessment of Used Components in Consumer Electronics Products

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Abstract

Products need to be considered for their entire life cycle from design, manufacture, and sale, through to use and end-of-life in order to optimize the production processes and to reduce impacts on the environment. To competitively exploit these products, one option is to incorporate used components in ‘‘new’’ or remanufactured products. However, this option is partly limited by a firm’s ability to assess the reliability of used components. The methodology proposed in this paper addresses the problem of reliability assessment of used parts by considering two important aspects. Firstly, it assesses the overall reuse potential of components with a clear understanding of the failure mechanism. Secondly, it determines the actual (used) life of the components by analyzing the operating history of components. This is a critical advance in sustainable management of supply chains since it allows for a better understanding of not only service requirements of product, but the remaining life in a product and hence its suitability for reuse or remanufacture.

Keywords
Reliability assessment, Sustainability, Remaining life