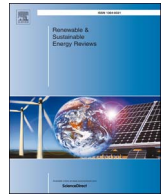




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Advances in fatigue life modeling: A review

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ABSTRACT

The purpose of this paper is to examine the state-of-the-art research efforts linked with the development of fatigue life estimation models. The main objective is to identify new concepts for fatigue life estimation other than the classical models and their hybrids. Various techniques to estimate fatigue life have been identified, such as critical plane deviation, 5D deviatoric space enclosed surface, modified Wholer curve. However, the most notable one to be found is the application of evolutionary optimization algorithms for, e.g., genetic algorithms, artificial neural networking, and differential ant-stigmergy algorithms. Initially, a brief history of fatigue life estimation and modeling is presented. In subsequent sections, some familiar classical models are discussed, and then various innovative approaches to fatigue life prediction are reviewed. The survey is fairly detailed, and best efforts have been made to the net in as many new methodologies as possible. The review is organized to offer insight on how past research efforts have provided the groundwork for subsequent studies.

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