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Soggetti	Mechanics Mechanics, Applied Industrial engineering Production engineering Nuclear energy Building materials Solid Mechanics Industrial and Production Engineering Nuclear Energy Structural Materials
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Background on stochastic models for cumulative damage process -- Basic mathematical tools for stochastic fatigue analysis -- Stochastic model for thermal fatigue crack growth -- Application -- Conclusions.
Sommario/riassunto	The book describes a systematic stochastic modeling approach for assessing thermal-fatigue crack-growth in mixing tees, based on the power spectral density of temperature fluctuation at the inner pipe surface. It shows the development of a frequency-temperature response function in the framework of single-input, single-output (SISO) methodology from random noise/signal theory under sinusoidal input. The frequency response of stress intensity factor (SIF) is obtained by a polynomial fitting procedure of thermal stress profiles at various

instants of time. The method, which takes into account the variability of material properties, and has been implemented in a real-world application, estimates the probabilities of failure by considering a limit state function and Monte Carlo analysis, which are based on the proposed stochastic model. Written in a comprehensive and accessible style, this book presents a new and effective method for assessing thermal fatigue crack, and it is intended as a concise and practice-oriented guide for all undergraduate students, young scientists and researchers dealing with probabilistic assessment of structural integrity. .