



Book Reviews

Prediction of Service Life for Machines and Structures, by V. V. Bolotin, THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, 1989.

This book is highly recommended by the reviewer for persons working in the solid mechanics and material science and engineering areas. Many basic approaches and methods outlined in the book are commonly used in design as well as basic research. A systematic description of the theories leading to the prediction of the durability and lifetime of machines and structures is given. In particular, the following topics are discussed in detail: reliability theory of machines and structures, semi-empirical models for damage accumulation, prediction of structural service life at the design stage, prediction of safety and risk indexes, prediction of residual service life and mechanics of fatigue failure.

Some background is needed to clearly understand the approach and results described in this book. For instance, a background in fatigue and fracture mechanics is needed to appreciate the content of Chapters 3 and 4, where the Coffin-Manson law for low-cycle fatigue and the Paris formula for crack propagation under fatigue are used as examples to employ the models. A knowledge of statistics is also preferred by the author. Chapters 2, 5, and 6 have a heavy involvement with probability theory.

The papers and results quoted in this book are mainly from the Russian literature. This may not be convenient when checking some of the original results and ideas.

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Process Design for Reliable Operations, by Norman P. Lieberman, Gulf Publishing, 1988, 253 pp., \$35.00.

This short book is directed at students in Chemical Engineering, young process design or operating engineers, and those in allied sciences seeking some background in the fast moving field of Chemical Engineering Process Design. The book is clearly and simply written with extensive subheadings which make it easy to find specific items. A considerable amount of illustrative material is included as well as a glossary of terms, commonly used by Chemical Engineers, that have developed a meaning peculiar to the process industry.

After a humorous introduction, which outlines the basic idea of Chemical Engineering Process Design, the book is divided into eighteen enlightening and entertaining additional chapters. Topics such as sizing process vessels, choosing between packing and trays for a distillation column, designing heat exchangers and centrifugal pumps, practical difficulties of operating a vacuum system, surface condenser, steam jets and other equipment used in the operation of chemical plants, are covered in this book. As a former design engineer for a very large chemical company, I found the book valuable for anyone who wishes to learn something about the importance of Process Design, its uses in the Petro-Chemical Industry, and its great potential for technological applications. The author guides the reader through the field of Process Design by using enlightening anecdotes and illustrations that produce solutions to actual design and plant problems. The author has made an effort to show the reader how to avoid/overcome specific problems in process design and equipment. I do not recommend the book as a classroom textbook; however, I would make it required reading for any future engineer. Anybody reading this book develops a feeling for what it is like to work as a process designer.

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Models for optimization and prediction of service life of machinery by various parameters (economic, technical, and ecological) were developed. The paper describes the use of the most popular models for optimization of service life of machinery, which are economic models. Costs have a very complex structure. The following formula states a simplified expression of costs on maintenance and operation of machinery fleet: Economists consider the first term as conditional-con. Thus, the optimum service life of the machine is in the time range from t_{ok} to t_{nax} . The described method of data processing on operating time of machinery fleet may serve as a basis for predicting of service life not only for machinery, but also for any technical facilities. Service life prediction (SLP) involves estimation of functional lifetime for materials and system components from time-limited end use datasets or data produced from accelerated simulations of end use conditions. Service life is formally defined as the "period of time after installation during which essential properties meet or exceed minimum acceptable values" [21].

Abstract Among the factors that mostly influence the damage of ancient masonry structures, viscous sliding and creep-fatigue interaction are among those that worth mentioning; in particular, persistent heavy loads have proved to be the cause of a continuous and slow damage. Structures service life probability of failure random loads environmental loads material degradation fatigue creep fracture stress- strength interference. This is a preview of subscription content, log in to check access. Preview.

Bolotin, V. V., Prediction of Service Life for Machines and Structures, ASME Press, New York, 1989. Google Scholar. 3. Masters, L. W., ed., Problems in Service Life Prediction of Bulding and Construction Materials, NATO ASI Series E: Applied Sciences - No. 95, Martinus Publishers, the Netherland, 1985. Google Scholar. 4. ÅEaÅko, J., Bily, M., and Bukoveczky, J., Random Processes: Measurement, Analysis, and Simulation, Elsevier, Amsterdam, 1988. zbMATH Google Scholar.

Machine learning and data mining. v. t. e. Structured prediction or structured (output) learning is an umbrella term for supervised machine learning techniques that involves predicting structured objects, rather than scalar discrete or real values. Similar to commonly used supervised learning techniques, structured prediction models are typically trained by means of observed data in which the true prediction value is used to adjust model parameters. Due to the complexity of the model and the Prediction of Service by V.V. Bolotin. Other editions. Want to Read saving €! Error rating book. Refresh and try again. Rate this book. Clear rating. See a Problem? We'd love your help. Let us know what's wrong with this preview of Prediction of Service Life for Machines and Structures by V.V. Bolotin. Problem: It's the wrong book It's the wrong edition Other. Details (if other): Cancel. Thanks for telling us about the problem. Return to Book Page. Not the book you're looking for? Preview " Prediction of Service Life for Machines and Structures by V.V. Bolotin. Prediction of Service Life for Machines and Structures. by. V.V. Bolotin.