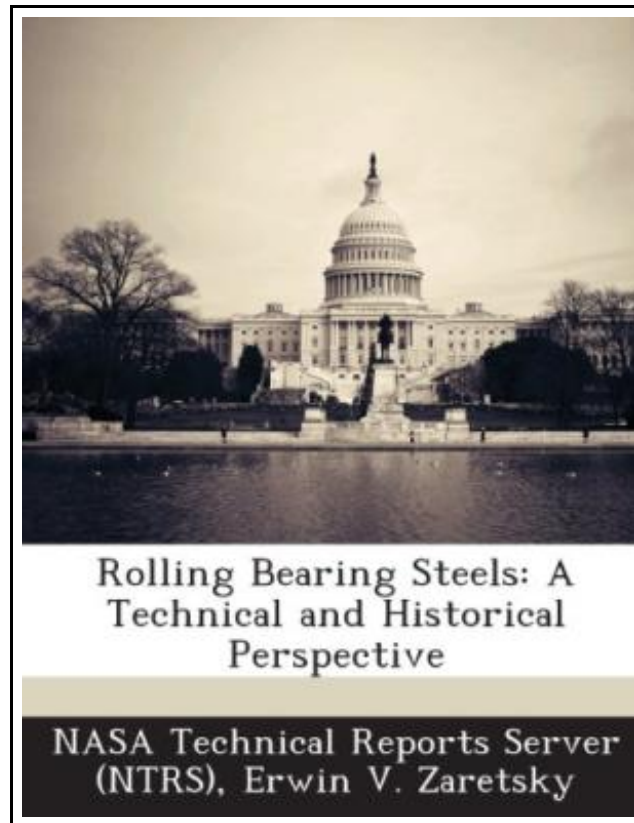


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## ROLLING BEARING STEELS: A TECHNICAL AND HISTORICAL PERSPECTIVE



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Bibliogov, United States, 2013. Paperback. Book Condition: New. 240 x 182 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.Starting about 1920 it becomes easier to track the growth of bearing materials technology. Until 1955, with few exceptions, comparatively little progress was made in this area. AISI 52100 and some carburizing grades (AISI 4320, AISI 9310) were adequate for most applications. The catalyst to quantum advances in high-performance rolling-element bearing steels was the advent of the aircraft gas turbine engine. With improved bearing manufacturing and steel processing together with advanced lubrication technology, the potential improvements in bearing life can be as much as 80 times that attainable in the late 1950s or as much as 400 times that attainable in 1940. This paper summarizes the chemical, metallurgical and physical aspects of bearing steels and their effect on rolling bearing life and reliability. The single most important variable that has significantly increased bearing life and reliability is vacuum processing of bearing steel. Differences between through hardened, case carburized and corrosion resistant steels are discussed. The interrelation of alloy elements and carbides and their effect on bearing life are presented. An equation relating bearing life, steel hardness and temperature is given. Life factors for various steels are suggested and discussed. A relation between compressive residual stress and bearing life is presented. The effects of retained austenite and grain size are discussed.



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