

Heat treatment of gears: a practical guide for engineers

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Abstrak

This book is designed to provide engineers with a better understanding of heat treatment and its effects on gear quality and performance, especially as these considerations are critical to ensuring that the gears perform satisfactorily under anticipated service conditions. Increased demand for gears to transmit more power through smaller, lighter, quieter, and more reliable packages that must operate over a wide range of service conditions has made the design and manufacture of gears much more complex. Gears manufactured from certain steels are found to meet these demands, and become especially effective when heat treated and finish machined for high geometric accuracy. However, distortion of the gear after heat treatment offers the engineer a challenging opportunity not only in ensuring a high quality product but also in controlling manufacturing costs. Heat treat distortion of gears is discussed in detail for the major heat treat process, and a case history of each successful gear heat treat process is included. Contents: Introduction to Gear Heat Treatment Properties of Iron Heat Treatment of Gears Through-Hardening Process Carburizing and Hardening Nitriding Modern Nitriding Processes Carbonitriding Induction Hardening Selection of Heat Treat Process for Optimum Gear Design.