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BOOK REVIEW

High-Conformal Gearing: *Kinematics and Geometry*, by Stephen P. Radzevich, CRS Press, Taylor & Francis Group, Boca Raton 2016, xxiv + 332pp, ISBN 978-1-4987-3918-4.

The present book is devoted entirely to the kinematics and geometry of conformal and high-conformal gearing. The important topics like gear accuracy, gear loading, gear wear, gear lubricating, vibration generation, and noise excitation, etc., are not addressed in this book.

Specifically, the *Introduction*, underline the main problem discussed in the book namely, transmitting a rotation smoothly from a driving shaft with the highest possible power density to a driven shaft. The importance of this subject requires the necessity of gear boxes of the smallest possible size that are capable of transmitting the highest possible power. The historical background and the organization of the book is given.

Chapter one - *A Brief Overview of Conformal Gearing*: *State of the Art*, begins with a terse consideration of the necessary and sufficient criteria that the geometrically accurate (ideal) gearing needs to meet. Ancient designs of conformal gearing, that is, pre-Leonardo da Vinci (1493) designs are briefly discussed here. The designs of conformal gearing proposed in the beginning of the twentieth century are also considered. Weakness of these designs is mostly because they were developed based only on common sense and not on scientific theory of gearing as such a theory was not known at this time. This is the reason all the proposed designs of conformal gearings, including Wildhaber's helical gearing to fail. Fortunately, in 1954 Novikov gearing - a perfect example of conformal gearing, is invented. At the end of this chapter, the features of tooth flank generation in Novikov gearing are considered.

In Chapter two - *Conditions for Transmitting a Rotation Smoothly*, the set of three necessary and sufficient conditions to transmit a rotation smoothly is established, namely: the condition of contact of the tooth flanks of the gear and the mating pinion, the condition of the conjugacy of the interacting tooth flanks, the condition of the equality of the base pitch of the gear, and the pinion of the operating base