

Key design aspects of a wind turbine SRB main bearing for field operation performance

Xuehai Gao¹, Xun Wang¹, and Zekun Zhang¹

¹Shanghai Dianji University

April 23, 2024

Abstract

A main bearing (MB) preforms the critical role of supporting the rotor and whole drive train in a wind turbine. It endures very heavy and complex load coming from the rotor, meanwhile, high reliability in whole operation life is required for the high cost of MB replacement. Taking a spherical roller bearing (SRB) MB as an example, the paper analyzed complex load characters of a SRB MB configuration and discussed how to simplify the complex load in MB design works, then the key aspects influencing the MB performance were discussed, including raceway performance and shrink fit. Further more, thresholds of raceway contact pressure occurrence, fitting contact pressure and hoop stress were presented based on the state of art experiences. The paper gives an overview of SRB MB design for field operation performance.

Hosted file

manuscript.docx available at <https://authorea.com/users/773460/articles/863446-key-design-aspects-of-a-wind-turbine-srb-main-bearing-for-field-operation-performance>