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Design and optimization of billet structure about High-speed Rail bearing in cold rolling

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Abstract

Bearing is one of the key parts in high-speed trains. To achieve the high-precision forming of outer ring in bearing for high trail, the paper analyses the sections of the outer ring and deduces the calculating formula for the volume. All of that is based on the basic theory of cold rolling and the principle of volume conversation by the application of the finite element software ABAQUS. According that, the paper designs four typical structure of blank of the outer ring in bearing and then analyses their defects and causing reasons in the process of cold rolling between different structure. Through the analysis, the paper eventually gets the best size of the symmetric blank about outer ring, which lays the theoretical foundation of implementing the high-precision forming of outer ring in bearing for high trail.