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The Influence of Cycle Index of Simulation Condition on Main Bearing Wear Prognosis of Internal Combustion Engine

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Abstract : The update frequency of wear profile in main bearing wear prognosis of internal combustion engine plays an important role in the calculation efficiency and accuracy. In order to investigate the appropriate cycle index of the simplified working condition of wear simulation, the main bearing-crankshaft journal friction pair of a diesel engine in service was studied in this paper. The method of multi-body dynamics simulation was used, and the wear prognosis model of the main bearing was established. Several groups of cycle indexes were set up for the wear calculation, and the maximum wear depth and wear profile were compared and analyzed. The results showed that when the cycle index reaches 3, the maximum deviation rate of the maximum wear depth is about 2.8%, and the maximum deviation rate comes to 1.6% when the cycle index reaches 5. This study provides guidance and suggestions for the optimization of wear prognosis by selecting appropriate value of cycle index according to the requirement of calculation cost and accuracy of the simulation work.

Keywords : cycle index, deviation rate, wear calculation, wear profile
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