Research on Integrated Optimization Design Method for Diesel Engine Valve Train

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In order to have a good performance of gas exchange in working process, a function of six order polynomial dynamic cam was established in this paper. The influence of the maximum ample factor to valve including the maximum positive and negative accelerations and the minimum curvature radius was analyzed by NLPQL. On this basis, multi-body dynamic analysis for diesel engine valve train was done, valve train dynamic model was established by ADAMS, multidisciplinary optimization process of cam profile and its model was put forward, and ISIGHT software was used to optimization and calculation. Finally, a set of different cam parameters and corresponding valve performance parameters was established, multipart integrated design and multidisciplinary optimization for diesel engine valve cam was realized. This paper provides a new method for the multicomponent integration design and multidisciplinary integration optimization for diesel engine valve train.

Keywords: Multidisciplinary Optimization; Valve Train; Cam Profile; Ample Factor

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