摘　要

对有限元的方法与拓扑优化方法等结构优化设计技术在减速器箱体结构的优化设计特别是在轻量化和低噪音设计的原理、应用及效果进行了概述；通过铸造过程分析程序，提供了填充和硬化外壳模型的结果。结果表明，建模结果的作用主要是对铸造缺陷的形成、大小、分布和原因进行相应的预测。我们可以将铸造过程进行快速的、经济的进行优化，修复铸造缺陷，提高铸件质量，降低生产成本。

关键词：减速机箱体；结构优化设计；铸造工艺优化；数值模拟

ABSTRACT

……Abstract: The principle, application and effect of finite element method, topological optimization method and other structural optimization design techniques in the optimization design of reducer casing structure, especially in lightweight and low noise design are summarized. The simulation results of filling and solidification process of reducer casing with casting process analysis software are introduced. The results show that the simulation results can be used to predict the formation, size, distribution and cause of casting defects. It can quickly and economically optimize casting process, eliminate casting defects, improve casting quality and reduce production cost.

Keywords: reducer casing; Structural optimization design; Optimization of casting process; The numerical simulation