
分体式自卸叉车结构设计

摘 要

叉车作为一种多用途、机动性强的物料装卸搬运机械得到了广泛的应用。本文阐述了国内外叉车的研究现状、研究动态和叉车在物流运输中的重要地位，针对手动叉车的作业空间较为单一，不能在较小空间内做高效运输等问题，开发设计了一款分体式自卸叉车，并提高工作效率，节省人力，主要完成以下工作。

首先，根据叉车工作环境设计合适的外形尺寸；完成门架机构、剪叉机构、升降机构、叉板机构的结构设计；运用 solidworks 软件完成了分体式自卸叉车的三维实体建模；通过理论计算完成了叉车液压系统及关键零部件的设计计算；基于 solidworks simulation 软件对叉板机构进行了额定载荷下的静力学有限元分析。并用 auto CAD 软件完成了相关二维工程图的绘制。

关键词：分体式叉车，总体设计，液压系统，有限元分析

Structural design of split dump forklift truck

Abstract

Forklift truck has been widely used as a versatile and highly mobile material handling machine. This paper expounds the current research of forklift, the research dynamic and forklift in the important position in the logistics transportation, for manual forklift truck operation space is relatively single, can't do efficient transportation problem in within a small space, the development has designed a system dump forklift, and improve work efficiency, save manpower, mainly completed the following work.

First of all, according to the forklift work environment design appropriate external size; Complete the structural design of door frame mechanism, shear fork mechanism, lifting mechanism, fork plate mechanism; Solidworks software is used to complete the 3d modeling of split dump forklift truck. The design and calculation of hydraulic system and key parts of forklift truck are completed by theoretical calculation. Based on solidworks simulation software, the static finite element analysis of fork plate mechanism under rated load was carried out. The two dimensional engineering drawings were drawn by auto CAD software.

Key words: split forklift, overall design, hydraulic system, finite element analysis

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