玻璃清洁机器人的设计

摘　　要

社会进步，时代发展，大城市随处可见高楼大厦。新型结构的高层建筑也开始大量出现，为了追求美观和更多的光照度越来越多的建筑使用玻璃幕墙，玻璃幕墙结构可以提高采光度，缺点是易脏。目前对于玻璃幕墙的清洗大部分均是采用高空吊篮方式人工的进行清洗，此种方式工作效率低成本高，并且具有一定危险性，容易导致工人的人身安全受到威胁，因此采用机械化设备代替人工清洗幕墙具备较高的研究意义和研发价值，本次设计主要内容为设计一款用于清洗玻璃幕墙的专用清洗机器人，可实现自动化清洗工作，自动供水、自动路线移动以及实现自动避障功能，同时也可以人工远程操作，需要根据实际的工作环境，分别对清洗机构以及爬壁机构重点设计，结合市场上相关同类产品，制定本次设计的多种可行方案并选择最优方案，该清洁机器人机构将采用三相电机驱动、齿轮机构传动、带结构传动等方式进行分析设计，利用 solidworks 建立机械结构的空间模型对各零件进行设计以及运动仿真分析，确认合理性。

关键词:清洗机器人；齿轮机构；刷洗

The design of glass cleaning robot

ABSTRACT

With social progress and the development of The Times, tall buildings can be seen everywhere in big cities. New structure of high-rise buildings also began to appear in large Numbers, in order to pursue beauty and more illumination, more and more buildings use glass curtain wall, glass curtain wall structure can improve the degree of lighting, the disadvantage is easy to dirty. For glass curtain wall cleaning most of all is to use high way of hanging basket artificial cleaning, which low cost and high working efficiency, and has certain risk, easy to cause the worker's safety is threatened, so the mechanized equipment instead of manual cleaning curtain wall with high research significance and research value, this design main content is to design a special cleaning robot is used for cleaning the glass curtain wall, which can realize automatic cleaning, automatic water supply, automatic route mobile and realize automatic obstacle avoidance function, at the same time can also be artificial remote operation, need according to the actual working environment, Respectively and climbing institutions focus on design of cleaning mechanism, combined with the related products on the market, develop the design of a variety of feasible solutions and select the optimal scheme, the cleaning robot mechanism will be driven by three-phase motor, gear transmission, analysis and design, in the form of transmission belt structure and the mechanical structure of the space was established based on solidworks models of the parts design and motion simulation analysis, confirmed the rationality.

Key words :Cleaning Robot；Gear mechanism；Scrub

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