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高效率模块化航空静止变流器的研制

张方华, 龚春英

南京航空航天大学 自动化学院

High Efficiency Modular Aeronautic Static Inverter

Zhang Fanghua, Gong Chunying

College of Automation Engineering, Nanjing University of Aeronautics and Astronautics

摘要

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摘要 基于通用化、系列化和模块化的研制思想, 致力于研究提高航空静止变流器(ASI)的变换效率、减轻系统重量、提高可靠性和维护性等核心技术问题。从总体研制方案、核心技术和系列化基础模块3个层面出发, 采用功率扩展性能好、变换效率高、可靠性高的推挽正激电路和双降压式逆变器研制了DC-DC变换模块、DC-AC变换模块等单元模块, 组合成4种航空静止变流器基础模块。研制的系列化基础模块, 整机变换效率均比国外同类产品提高4.5%以上, 并且在体积、重量、可靠性和可维护性等方面均具有明显优势。

关键词: 逆变器 标准化 模块化 推挽正激变换器 双降压式逆变器

Abstract: One main trend in the development of aeronautic static inverter (ASI) is its modularization, generalization, and standardization. This article made a study on achieving higher efficiency, lighter system weight, higher reliability, and maintainability of ASI. Because of their good power expansibility and high efficiency and reliability, the push-pull forward converter and dual buck inverter are selected as the main topology to develop the DC-DC converter module and the DC-AC inverter module, and four ASI basal modules are combined by them. The four ASI modules have improved the efficiency by 4.5% as compared with similar products manufactured at home and abroad, and have obvious advantages in terms of weight, volume, reliability, and maintainability.

Keywords: electric inverter standardization modularization push-pull forward dual buck inverter

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Corresponding Authors: 张方华

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