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航空变速恒频电源系统中优化的SPWM调压研究

赵修科, 王石维

南京航空航天大学306 教研室, 南京, 210016

STUDY OF VOLTAGE REGULATION FOR OPTIMIZED SPWM TECHNIQUE IN AIRCRAFT VSCF SYSTEM

Zhao Xiuke, Wang Shiwei

Faculty 306, Nanjing University of Aeronautics and Astronautics, Nanjing, 210016

摘要

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摘要 在航空变速恒频系统(VSCF)中, 航空发电机发出的变频交流电经整流变换为直流电, 再经逆变器变换成恒频交流电。逆变器通常采用固定开关点的优化的SPWM技术, 通过调节发电机励磁调节输出电压。由于系统是高阶系统, 为了降阶, 提出改变开关点的位置来调节输出电压, 并提出优化SPWM的定义, 分析了调节范围和谐波含量的变化, 并给出了实现电路。

关键词: 脉宽调制 谐波 电源电路

Abstract: In the DC-link aircraft variable speed constant frequency(VSCF) electrical system, the DC-link voltage is converted by a inverter using SPWM technique with fixed switching point to constant frequency output voltage. The amplitude of the output voltage is controlled by the magnitude of the field excitation current to maintain the output voltage within specified limits. For the high-order regulation system, it is expensive to achieve high figure of merit. An adjustable optimized SPWM to decrease orders of the system is presented. Analysis for regulation range and variation of harmonic components is performed. A prototype circuit is built and tested to verify this concept.

Keywords: pulse duration modulation harmonics power supply circuits

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