DFA Dirección de Formación Académica

CENTRO DE INVESTIGACIONES EN OPTICA, A.C.

Advisor: Dr. Gerardo Ramón Flores Colunga

Committee Members:

Dr. Abraham Efraím Rodríguez Mata
(Secretary – ITCHIHUAHUA)

Dr. Gerardo Ramón Flores Colunga
(Evaluator)

Dr. Luis Manuel Valentín Coronado
(Substitute Evaluator)

Dr. Noé Guadalupe Aldana
(Chairperson)

Thesis: "TOWARDS THE CONSTRUCTION OF AN ELECTRIC GENERATOR FOR QUADROTORS: MODELING, DESIGN, AND CONTROL OF THE ELECTRONICS"

Summary:

Un receptor solar es el corazón de una instalación de concentración solar de potencia. Es el This thesis develops the basis for the design and construction of a power generation system for application in unmanned aerial vehicles (UAV) with quadrotor structure. This system is integrated by a power generation stage, with two-stroke internal combustion engine of two Horse-Power (HP) coupled with a brushless Altern Current (AC) motor. In particular we will focus more on the second stage that is rectification and voltage regulation. In this work a three-phase controlled rectifier is proposed, modeled, and simulated for this purpose a robust adaptive control is implemented to regulate the output voltage or current and to adapt even when the output load is unknown or changes. The mathematical model was worked in d - q space and the controller was designed considering this model in which the states id (direct current) iq (reactive current) and vo (system output voltage) are controlled.