



Practical Eco-Electrical Home Power Electronics

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This book is a sequel to Your own Eco-Electrical Home Power System (ISBN 978-0-905705-82-8) and goes deeper into the electronics of photovoltaic and thermal solar technologies, wind power conversion, inverter circuits, and loads such as electronic lighting. ♦ Power electronics circuit theory is presented while analyzing commercial circuits, including little-known converters and subtleties such as snubbers and leakage inductance. The book also offers in-depth coverage of power system strategizing for optimal efficiency and utility, including a 170 V DC bus, commercial solar charger design with detailed circuit explanations, wind generator electric machine electromechanical theory, wind converter design requirements and the series-L zero-current-switching converter and power supplies found inside loads connected to home power systems and their potential problems and consequences for inverters. ♦ A wealth of information is presented on engineering topics including ♦- maximum-power charging and the boost push-pull low-to-high-voltage converter ♦- three-state lead-acid battery charging ♦- design equations and plots for series-L ZCS converters ♦- fluorescent lighting and compact fluorescent inverter design and repair, with circuit diagrams for three commercial CFLs ♦- LED lighting including portable LED lamp driver switching and linear circuits ♦ Also included is a chapter on solar thermal technology an alternative to solar PV, often found to be more economical than PV at the current state of thermal electric module development.

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