PREFACE

Renewable sources of energy acquire growing importance due to its enormous consumption and exhaustion of fossil fuel. As conventional sources of energy are rapidly depleting and the cost of energy is rising, photovoltaic energy becomes a promising alternative source. The output power of PV arrays is always changing with solar irradiation and atmospheric temperature weather conditions. Therefore, an MPPT control to extract maximum power from the PV arrays at real time becomes indispensable in PV generation system. In recent years, a large number of techniques have been proposed for tracking the maximum power point (MPP). MPPT is used in photovoltaic (PV) systems to maximize the photovoltaic array output power. In the present work MPPT techniques are proposed to Photovoltaic system.

Chapter 1 Presents an overview, concept of photovoltaic system, introduction to MPPT, problem outline. Literature survey, organization and objective of the thesis. The mathematical model of photovoltaic system using basic circuit equations of the photovoltaic solar cells, including the effects of solar irradiation and temperature changes.

Chapter 2 Deals with the analog pulse width modulation based MPPT controller for grid connected PV system.

Chapter 3 Explains the tracking approach for PV system using a fractional voltage feedback (FVF) and fractional current feedback (FCF) MPPT methods.

Chapter 4 Presents fixed step-size perturb voltage (FSPV) and variable step-size perturb voltage (VSPV) MPPT methods for photovoltaic system.
Chapter 5  Converse adaptive fixed duty Cycle (AFD) MPPT method for photovoltaic system.

Chapter 6  Presents the design and implementation of the adaptive fixed duty cycle (AFDC) with digital control for a single phase grid connected photovoltaic system with a DSP.

Chapter 7  Explains the conclusions and future scope.