



Enhanced Phase-Locked Loop Structures for Power and Energy Applications

Masoud Karimi-Ghartema

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DESCRIPTION

Filling the gap in the market dedicated to PLL structures for power systems

Internationally recognized expert Dr. Masoud Karimi-Ghartemani brings over twenty years of experience working with PLL structures to *Enhanced Phase-Locked Loop Structures for Power and Energy Applications*, the only book on the market specifically dedicated to PLL architectures as they apply to power engineering. As technology has grown and spread to new devices, PLL has increased in significance for power systems and the devices that connect with the power grid. This book discusses the PLL structures that are directly applicable to power systems using simple language, making it easily digestible for a wide audience of engineers, technicians, and graduate students.

Enhanced phase-locked loop (EPLL) has become the most widely utilized architecture over the past decade, and many books lack explanation of the structural differences between PLL and EPLL. This book discusses those differences and also provides detailed instructions on using EPLL for both single-phase applications and three-phase applications. The book's major topics include:

- A basic look at PLL and its standard structure
- A full explanation of EPLL
- EPLL extensions and modifications
- Digital implementation of EPLL

- Extensions of EPLL to three-phase structures

Dr. Karimi-Ghartemani provides basic analysis that helps readers understand each of the structures presented without requiring complicated mathematical proofs. His book is filled with illustrated examples and simulations that connect theory to the real world, making *Enhanced Phase-Locked Loop Structures for Power and Energy Applications* an ideal reference for anyone working with inverters, rectifiers, and related technologies.

ABOUT THE AUTHOR

MASOUD KARIMI-GHARTEMANI, PhD, is an Associate Professor in the Department of Electrical and Computer Engineering at Mississippi State University. He received his BSc and MSc in Electrical Engineering from Isfahan University of Technology (IUT), Isfahan, Iran, and completed his PhD in Electrical Engineering at the University of Toronto in 2004. The topic of his PhD research was synchronization of power electronic converters. He is the holder of several patents, author of over thirty papers in IEEE Transactions journals, and is a senior member of the IEEE.

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