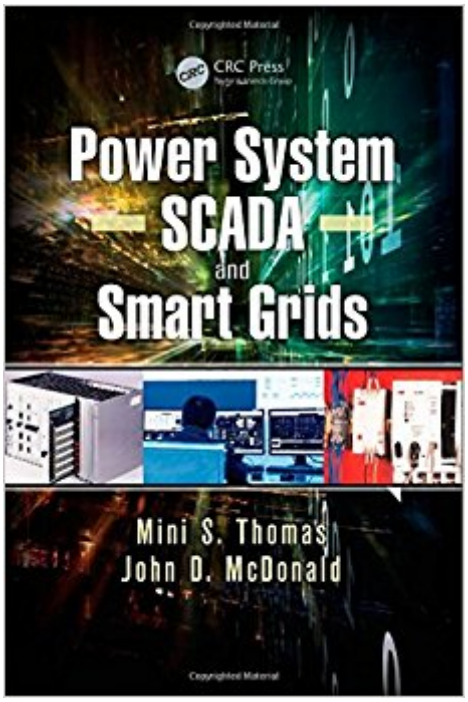
Power System SCADA And Smart Grids



Synopsis

Power System SCADA and Smart Grids brings together in one concise volume the fundamentals and possible application functions of power system supervisory control and data acquisition (SCADA). The text begins by providing an overview of SCADA systems, evolution, and use in power systems and the data acquisition process. It then describes the components of SCADA systems, from the legacy remote terminal units (RTUs) to the latest intelligent electronic devices (IEDs), data concentrators, and master stations, as well as: Examines the building and practical implementation of different SCADA systems Offers a comprehensive discussion of the data communication, protocols, and media usage Covers substation automation (SA), which forms the basis for transmission, distribution, and customer automation Addresses distribution automation and distribution management systems (DA/DMS) and energy management systems (EMS) for transmission control centers Discusses smart distribution, smart transmission, and smart grid solutions such as smart homes with home energy management systems (HEMs), plugged hybrid electric vehicles, and more Power System SCADA and Smart Grids is designed to assist electrical engineering students, researchers, and practitioners alike in acquiring a solid understanding of SCADA systems and application functions in generation, transmission, and distribution systems, which are evolving day by day, to help them adapt to new challenges effortlessly. The book reveals the inner secrets of SCADA systems, unveils the potential of the smart grid, and inspires more minds to get involved in the development process.

Book Information

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Customer Reviews

"... a must-have text on this subject. It provides not only students, but those who deal with SCADA, insight into the various technologies and systems that exist along with their differencesÃ¢â ¬â ¢both strengths and weaknesses. ... a very thoughtful resource on such an important, and rapidly changing, topic. This book also provides the next generation of power engineers with a ready reference to understand where we have been and where we can go in the not-too-distant future."Ã¢â ¬â ¢David W. Roop, from IEEE Power and Energy Magazine, January/February 2016 "As a power system operator having nearly four decades of experience and as an end user of the supervisory control and data acquisition (SCADA) systems, I have always found the available literature on SCADA as limited and in the form of documents by vendors or in the form of research papers. This book is a first of its kind in the sense that it is Ã¢â ¬Ëœvendor neutralÃ¢â ¬â„¢ and very lucidly brings out various fundamental concepts related to SCADA. The book provides an excellent reference material both for beginners and practicing professionals. I would strongly recommend the book to all power system engineers as an essential reference material. Ã¢â ¬Â¦ It provides an understanding of the historical and legacy systems as well as an insight into the new technologies. Automation is the key to the future, and the book appropriately delves into this aspect."Ã¢â ¬â ¢Sushil Kumar Soonee, Power System Operation Corporation, New Delhi, India "The authors cover all of the building blocks and detailed functionality of electric power SCADA systems, including a good deal of legacy hardware and older techniques. This is important because most large existing systems contain a mix of new and old equipment, with the latter being very poorly documented and therefore hard for newcomers in the field to understand. I would recommend this book to college students/new graduates as well as professionals coming from other industries who want to understand how electric power SCADA got to where it is, why it is evolving into new technologies, and what types of real-world challenges they will be encountering."Ã¢â ¬â ¢Michael Thesing, Patterson & Dewar Engineers, Inc., Norcross, Georgia, USA "Each topic, like Ã¢â ¬Ëœ SCADA systemÃ¢â ¬â„¢ and Ã¢â ¬Ëœremote terminal unitÃ¢â ¬â„¢ (RTU), has been introduced with a simple block diagram showing the various components followed by description of each component thereof. This approach will immensely help the student to learn the topic easily and systematically. Photographs of actual (commercially available) products like RTUs and relay intelligent electronic devices (IEDs) make the book very useful to students who are about to enter the engineering profession and to practicing engineers. Ã¢â ¬Â¦ Advanced topics like Ã¢â ¬Ëœalarm suppression techniquesÃ¢â ¬â„¢ and Ã¢â ¬Ëœintelligent electronic devicesÃ¢â ¬â„¢ have been dealt with thoroughly. A laboratory

implementation of SCADA, named Ã¢â ¬ËœSCADA labÃ¢â ¬â„¢, will be very useful as a learning model to students and as a research model to researchers. A full chapter on Ã¢â ¬ËœSCADA communicationsÃ¢â ¬â„¢ does justice to this topic. The following topics are very well addressed in the book: small, medium, and large master stations; software modules of master stations; and human-machine interface (HMI) hardware components and software functionalities. Ã¢â ¬Â¦ Issues like Ã¢â ¬ËœopenÃ¢â ¬â„¢ and Ã¢â ¬ËœproprietaryÃ¢â ¬â„¢ systems and Ã¢â ¬Ëœmessage securityÃ¢â ¬â„¢ enhance the value of this book. Ã¢â ¬ËœCase studies in SCADA systemsÃ¢â ¬â„¢ give an insight into the practical SCADA systems. The concepts of Ã¢â ¬Ëœsingle master - single RTUÃ¢â ¬â„¢, Ã¢â ¬Ëœsingle master - multiple RTUÃ¢â ¬â„¢, and Ã¢â ¬Ëœmultiple master - multiple RTUÃ¢â ¬â„¢ have been explained with simple block schematics. Ã¢â ¬Â¦ The authors have a long experience of teaching the subject and working in the area, and Ã¢â ¬Â¦ the book has been written well. Ã¢â ¬Â¦ In my view, there was a long-felt need for a book of this type. The book does full justice to the subject of SCADA." Ã¢â ¬â ¢HK Verma, Sharda University, Greater Noida, India "The book is well written and well organized with good details to describe the basic concepts and key features of SCADA systems, including the overall system architecture, key components, functionalities, and the applications, as well as the adjacent sub-systems, such as the communication systems and the filed electronic devices. A few practical application example cases are also included in the book, which will be very useful references for the readers."Ã¢â ¬â ¢Jiyuan Fan, Southern States LLC, Hampton, Georgia, USA

Mini S. Thomas is a professor in the Department of Electrical Engineering at Jamia Millia Islamia, New Delhi, India (JMI), with 29 years of teaching and research experience in the field of power systems. She was the head of the Department of Electrical Engineering and currently is the director of the Center for Innovation and Entrepreneurship. She graduated from the University of Kerala, India and obtained her M.Tech from the Indian Institute of Technology Madras, both with Gold Medals. She also holds a Ph.D from the Indian Institute of Technology Delhi, New Delhi. Dr. Thomas conceived, designed, and implemented the first-of-their-kind supervisory control and data acquisition (SCADA) and substation automation (SA) laboratories and has done extensive research work in SCADA systems, substation and distribution automation, and smart grids. She has published more than 100 research papers in international journals and conferences of repute, and is the coordinator of the special assistance program (SAP) on power system automation from the University Grants Commission, Government of India. John D. McDonald, P.E., is director of Technical Strategy and Policy Development for GE Energy Management - Digital Energy, Atlanta,

Georgia, USA, with 40 years of experience in the electric utility industry. He joined GE EnergyÃ¢â ¬â„¢s Transmission and Distribution (now Digital Energy) business in 2008 as general manager of marketing, and accepted his current role in 2010. McDonald is a sought-after industry leader, technical expert, educator, and speaker. In his 28 years of working group and subcommittee leadership with the IEEE Power and Energy Society (PES) Substations Committee, he led seven working groups and task forces that published standards and tutorials in the areas of SCADA and master/remote terminal unit (RTU) and RTU/IED communications protocols. He is a fellow of IEEE and past president of the IEEE PES. He teaches smart grid courses for GE and the Georgia Institute of Technology, Atlanta, USA, and substation automation, SCADA, and communications courses for various IEEE PES local chapters. He has published 80 papers and articles, co-authored four books, and holds a BSEE and MSEE from Purdue University, West Lafayette, Indiana, USA, and an MBA from the University of California-Berkeley, USA. He received the 2009 Outstanding Electrical and Computer Engineer Award from Purdue University.

Really and amazing book updated to the state of the art for SCADA systems. I am enjoing to learn about a modern point of view of these systems.

Future of Electric Utilities Power Pressure Cooker XL Cookbook: The Quick And Easy Power Pressure Cooker XL Recipe Guide For Smart People Ã¢â ¬â œ Delicious Recipes For Your Whole Family (Electric Pressure Cooker Cookbook) Power Pressure Cooker XL Cookbook: The Quick And Easy Power Pressure Cooker XL Recipe Guide For Smart People Ã¢â ¬â œ Delicious Recipes For Your Whole Family Power System Harmonics and Passive Filter Designs (IEEE Press Series on Power Engineering) Electric Power System Basics for the Nonelectrical Professional (IEEE Press Series on Power Engineering)