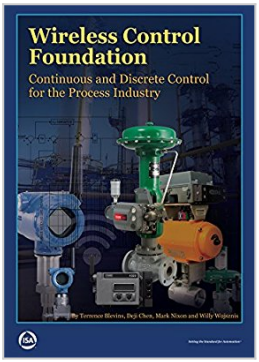

Wireless Control Foundation: Continuous and Discrete Control for the Process Industry: Symposium Proceedings

By Terrence Blevins

Wireless Control Foundation: Continuous and Discrete Control for the Process Industry: Symposium Proceedings By Terrence Blevins

In this book, the authors address the wireless communication concepts and terminology that are needed to apply wireless control in the process industry. The control system interfaces and wireless field devices described in this book are based on wireless standards for industrial settings and can be used in monitoring and control applications.
Wireless transmitters were initially used only to monitor the process, not control it. However, over the last six years, wireless measurements have earned high user confidence, and new control techniques have been devised to deal with the characteristics of wireless operation. Based on the broad acceptance of wireless transmitters, many manufacturers are in the process of developing and introducing wireless final control elements such as on/off and throttling valves.

The book details the recent technical innovations that address control using wireless measurements and final control elements. It presents how control can be structured to manage the slow and non-periodic measurement update rates provided by a wireless transmitter and to compensate for communication delay to the final control element. These new control techniques make it possible to use wireless measurements and wireless valves in closed loop control. The book also presents how wireless measurements may be utilized with model predictive control (MPC).

Multiple application examples are used to show what is required to utilize wireless control. Workshops are included in the book that explore key concepts associated with wireless control. The reader may view the workshop solution by going to the website that accompanies the book.

The book is written for the process or control engineer, who is familiar with traditional control but has little or no experience in designing, installing, checking out or commissioning control using wireless transmitters and/or wireless valves. The book provides comprehensive coverage of wireless control for both continuous and discrete applications in the process industry. Information is provided on commercially available analog and discrete wireless transmitters

and on-off valves.

Since some readers may work with an existing distributed control system (DCS) that does not provide native support for wireless field devices, information is provided on how a wireless network may be integrated into a control system using supported serial and Ethernet interfaces. In addition, information is provided on how the PID modifications needed for wireless control may be created using tools supported by the DCS. One chapter of the book addresses how a dynamic simulation of the process and wireless field devices may be easily created in a DCS to support checkout and operator training on wireless control.

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Editorial Review

About the Author
Terrence Blevins has been actively involved in the application and design of process control systems throughout his career. For more than 15 years, he worked as a systems engineer and group manager in the design and startup of advanced control solutions for the pulp and paper industry. Terry was instrumental in the establishment of Emerson Process Management s Advanced Control Program. From 1998 2005, Terry was the team lead for the development of DeltaV advanced control products. He is the Fieldbus FoundationTM team lead for the development and maintenance of the Function Block Specification and editor of the SIS Architecture and Model Specifications. In this capacity, Terry is involved in the movement of Fieldbus Foundation function block work into international standards. Mark Nixon has been involved in the design and development of control systems throughout his career. Mark started his career as a systems engineer working on projects in oil & gas, refining, chemicals, and pulp & paper. He moved from Canada to Austin, TX in 1998 where he has held a variety of positions in both research and development. From 1995 2005, Mark was lead architect for DeltaV. In 2006, he joined the wireless team, taking a very active role in the development of the WirelessHART specifications and the development of the IEC 62591 standardization. Willy Wojsznis has been involved in the development of advanced control products over the last twenty years focusing on model predictive control, data analytics, and auto tuning. Over the previous nearly 25-years of his career he developed computer control systems and applications in the cement, steel, mining, and paper industries. His professional work resulted in a number of successful and innovative advanced control products, over thirty patents, and over forty technical papers. He received a control engineering degree (EE) from Kiev Technical University, Ukraine in 1964, an M.S. in Applied Mathematics from Wroclaw University, Poland in 1972, and a Ph.D. from Warsaw University of Technology in 1973. He co-authored the ISA bestselling book Advanced Control Unleashed . In 2010, he was inducted into Control Magazine 's Process Automation Hall of Fame. Presently, Willy is part of the DeltaV future architecture team. He conducts applied research in the areas of optimization, adaptive control, data analytics, and model predictive control.

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Kathleen Edwards:

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