

Preface

There are many books about control systems on the market, but a gap in this area still remains. This book is intended to fill that gap.

Most books on control systems present control theory. They mainly dwell on the theory behind the analysis and synthesis of continuous closed control loops, but they may also present methodologies for the control of discrete event systems. Students, both undergraduate and graduate, have a variety of choices for learning how to design control systems.

Some books deal with control technology. They provide information about the inner structure and functioning of control processors and about the communication technologies used to combine controllers. Both for students and for practitioners, they describe how to develop communication stacks for fieldbuses and how to program controllers.

All these books have their merits, but they fail to convey an impression of what industrial control systems are really about. Beyond the basic control functions, modern process control systems present a wealth of further functions which allow the safe, secure, and efficient operation of an automated plant and which deliver significant benefits to the plant owner and operator. Furthermore, these functions and how they are integrated with each other and with the enterprise resource planning (ERP) system tend to become the differentiating factors between the process automation systems on the market. Therefore, automation system suppliers spend significant efforts on these topics, and their endeavors deserve attention. For engineering and computer science students, modern process control systems offer a variety of interesting topics to delve into, and valuable career perspectives afterwards. Engineers, both the novice and the experienced, should familiarize themselves with these developments to be able to understand modern process control system functionality and to make the best use of it.

This is the aim of this book. It not only conveys the overall picture of modern process control systems, but provides a thorough understanding of the functions that turned the “classical” distributed control system (DCS) into the so-called “Collaborative Process Automation System (CPAS).” It does not propose to deal with all the details but to stimulate further reading, for which it

provides appropriate hints. Thus, this book is unique in focus and structure. I wish for this book the numerous interested readers that it deserves.

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