

Preface

This book is aimed at people who work in the process industry and come into contact with control technology, such as operators, technicians and engineers. It is also suitable for use in schools and higher education institutions where control technology is included in the syllabus. The book includes an exercise section with solutions. This gives the reader an opportunity to actively work with the methods addressed and also makes the book more suitable for use in schools and in education. It is written assuming only mathematical knowledge at school level. The content here covers the practical parts of control technology currently used in the process industry and it contains many examples from this industry. The technical development in the field of control technology has developed quickly in recent decades. This does not only apply to controllers and control systems, but also to other tools for engineers and operators. This technical development has led to major efficiencies and higher quality in the process industry

Technological developments and intensifying competition have resulted in a reduction in personnel. The rapid technological changes have also meant that many older people have left their roles and have been replaced by younger ones. These generational changes have often been a prerequisite for the industry to be able to take advantage of new computer-based techniques.

However, there is a danger with these generational changes. There is a risk that the process knowledge and experience found in the older generation is not passed on to the younger generation. The development means that new demands are placed on those who are responsible for instrumentation and operation of industrial processes. More advanced equipment offers greater opportunities than before, but for it to be able to be used efficiently also requires a knowledge of how it works, its opportunities and its limitations. The hope is that this book will help to convey parts of this knowledge.

This risk is exacerbated as we urgently need to respond to the threats resulting from our changing climate. The process industry is a large contributor to carbon emissions and the main user of natural resources. It is vital that we ensure efficient process operation. The first building stone in achieving this is good process control.

This is the first English translation of the original book 'Praktisk processreglering' published in Swedish by Studentlitteratur. There were four editions of the Swedish book: in 1990, 1997, 2008 and 2019. Over the years, the content of the book became known to colleagues and collaborators in industry and academia who asked for an English edition.

Large parts of the material in the book were used in practical control technology courses for the process industry, arranged primarily by ABB (formerly NAF Controls, SattControl Instruments and Alfa Laval Automation), SUM AB and in recent years Gustaf Fagerberg AB. A large part of the material and the gradual development of the book is the result of the knowledge and inspiration I got from course participants

and course leaders over the years and I am very grateful for the contact I had with the Swedish process industry. I also want to thank other friends and colleagues, both in the academic world and in industry, for stimulating discussions as well as contributions to the book. I would especially like to thank Karl Johan Åström, who always shared my interest and my research in the field, José Luis Guzmán for a very fruitful research collaboration, and Margret Bauer for not only translating the book but also suggesting several important improvements of the content. Finally, I would also like to thank Leif Andersson for invaluable help with the typographic design of the book and with the use of LaTeX.

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