

Preface

This edition is the third in a series of textbooks on kraft recovery boilers. Like the previous two editions, this one was sponsored by the Recovery Boiler Program R&D Subcommittee of the American Forest & Paper Association (AF&PA) or its predecessor, the American Paper Institute (API). All three textbooks have been published by TAPPI Press. The first edition, *Kraft Recovery Boiler Physical and Chemical Processes*, published in 1988, summarized the published research up to that point on the processes occurring within black liquor recovery boiler operations. The second edition in the series, *Kraft Recovery Boilers*, published in 1997, was updated with subsequent research on recovery boilers and expanded the presentation to include practical applications.

Much progress has been made on recovery boiler technology since 1997. Technology that was then just research has since been applied and has impacted recovery boiler equipment design, operation, and maintenance practices. The current textbook brings together the previous work and the research of the past 20 years from organizations such as the Renewable Bioproducts Institute (formerly Institute of Paper Science and Technology), Åbo Akademi University, Aalto University, and the University of Toronto into a single, integrated, coherent portrayal of recovery boiler technology.

The intended use of the book is both as a research reference, providing rapid access to the pertinent literature on recovery boiler topics, and equally to provide specific information and understanding to technical people working in the field. Although the target audience is made up of engineering, technical, and supervisory staff at pulp and paper mills, the book contains enough breadth and depth to satisfy recovery boiler designers, process equipment suppliers, consultants, students, and researchers. Strong emphasis was placed on producing a reference with many typical process values, practical examples, and clear diagrams of equipment and processes. Considerable effort was also made to assimilate material from diverse disciplines and sources so that the complex interaction of various processes could be readily understood.

No single book could hope to cover all aspects of a subject as broad as black liquor recovery boilers. In trying to narrow the scope of work in preparing this book, it was decided to exclude material already treated in the chapters by Dr. Thomas M. Grace in the book *Chemical Recovery in the Alkaline Pulping Process* published by TAPPI Press and the book *Pulp and Paper Manufacture* published by the Joint Textbook Committee of the Pulp and Paper Industry. Another excellent resource for information on recovery boilers and other operations in the recovery cycle, such as black liquor evaporation/concentration and lime kiln/recausticizing operations, can be found in the *TAPPI Kraft Recovery Operations Course* held annually in Florida.

Eight primary authors for this book contributed their understanding and experience in each area of recovery boiler processes. The individual contributors are identified within each chapter. Also identified are the specialist reviewers for each chapter, whose comments contributed substantially to the final quality of the chapter. All the authors and reviewers deserve a great deal of credit for their help in preparing this book. A list of the reviewers along with their affiliations is given below.

One of the authors, Dr. Thomas M. Grace, deserves special recognition not only for his specific contribution to this book, but also for his enormous impact throughout his career in research, teaching, and practical application of recovery boiler technology. He has been involved for a long time with the Black Liquor Recovery Boiler Advisory Committee (BLRBAC) and the AF&PA Recovery Boiler Program. Dr. Grace is the author of numerous technical articles and book chapters dealing with chemical recovery. He received the TAPPI Gunnar Nicholson Gold Medal award in 2001. Dr. Grace has taught most of the authors and reviewers of this textbook, either directly or through his many publications and presentations.

I wish to express my sincere gratitude and appreciation to all the authors and reviewers for sacrificing so much of their time to help with the preparation of this book, to the AF&PA Recovery Boiler Program R&D Subcommittee for their continuing support of research and communication of technical information on recovery boiler operations, and to Carolyn Winsborough for her help with ensuring that all manuscripts are easy to read and can be understood even by non-technical readers. I am very grateful to nearly 60 industry partners from eight countries, to the Natural Sciences and Engineering Research Council of Canada (NSERC) for their support of various research programs that I led on Energy and Chemical Recovery at the University of Toronto over the past three decades, and to the

dedicated students and researchers who persevered in ensuring high-quality practical results. Results obtained from the programs are used heavily throughout the book.

This book took much longer to complete than expected, but I was fortunate to have had the University of Toronto to support me financially as a faculty member. Last but not least, I am indebted to my wife Aivan, daughter Angela, and son Christopher for their unconditional support, without which this reluctant editor would never have had the luxury of time and courage to complete this book.

Honghi Tran
Professor
University of Toronto

List of Contributors

AP&PA RECOVERY BOILER PROGRAM R&D SUBCOMMITTEE

Chairmen	Affiliation
Karl Morency	Georgia Pacific Corporation
Chris Verrill	International Paper

Executives	Affiliation
Tom Grant	AF&PA
Wayne Grilliot	AF&PA

CHAPTER REVIEWERS

	Affiliation	Chapters
Terry Adams	T. N. Adams Consulting	7, 8, 9
John Andrews	MeadWestvaco	13, 16
Nasser Ashgriz	University of Toronto	4
Steve Bogart	Weyerhaeuser	7
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Michael Buchanan	Georgia Institute of Technology	3
Markus Bussmann	University of Toronto	10
David Clay	Jacobs Engineering	3
Florence Cone	International Paper	11
Stephen Cox	International Paper	11
Markus Engblom	Åbo Akademi University	4
Len Erickson	Power Specialists Associates	9, 13, 14, 15
Jim Frederick	Table Mountain Consulting	1, 5, 8
Tom Grace	T.M. Grace Company	2, 5, 8
Margaret Gorog	International Paper	11
Kari Haaga	Valmet	1
Wes Hill	Georgia Pacific	13
M.I. Jameel	Clyde Bergemann	10
Eric Johansson	Acuren Group	12
Andrew Jones	International Paper	1, 2, 5, 6, 9, 11, 15, 16
Ari Kankkunen	Aalto University	4
Oskar Karlström	Åbo Akademi University	5
Jim Keiser	Oak Ridge National Laboratory	12
John LaFond	Jansen Combustion and Boiler Technologies	4, 5
Mark LeBel	ANDRITZ	14
Denise Levesque	ALSTOM Canada	4
Michael Lykins	Packaging Corporation of America	7, 8, 10, 12, 16
Donald McCabe	Irving Pulp and Paper	15
Karl Morency	Georgia Pacific	1
Pasi Miikkulainen	ANDRITZ	4
Steve Osborne	Babcock & Wilcox	1
Jack Porter	Jack Porter Consulting Inc.	4
Craig Reid	Acuren Group Inc.	12
Keijo Salmenoja	ANDRITZ	1
Mark Sargent	International Paper	13
Jukka Savolainen	ANDRITZ	15
Sandy Sharp	SharpConsultant	12
Reyhaneh Shenassa	Valmet	6
Doug Singbeil	FPIinnovations	11
Ivan Sretenovic	Clyde Bergemann	8

Danny Tandra	Clyde Bergemann	9, 10
Christian Thompson	FPIInnovations	11
Honghi Tran	University of Toronto	All
Esa Vakkilainen	Lappeenranta University of Technology	1, 16
Chris Verrill	International Paper	1, 2, 3, 5, 6
Rick Wessel	Babcock & Wilcox	4