## BOOK REVIEW

*Stephen M. Hill,*[1] *M.S.*

# Review of: *Enclosure Fire Dynamics*

**REFERENCE:** Karisson B, Quintiere JG. Enclosure fire dynamics. CRC Press, Boca Raton, Florida, 1999, 315 pp., $79.95.

Understandably, one of the primary requirements for all individuals involved in any aspect of modern fire safety and fire protection engineering, including fire scene investigation and reconstruction, is to understand how a fire behaves in an enclosed space. *Enclosure Fire Dynamics* addresses, in a clear and logical manner, physical changes in such an environment. The book is a collaboration of two internationally renowned experts in the field of fire protection engineering and presents the reader with an academic understanding of the dominating mechanisms influencing fires in compartments, or enclosures.

The authors make the point that texts written specifically for engineering students are scarce and most engineering design guides present methodologies for solving fire protection engineering problems using specific calculations in which the derivations are not typically presented from first principles. *Enclosure Fire Dynamics* presents engineering equations for specific applications, which are developed from first principles, stating clearly the assumptions and limitations associated with the applications. Additionally, the resulting equations are presented such that a comparison to the experimental data is evident. The intent of this presentation is to educate the reader with respect to the validity and applicability of a wide range of engineering equations and models.

A basic knowledge of mathematics, physics, chemistry and heat transfer is assumed by the authors. The readability of the text and the solution of example problems allow one who possesses the presumed knowledge base the ability to comprehend the principles as they are presented. The main topics discussed in the text include energy release rates, fire plumes, flame height, pressure profiles, vent flows, gas temperatures, heat transfer in compartments, smoke filling, yield of combustion products, and specie concentrations. Conservation laws are introduced and assumptions are presented that allow the governing equations to be reduced to equations describing the smoke filling process within an enclosure.

An abstract and summary of each chapter is provided, clearly identifying the knowledge the reader should expect to gain. Each chapter includes explanatory figures and tables as well as definitions of terminology, providing insight to those not familiar with the terms used in the context of the chapter.

Sample problems are presented in each chapter and are accompanied by detailed suggested solutions. Additional exercises are included at the end of each chapter along with final solutions. The reader is cautioned that a number of errors have been identified in the first printing of the book, especially in some sample problems and end of chapter exercises. However, errata have been issued by the authors and are available over the internet in Adobe Acrobat form at www.brand.lth.se/efd. The samples and other exercises appear to be well thought out and applicable to the subject matter of each chapter. They represent applications often encountered by engineers in the fire protection field.

Chapter 2, "A Qualitative Description of Enclosure Fires," provides a general overview of room fires appropriate for audiences not versed in fire safety engineering terms but with a general interest in gaining an appreciation for the types of processes that occur during fires in enclosures. The authors have compiled an excellent narrative consisting of topics generally discussed discursively in other literature references. With the emphasis of this book on enclosure fires, the authors provide excellent segues between topics. Enjoyably, this technique seems to carry on throughout the text. The structure and content of each chapter is well thought out and presented clearly. In addition, a comprehensive list of references appropriately directs the reader to additional information pertaining to each subject.

The application of engineering equations to computer zone-type fire models as well as more complex computational fluid dynamics (CFD) models is also discussed. The appendix provides concise guidance on the use of a specific computer fire model, HAZARD I, a zone fire modeling program developed by the National Institute of Standards and Technology (NIST). The author's intent in providing this information in the appendix is to enable the reader to understand the constraints associated with certain engineering equations and compare the results with those found using computer fire models as well as those measured in laboratory experiments.

*Enclosure Fire Dynamics* is a valuable resource, compiling essential engineering equations into a single stand-alone publication targeted at fires in enclosed spaces. It is an essential addition to the library of any fire protection engineer, researcher, investigator and an excellent resource for engineering students. The book can be purchased through the publishers online at www.crcpress.com.

[1] Fire research engineer, Fire Research Laboratory, Bureau of Alcohol, Tobacco, and Firearms, 1401 Research Blvd., Rockville, MD.

# ERRATA

**Erratum/Correction of** Hill S. Review of: *Enclosure fire dynamics.* J Forensic Sci 2000 Nov.;45(6):1364.

On page 1364 in the reference section. The book's primary author last name was spelled incorrectly as Karisson. The author's correct last name is Karlsson.

The Journal regrets this error. Note: Any and all future citations of the above-referenced paper should read: Hill S. Review of: *Enclosure fire dynamics.* [published erratum appears in J Forensic Sci 2001 March;46(2)] J Forensic Sci 2000 Nov.;45(6):1364.

**Erratum/Correction of** Tillinghast E, Cournos F. Assessing the risk of recidivism in physicians with histories of sexual misconduct. J Forensic Sci 2000 Nov.;45(6):1184–89.

On page 1184, the title for co-author Francine Cournos is inadvertently printed as *M.Sc.* The correct title should be *M.D.*

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