



# **Modelica by Application – Power Systems**

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# Abstract

This is a comprehensive but a concise and educational (e-)book aiming at advertising Modelica-based technologies particularly useful for power system modeling applications. Whatever aspect that could be useful has been included, to the best of author's knowledge. We hope that this book is useful not only for power system modelers desiring to get a quick idea about the benefits of employing Modelica but also for those Modelica modelers desiring a starting guide into the world of Power System.

## Involvement & Conditions

If you are clearly involved in power-system related activities using the Modelica language, you are highly encouraged to actively improve the state of this book whenever and/or wherever possible. For this reason, this book is available on the platform Overleaf which allows collaborative writing.

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# Acknowledgment

Atiyah Elsheikh is highly appreciating his former employer, Austrian Institute of Technology, as this book has been initially started during his role there, initially as a technical report. The early version was still in a primitive state until he recently decided to write a comprehensive book.

Moreover, couple of capitals of this book has been written by others. Without their contribution, the book would be definitely less valuable. Thus, I'd like to thank (in alphabetical order of family names):

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- Prof. Antonello Monti, RWTH Aachen, being the initiator of the idea of having a comprehensive report that gathers all useful aspects Modelica can provide for power system modeling applications. The first chapter was originally written by him.

I also would like to thank

- Dr. Mathias Legrand for allowing to employ this wonderful latex template found under

<https://www.latextemplates.com/template/the-legrand-orange-book>

I believe that online Modelica educational materials need to be gathered together and since the idea of having a freely accessible book that is meanwhile sponsored (or to be sponsored) by any one on the basis of pay-as-much-as-you-think-this-book-deserve is inspired by the author of the book "Modelica by Examples", thus, my special appreciation goes to Dr. Michael Tiller, for:

- his initial agreement in hosting or linking a future html-version of this book in the platform

<https://modelica.university>

- his technical tips, recommendations and his willing to help me (despite apparently being a very busy person with his own duties)

I hope to have enough energy in near future and learn the technology needed to bring this book to the platform modelica.university and to establish url-links to adequate materials in his book whenever more in-depth clarification of Modelica syntax is needed. In that way, the focus of this book can remain on the applications side of power systems rather than attempting to illustrate the tiniest details of the Modelica language.







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# Motivation

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