KOENIG SOLUTIONS · COURSE OUTLINE

Battery Modeling in COMSOL Multiphysics® Training Course (One Day)

7 Hours	1	8
DURATION	MODULES	TOPICS

COURSE OVERVIEW

Intensive introduction to battery modeling with COMSOL Multiphysics®. During this one-day course, we will discuss the capabilities of the Battery Design Module, an add-on to the COMSOL Multiphysics® software, for battery design and analysis. We will cover important physics phenomena, such as species transport, charge balances, electrochemical reactions, Joule heating, thermal effects, heat transfer, fluid flow, and other phenomena in a battery system. Through demonstrations, you will learn about the software's predefined battery interfaces at different complexity levels, gaining insight into the capabilities for modeling, for example, porous electrode structures and battery packs with thermal management systems. You will also learn how to use the feature for studying design parameters such as materials, dimensions, and active material particle sizes as well as how to incorporate aging mechanisms into your model.

PREREQUISITES

- This course assumes familiarity with the fundamentals of battery modeling. We strongly recommend that those new to COMSOL Multiphysics® take the Intro to COMSOL Multiphysics® course prior to attending this class.

LEARNING OBJECTIVES

What You Will Learn

- The goal of this course is to teach you how to construct battery models at various scales in order to gain a thorough understanding of underlying physics and performance.
- By the end of the course, you will have received a comprehensive overview of the predefined battery interfaces in the Battery Design Module.

COURSE SYLLABUS

1 Module, 8 Topics

01

Day 1

TOPICS

- Introduction to electrochemical modeling
- High-fidelity and simplified battery modeling
- Heterogeneous battery modeling
- The Newman (pseudo-2D) approach
- Capacity fade and aging
- Single particle, lumped, and equivalent circuit models
- Battery packs
- Thermal modeling

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

- Classroom Training
- Live Online Classes (ILO)
- Fly-Me-A-Trainer (FMAT)
- Flexi (Self-Paced)
- 1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

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