

HIL Power User

On-site Training

□ Objective

- Kick-start your HIL testing with a hands-on overview of how to make the most of the latest features of the Typhoon HIL Toolchain.
- Duration: 2 day x 8 h

□ Pre-requisites

- Software installation on each attendee's computers
- [HIL Fundamentals > Introduction to the Typhoon HIL Toolchain](#)

□ Recommended pre-requisites

- [HIL Fundamentals > Basic Workflow](#)
- Complete [HIL Fundamentals](#)



Day 1

HIL Power User Example Agenda

9:00 - 10:00

General Introduction

Introduction to Typhoon HIL:

- Company Presentation
- Technology Introduction, Motivation
- Setup and Devices

Support:

- Typhoon HIL Support Center
- Documentation, Tutorials
- HIL Academy

10:00 - 11:15

Getting Started

Toolchain Overview:

- Typhoon HIL Control Center
- Examples Library

Running Your First Model [Hands-On]:

- Schematic Editor – Simple Circuit Design
- HIL SCADA – Basic Interface Design

11:15 - 11:30

Coffee Break

11:30 - 12:30

Fundamentals of Real-Time Modeling and Simulation

Modeling Principles 1:

- System Architecture
- Electrical Domain Model Mapping
- Signal Processing

12:30 - 13:30

Lunch Break

13:30 - 14:30

Fundamentals of Real-Time Modeling and Simulation

Modeling Principles 2:

- Model Partitioning Motivation
- Core Partitioning
- Device Partitioning

14:30 - 15:00

HIL for Power Electronics

Introduction to Power Electronics Library:

- Challenges for the Real-Time Simulation
- Modeling Approach and Converters Library
- Control Options

15:00 - 15:15

Coffee Break

15:15 - 16:30

HIL for Power Electronics

Introduction to Power Electronics Library:

- Additional Features

Example Model:

- Hands-on Example

Day 2

HIL Power User Example Agenda

9:00 - 10:15

Electrical Machines and Drives

Introduction to Electrical Machines Library:

- Machines Solver
- Machines Library

Example:

- Variable Speed Drive with Losses Calculation and Thermal Modeling

10:00 - 11:15

HIL for Grid Modernization

Introduction to Microgrid Library:

- Modeling Approaches for DERs

11:15 - 11:30

Coffee Break

11:30 - 12:30

HIL for Grid Modernization

Example Models:

- Terrestrial Microgrid with Multiple DERs

13:30 - 14:30

Communication Protocols

Introduction to Communication Protocols Library:

- Library Overview

Lunch Break

14:30 - 15:00

Communication Protocols

Introduction to Communication Protocols Library:

- Library Overview

Example Models:

- Modbus TCP
- CAN

Test Automation

Introduction to TyphoonTest IDE:

- TyphoonTest IDE
- Typhoon HIL API

15:00 - 15:15

Coffee Break

15:15 - 16:30

Test Automation

Test Automation Example:

- Hands-On Example