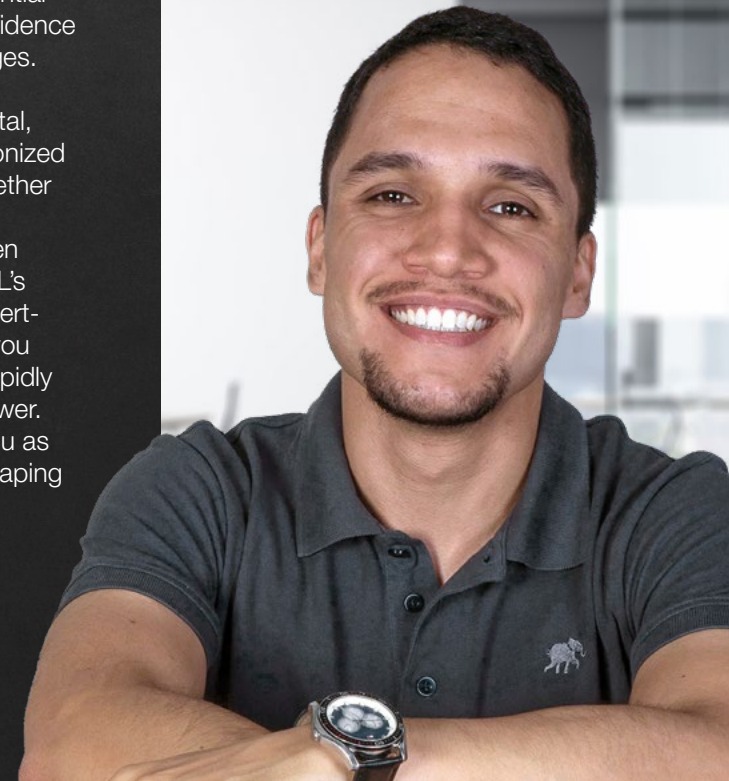# Learn from engineering experts in digital power!

"

As you complete these courses, you'll not only acquire essential skills but also gain the confidence to solve real-world challenges. At HIL Academy, we're building a future where digital, decentralized, and decarbonized energy systems thrive. Whether you're just beginning your journey or looking to deepen your expertise, Typhoon HIL's cutting-edge tools and expert-led courses will empower you to drive innovation in the rapidly evolving world of digital power. We're thrilled to support you as you play a pivotal role in shaping the future of energy.

Caio Osorio
Global Manager of
Academia Programs

About HIL Academy

HIL Academy is a **free educational platform** focused on digital power (e.g. Power Electronics, e-Mobility, and Grid Modernization), providing training and resources to support engineers and professionals in **Model-Based Engineering (MBE) and high-fidelity HIL simulations** for design, testing, and validation of a wide range of devices and systems.

Online Courses.

Access our on-demand courses anytime, anywhere, and enjoy the flexibility to learn at your own pace.

Applied Expertise.

Gain hands-on expertise with the latest simulation technology in power electronics, e-Mobility, and microgrid power systems.

Certification.

Earn a certificate of completion, acknowledging your specialized skills and achievements.

How to Access HIL Academy

#1 Visit HIL.Academy:

Access the _free e-learning platform_ created by Typhoon HIL.

#2 Sign In or Sign Up:

Sign in with your Typhoon HIL account if you're already a member, or _sign up_ to create a new account to get started.

#3 Choose a Course:

Explore our comprehensive _courses_ and specializations to advance your learning journey at any stage.

Start learning today.

HIL Fundamentals

HIL Fundamentals is the introductory course in the HIL Specialist Certification program.

In this course, you'll explore the computing architecture of Typhoon HIL real-time simulators and learn how to interface your Device Under Test (DUT). Through hands-on, step-by-step guidance, you'll become familiar with the Typhoon HIL software toolchain and gain deeper insight into the fundamental challenges of real-time modeling and simulation.

HIL Specialist: Ideal for Those New to Typhoon HIL Toolchain
This certification is comprised of five focused courses, allowing you to progress at your own pace and earn your specialization through dedicated learning and practical application.

"

If you're looking to get a solid grasp of Typhoon HIL hardware and software, this is the perfect place to start!

Jovana Marković
Applications Engineer

HIL for Power Electronics

This course will equip you with the skills to fully leverage the capabilities of the Typhoon HIL real-time simulator, specifically designed for validating your converter control design.

Learn how to build your power stage models and use your Hardware-in-the-Loop (HIL) testing setup to validate the controller and control code intended for real-world applications. Test controller hardware gate drive pulses in real-time, prevent destructive shoot-through conditions, and account for power losses and thermal stress in real operational environments.

"

If you're working in the e-Mobility sector, motor drives, or any field involving power electronics, this course is a must!

Dimitrije Jelić
Applications Engineer

HIL for Microgrids

This course will teach you how to quickly build real-time system level models for design and testing of energy management systems, power system protection schemes, microgrid controllers, and more.

Learn how to utilize your HIL setup as a platform for testing and Rapid Control Prototyping (RCP) of microgrid controllers. Master the extensive libraries of drag-and-drop, high-fidelity Distributed Energy Resources (DER) models and learn how to optimize them for system-level application tests.

This course will give you valuable insights into the different modeling approaches for system-level applications and how to effectively test them with HIL. I'm confident that by completing this course, you'll be able to create better models, faster.

Simiša Simić
Applications Engineer

Test Automation

In this course, you'll learn to automate the Typhoon HIL testing workflow that you've encountered in previous courses.

Embrace the "code less, achieve more" philosophy within the pytest framework and write your first automated test. Then, apply your knowledge in the TyphoonTest IDE, where you can easily automate tests and generate clear, user-friendly test reports. No prior coding experience is required.

"

If you're looking to significantly boost your testing efficiency and coverage, this is the course for you. Automate your tests, so you can focus more on improving your product while ensuring thorough, continuous testing!

Henrique Magnago
Head of Test Automation Solutions

Communication Protocols

Learn how to enable communication between your simulated models and the real world using a variety of industrial and user-defined protocols.

Integrate the communication layer into your HIL tests and learn how to configure and test Modbus and CAN bus devices, as well as run custom protocols over Ethernet and UART. This course is highly recommended for those who need to enable HMI interfaces, resolve device interoperability issues, or integrate multi-vendor systems.

Looking to get started with communication protocols or configure interfaces that allow your model to interact with real-world equipment? This course covers the key protocols used in industrial, energy, and automotive applications.

Juliano Grigulo
Applications Engineer

Explore Our Range of Courses

Expand your knowledge with courses designed for all experience levels. Visit HIL Academy for additional courses and dive into topics that will **advance your career**:

- Converter Circuits Fundamentals | Specialization program
  - Semiconductor Components
  - DC - DC Converters
  - AC - DC Converters
  - DC - AC Converters
  - AC - AC Converters
- Power Electronics Control Essentials: Modeling, Design, and Simulation
- Introduction to Digital Control of Power Converters
- Digital Control of Grid-Tied Converters
- Control of Microgrids
  - Controllers for Grid-Forming Inverters
  - Distributed Secondary Control
- HIL Simulation for Power System Protection

Access Support with Our Resources

At Typhoon HIL, we provide comprehensive resources to support your learning journey:

Relphie Support
Get instant answers and guidance through our intelligent assistant.

Typhoon HIL Forum
Connect with the community, get support, and discuss challenges in real-time simulation.

Documentation
Access detailed guides and manuals to deepen your knowledge of Typhoon HIL tools.

With these resources, you have everything you need to enhance your expertise and make the most of Typhoon HIL solutions.
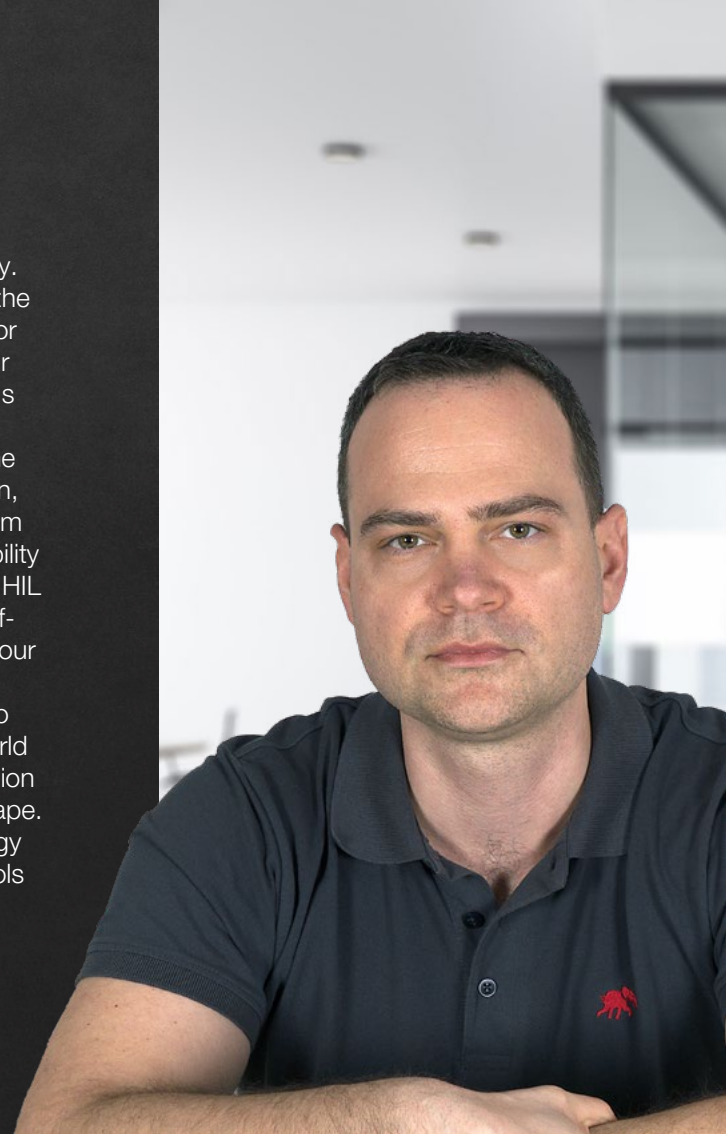
Grow Your Skills and Join the Digital Energy Revolution.

"
Take your expertise to the next level with HIL Academy. Whether you're diving into the HIL Specialist Certification or exploring other courses, our comprehensive curriculum is designed to equip you with the skills to excel in real-time simulation, control validation, and system integration. From power electronics to e-Mobility and digital power systems, HIL Academy offers flexible, self-paced learning tailored to your needs. With these courses, you'll gain the confidence to apply HIL testing in real-world scenarios and drive innovation in the digital energy landscape. Step into the future of energy with the knowledge and tools to lead the way.

Ognjen Gagrica
Applications Team Lead

Visit HIL.Academy.