

PowerWorkshop Expert VHDL

The PowerWorkshop “Expert VHDL” builds up on the skills learned in “Professional VHDL”. It’s conceived for FPGA developers that already have experience in programming with VHDL wishing to extend their knowledge and gain more in depth insights. This class stresses practical experience through multiple exercises throughout the course.

This workshop emphasizes the verification of chips using VHDL based test benches. After an initial introduction to the verification concept of VHDL, the participant will infer a variety of different circuits during the practical exercises. These circuits get verified using a VHDL source level debugger/ simulator and an appropriate verification environment (test bench). Development of simulation models necessary for accomplishing this task is covered, too. To top the content off, in addition to a concise introduction to Assertion-Based Verification (ABV), ChipScope Pro gets presented. The latter is exercised in a guided lab so the

participant gains hands on experience at the same time as the functional basics are explained.

At a maximum, two participants work on one PC having all necessary tools available. This assures a most realistic working environment.

Of course, exercises can be built upon tasks brought in by participants.

Applicable technologies

All (independent of technology)

Requirements

Basic VHDL knowledge (as taught in e.g. “Professional VHDL”)

Duration and Cost

Duration: 5 days

Cost: € 2.800, – net per person, including detailed training material, drinks in the breaks and lunch.

Agenda

Review of VHDL basics

Subprogrammms

- Functions
- Procedures

Loops

- FOR loops
- WHILE loops
- NEXT/EXIT statements

Verification through High-Level Simulation

Planning of Verification

- Verification Level
- Verification Strategies
- Response Verification
- Timing Verification

Test Bench Architectures

- General Simulation Models
- Monitoring
- Intelligent Test Benches

Attributes and Generics

- Signal and Type Attributes
- Re-usable Components

Stimulus and Response

- Discrete, Periodic and complex Stimuli
- Analog Stimuli
- Waveform Generator
- Pseudo Random Generator

Text-I/O

- Reading and Writing from/to Text Files
- Reading and Writing from/to Binary Files

On-Chip Debugging mit ChipScope

Modeling external Components

- ADC
- Function Generator
- Memory

PC based Exercises