

PowerWorkshop Professional VHDL

With the constantly increasing demand for highly-complex programmable modules combined with high clock rates, users are facing new challenges. Because speed, flexibility and a high level of quality are key to economic success, modern and powerful design methods based on hardware description languages must be used today.

The PLC2 PowerWorkshop named as “Professional VHDL” has a very high practical content and is designed for FPGA developers who have very little or no experience of VHDL. After a comprehensive introduction to the architecture of the XILINX FPGAs as well as the

Application areas, syntax and command structure of VHDL, in the broad-based practical part you will describe and verify on your own circuits from all kinds of application areas With VHDL. After the concluding synthesis, you will verify the correct functioning of these circuits by porting them to real systems/test boards. As well as the

test board, each participating group of maximum 2 people each will be given all the necessary equipment such as a development computer with design software and power pack. This gives them the best possible idea of the real and practical job of the developer.

Naturally you can also work on concrete assignments as part of the practical section.

Applicable technologies

Technology part: current FPGA technologies

VHDL: all (regardless of technology)

Requirements

Basic knowledge of digital technology (as taught in “FPGA circuit technology”) is helpful

Duration and Cost

Duration: 5 days

Cost: € 2800, – net per person, including detailed training material, drinks in the breaks and lunch.

Agenda

The architecture of the FPGA Architecture

- Clock Resourcen Management
- BlockRAM
- Configurable Logic Blocks (CLBs)
- I/O Block
- DSP

The VHDL design flow

- Design Entry with VHDL
- Syntax and instruction
 - Overview
 - VHDL types
 - Processes
 - Operators
 - Concurrent and Sequential Statements

- VHDL coding hints for FPGAs
- Instantiation of specific FPGA Components
- State machines
- The use of engine generators and IP Cores

The VHDL synthesis and VHDL simulation

- Verification strategies with test environments and test bench

FPGA development as a separate board

Part practice

- VHDL description
- VHDL simulation and synthesis
- implementation and testing in real Environment

Exercises on the PC