

DigSILENT Programming Language (DPL)

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March 23rd - March 24th 2021

Online training course

The DigSILENT Programming Language (DPL) is a specifically developed language to be used in *PowerFactory*. It is commonly used to automate the execution of time consuming workflows - however, its application extends far beyond that. DPL may also be used to process results, or to implement a routine that applies sequential changes to a network and calls *PowerFactory's* analysis functions in each step.

This training provides a compact and efficient introduction to the fundamental aspects of writing scripts using the DPL language. The course includes basic concepts, syntax, accessing and modification of objects from within the code, automation of a series of calculations and presentation of the results.

Within the context of the training course numerous scripts will be programmed, which are supposed to encourage own ideas or which can be adapted to suit particular requirements.

WHO SHOULD ATTEND:

The course is intended for

- Utility engineers
- Power system operators
- Project Developers
- Manufacturers
- Consultants
- Electrical engineers

Participants should be familiar with the basic handling of *PowerFactory*. Experiences with programming languages as Python, C++, C, Java is an advantage.

PRICE PER PARTICIPANT:

- 984.00€* (with valid maintenance contract)
- 1,120.00€* (without valid maintenance contract)
- 336.00€* (with valid student identification)

*Prices are exclusive of VAT

Training schedule

Central European Time (UTC +01:00)

DAY 1

- 9:00 Introduction and Basics**
Familiarisation with the general handling and basic syntax of the DigSILENT Programming Language.
- 9:30 Exercise: Basic DPL Syntax**
Prepare a small script in DPL to print messages in the output window and a counter script.
- 10:00 PowerFactory Object Access**
Access to calculation relevant objects of different classes inside of the *PowerFactory* database. Read and change objects and their attributes.
- 10:30 Coffee break**
- 11:00 Exercise: Object Access**
Access all lines available in the network. Read their lengths and calculate the total length. Distinguish whether a line element is an overhead line or a cable.
- 12:00 Execution of PowerFactory Commands**
Access and execution of any type of calculation object available in *PowerFactory*.
- 12:30 Lunch break**
- 13:30 Exercise: Execution of Calculation Commands**
Automatic execution of load flow calculations, modifying parameters in the command. Report calculation results in the output window.
- 14:30 Navigation through the PowerFactory Project**
Navigation through the project contents and the data base.
- 15:00 Coffee break**
- 15:30 Exercise: Navigation through the Project**
Automatic execution of load flow calculations for multiple Study Cases and Operation Scenarios. Comparison of results and their output into the output window.
- 17:00 End of the first day**

DAY 2

- 9:00 Report Results, DPL Sets and Subroutines**
Output of customised results in the output window. Introduction of subroutines and DPL sets.
- 9:30 Exercise: Report Results and Subroutines**
Access to project and load flow calculation. Create subroutines and report results in the output window.
- 10:30 Coffee break**
- 11:00 Result Files**
Become acquainted with the Result File element (ElmRes). Write/read data to/from it.
- 11:15 Exercise: Result Files**
Execute multiple short circuit calculations and save the results in a result file. Read and report the previously written results.
- 12:30 Lunch break**
- 13:30 Graphical Representation**
Familiarisation with graphical representations in *PowerFactory*. Automatic creation of plots.
- 13:45 Exercise: Graphical Representation**
Create a plot and set the curves to be displayed.
- 14:30 Data Container Objects**
Familiarisation with the data container objects available in *PowerFactory* (vectors, matrices, maps).
- 14:45 Exercise: Data Container Objects**
Fill and read a matrix. Print the contents of the matrix in the output window.
- 15:00 Coffee break**
- 15:30 External Data Files**
Learn how to read and write an external data file and the different options. Working with Excel files.
- 15:45 Exercise: External Data Files**
Write and read a comma separated values (*.csv) file. Use the DPL Extensions for MS Office to write values into Excel.
- 16:15 Table Reports**
Introduction to the Table Report library and object. Optional exercise: create a user defined Table Report to list the loading of lines.
- 17:00 End of the training course**