

PySimulator – A Simulation and Analysis Environment in Python with Plugin Infrastructure

A. Pfeiffer, M. Hellerer, S. Hartweg, M. Otter, M. Reiner
DLR Institute of System Dynamics and Control,
Oberpfaffenhofen, Germany
{Andreas.Pfeiffer, Matthias.Hellerer, Stefan.Hartweg,
Martin.Otter, Matthias.Reiner}@dlr.de

The open source environment *PySimulator* is introduced and its design is discussed. The central idea is to provide a generic framework to perform simulations with different simulation engines in a convenient way, to organize the persistent storage of results, to provide plotting and other post-processing feature such as signal processing or linear system analysis, and to export simulation and analysis results to other environments. PySimulator consists of a convenient graphical user interface (see Figure 1) similar to many other, usually commercial, simulation environments.

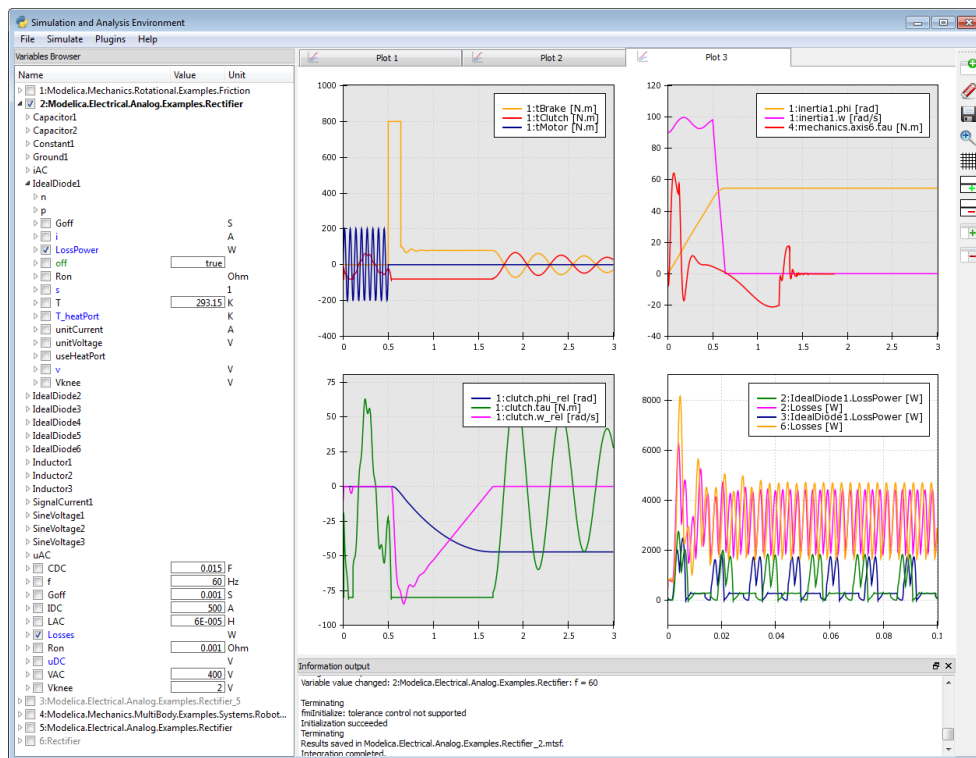


Figure 1: Main graphical user interface of PySimulator.

The major innovation of PySimulator is its *plugin system*: Nearly all operations are defined as plugins with defined interfaces. Several useful plugins are already provided, but anyone can extend this environment by his/her own plugins and there is no formal difference to plugins already provided by the authors of the paper. Introducing a new plugin means to copy a template and adapt it by writing Python code. Hereby it is possible to build upon the results of other plugins and provide own results to other plugins. All plugin functionality available via the graphical user interface shall also be easily accessible in Python scripts. This will allow a modeler to define and automatically execute Python scripts.