Solar Array Simulation

PC-Software for PV-Simulation

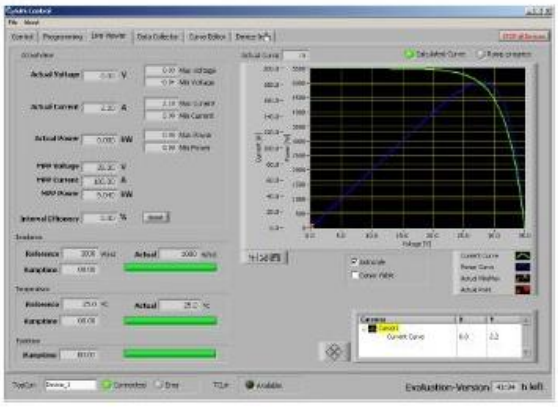
QUALITYSOURCE
LA PUISSANCE À VOTRE MESURE

SASControl

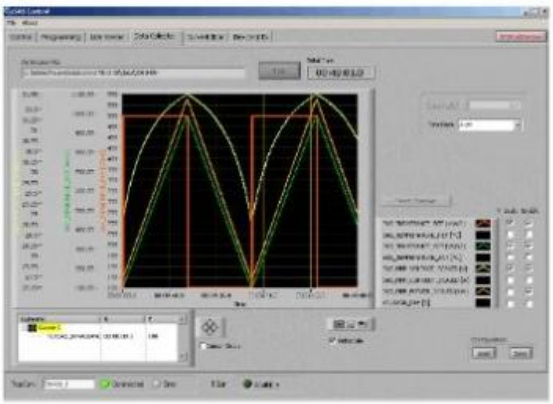
Version 1.7.0

Features

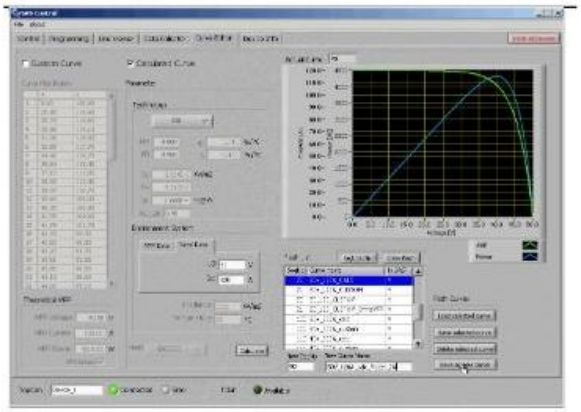
- Software for simulation of solar arrays (PV simulation)
- Simulation of characteristic curve I = f(U) of solar panel in firmware (1-diode model according to EN50530 standard)
  - Parameter based
  - Including the theoretical MPP value
- Manipulation of irradiance, temperature, amplitude or input scaling with special commands.



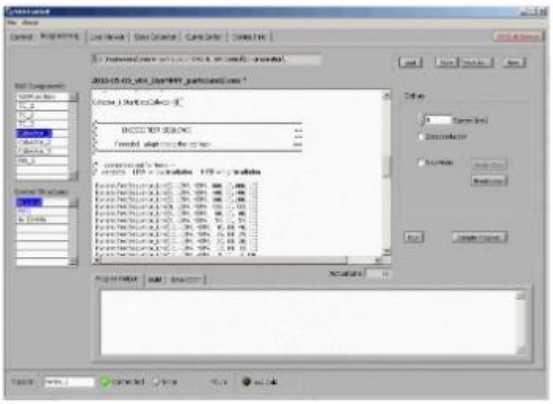
- **LiveViewer**: Presentation of TopCon live data
  - I=f(U) curve currently used
  - Changes of irradiance / temperature
  - MPPT-Efficiency (based on energy calculations)



- **DataCollector**: 8-channel longterm data logger (see figure above)
  - Virtually unrestricted signal recording with direct transmission to PC file
  - Arbitrary selection from a set of possible signals
  - Start/Stop programmable by software command



- **CurveEditor**: Management of curve in TopCon device
  - Calculated SASCurve:
    based on parameter set (according to EN50530 model), incl. MPP
  - Computed SASCurve:
    created from points (U, I), incl. MPP
  - Curve preview
  - Manipulation of curve list on TopCon

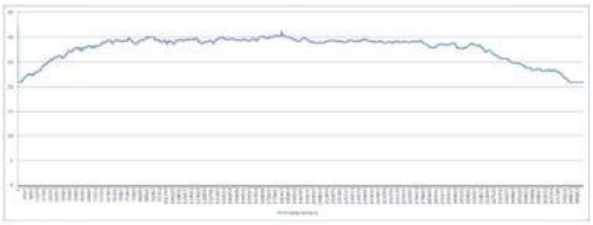


- **Programming**: Software editor with easy to learn (JavaScript alike) programming language
  - allows for arbitrary command sequences and automatic test cycles
  - programming with intelligent editing support
  - Extended debugging capabilities: single step mode, slow motion, interactive loop break
  - Printing data being recorded during execution of a script to file, importing data from file to be processed in a script
- Software for running tests according to EN50530 (static / dynamic MPPT) provided (see below)
- Course-of-a-day simulation (COADS) provided (see below)
- LabView-based GUI

- Works with TopCon (alone) or with Top-Con / TC.LIN combination.
- Support for up to 3 TopCons (under development).

"Course of a day simulation" (COADS)

- COADS implements the data import for a set of irradiance values (e.g. 400.000 data points, see graphics below)
  afterwards SW steps through the read data set and allows the simulation of the irradiation within the day
- Open source policy allows for simple modification of the script if needed



Tests according to EN50530

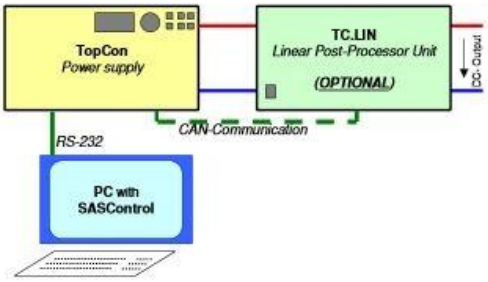
- SASScripts to implement the various tests of EN50530 provided, ready to be run (with minor adaptation to particular inverter model)
- Script for static MPPT test and calculation of the conversion efficiency: setting TopCon PV simulator to 48 operating points and performing MPP tracking test (with reports)
- Script for dynamic MPPT tests included: running the trapezoid curves (10-50%, 30-100%, startup/shutdown tests), usable with minor adaptations to particular inverter model.

General information

- Object-oriented programming API for .NET languages (TopConAPI.dll).
- Swiss made: developed, implemented and tested in Switzerland by Regatron AG, manufacturer of TopCon product family.

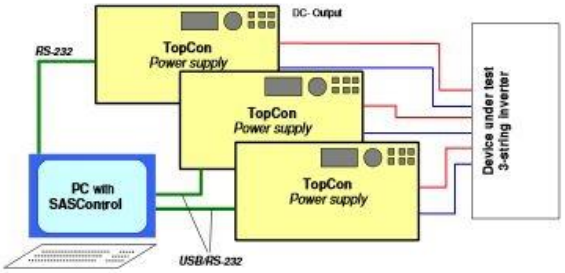
Typical System Configuration I

SingleTopCon (+ Single TC.LIN / optional)



Typical System Configuration II

Triple TopCon (for three-string-inverter, also available with TC.LIN post-processing units)



Scope of delivery

- Newest version of TopCon firmware including all functionality that is needed by SASControl.
- Installer package for PC including:
  - TCIO.DLL (communications functions), TCIOWrapper DLL (enhanced communications + .NET support)
  - SASControl.DLL (SAS related functions)
  - SASControl.exe (SAS user interface)
  - LabView Runtime Engine
- Operations and Programming Handbook
- Teaching examples (thoroughly explained in Programming Handbook)
- Implementations of EN50530 tests (for adaptation to own requirement) and Course-of-a-day simulation
- Installation support from your sales partner or Regatron

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