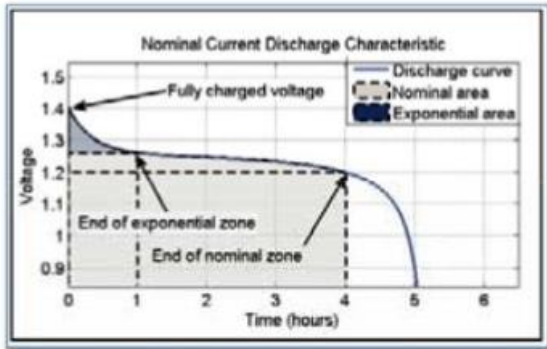


Main Features / functionality

- Software for simulating secondary (or primary) batteries
- Full integration with Regatron TC.GSS, TC.ResAct or TC.ReGen hardware (bi-directional power supply solutions)
- Implementation of a comprehensive battery model (based on Tremblay/Dessaint, 2009)



Overview of the battery model

- Selection from the most common battery models
 - Lilon, LiPo
 - LeadAcid
 - NiMH, NiCd
- Influence of battery temperature
- Influence of size of charge / discharge current
- Influence of charging loss
- Implementation of a table based battery model $u_{bat} = f(\text{current}, \text{state-of-charge})$ instead of mathematical model possible
- Adaptation and implementation of own battery models possible with simple, yet powerful scripting language
- Multi-channel logger with output to file (CSV, timestamps)
- Reporting / output-to-file capabilities from within the scripting language during process
- Data analysis (e.g. comparison) of data of different measurements in data analyzer component.

Main Screen of BATSim:

- Immediate overview of the TopCon core data (U, I, P)
- Optional R_{line} parameter (besides the internal R_i of the battery)
- Main control of the TopCon device: power on/off, connect mode, error handling
- Comprehensive BATSim information overview with visualization of the SOC and the charge/discharge process
- Manual change of certain parameters

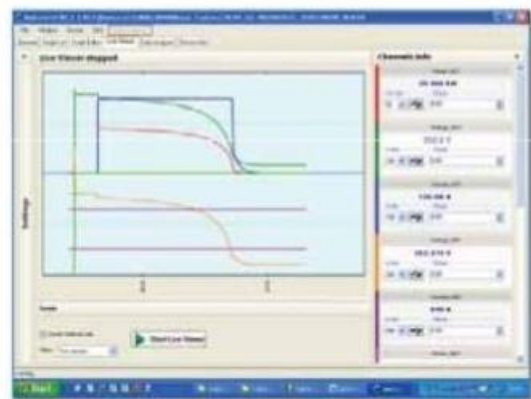


Main screen of BATSim application (charging at approx. 79% SOC)

LiveViewer:

Multi-channel data logger for long lasting data acquisition and immediate observation

- Virtually unrestricted signal recording with direct transmission to PC file.
- Common collection of data from different data sources.
- Arbitrary selection from a set of possible TopCon signals to be recorded
- Recording with realtime stamp
- Start/Stop programmable by software command
- Export to CSV data format for further processing of recorded data

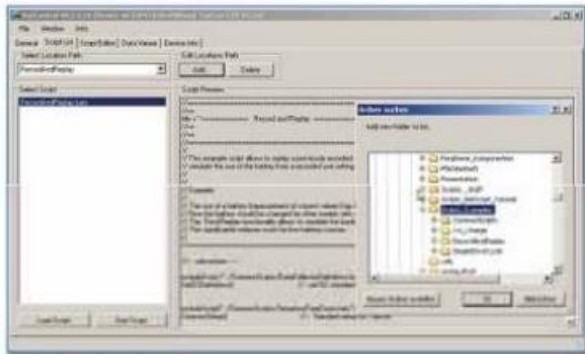


Data live viewer (battery discharge 100-0%)

Script Selection List:

Main entry point for execution of proprietary functional programs (BATScript)

- Selecting folders containing BATScripts
- Check and preview the selected script
- Immediately starting a functional script

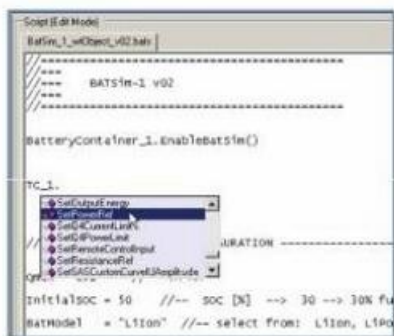


Script list window

Script Editor:

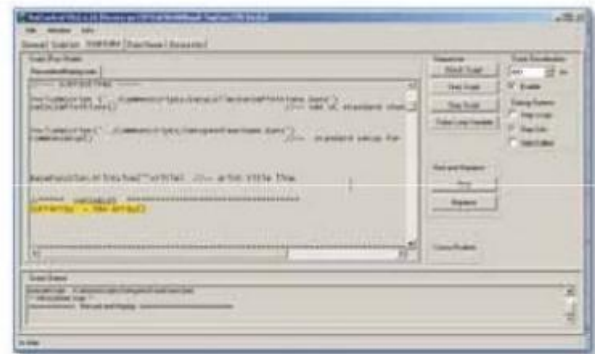
Software editor with easy to learn (JavaScript alike) programming language

- Write and test a BATScript in editor mode
- Execute a BATScript in execution mode
- Programming:
 - allows for arbitrary command sequences and automatic test cycles
 - programming with intelligent editing support



Easy to use editor

- 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
- Support for one TopCon in battery simulation mode, general access to up to 3 TopCons.



Script editor in execution mode (current line is lit).

General Information

- Swiss made: developed, implemented and tested in Switzerland by Regatron AG, manufacturer of TopCon product family.

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), TCIO-Wrapper DLL (enhanced communications + .NET support)
 - BATSim user interface and functionality (BATSim object, BATSim supervisor script)
- Operations and Programming Handbook
- Teaching examples (thoroughly explained in Programming Handbook)

Support

- Installation support from your sales partner
- Basic and advanced training on BATControl and the integration into inhouse computing systems



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