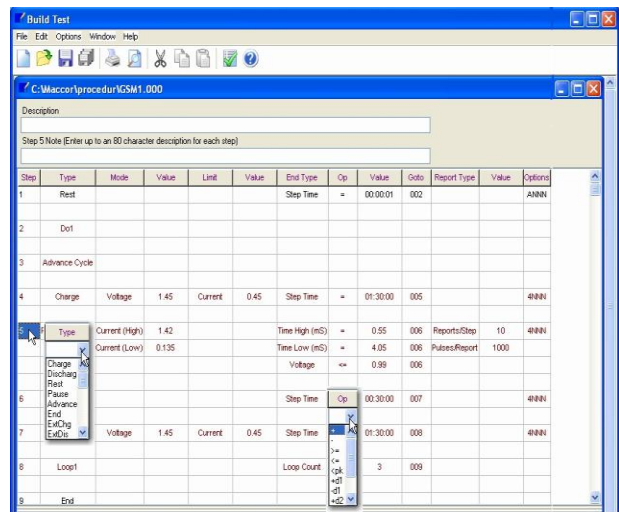


MacTest has been developed for use with all Maccor battery and energy storage device automated test systems. The MacTest software provides the necessary functions and features to program tests, control tests, record test data, and process the test data locally or remotely. It is written by and therefore under the full control of Maccor, and does not rely on any third party vendors. This powerful software is flexible, easy to use, and presently operates under Windows XP[®] and Windows 7[®] operating systems.

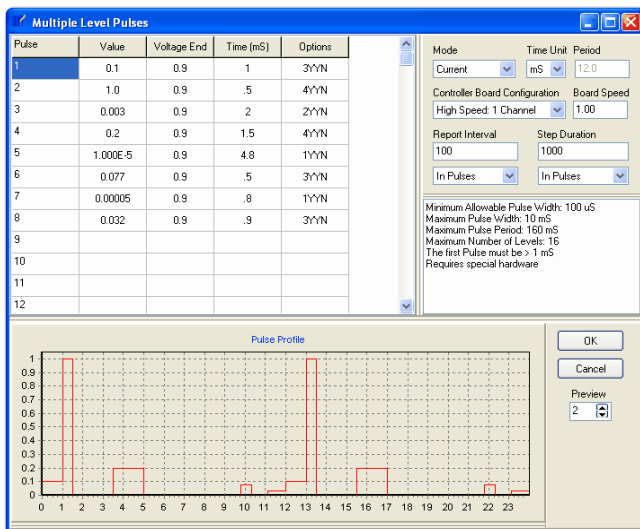
Build Test Program

This program allows the operator to create and edit test procedures. With its grid layout and menu-driven cells, writing test procedures is extremely simple. The test procedure consists of a number of Steps that direct the sequential operation of the test system. Features include:

- 128 Steps per test plus subroutines allows test procedures of almost unlimited length
- Multiple Step types ranging from simple charge and discharge steps through high speed pulsing to imported complex load waveforms (e.g. drive cycles)
- Set operating mode of constant current, voltage, power or resistance
- Set limits of current, voltage, power, or resistance that when met will automatically switch the control mode (e.g. CC to CV)



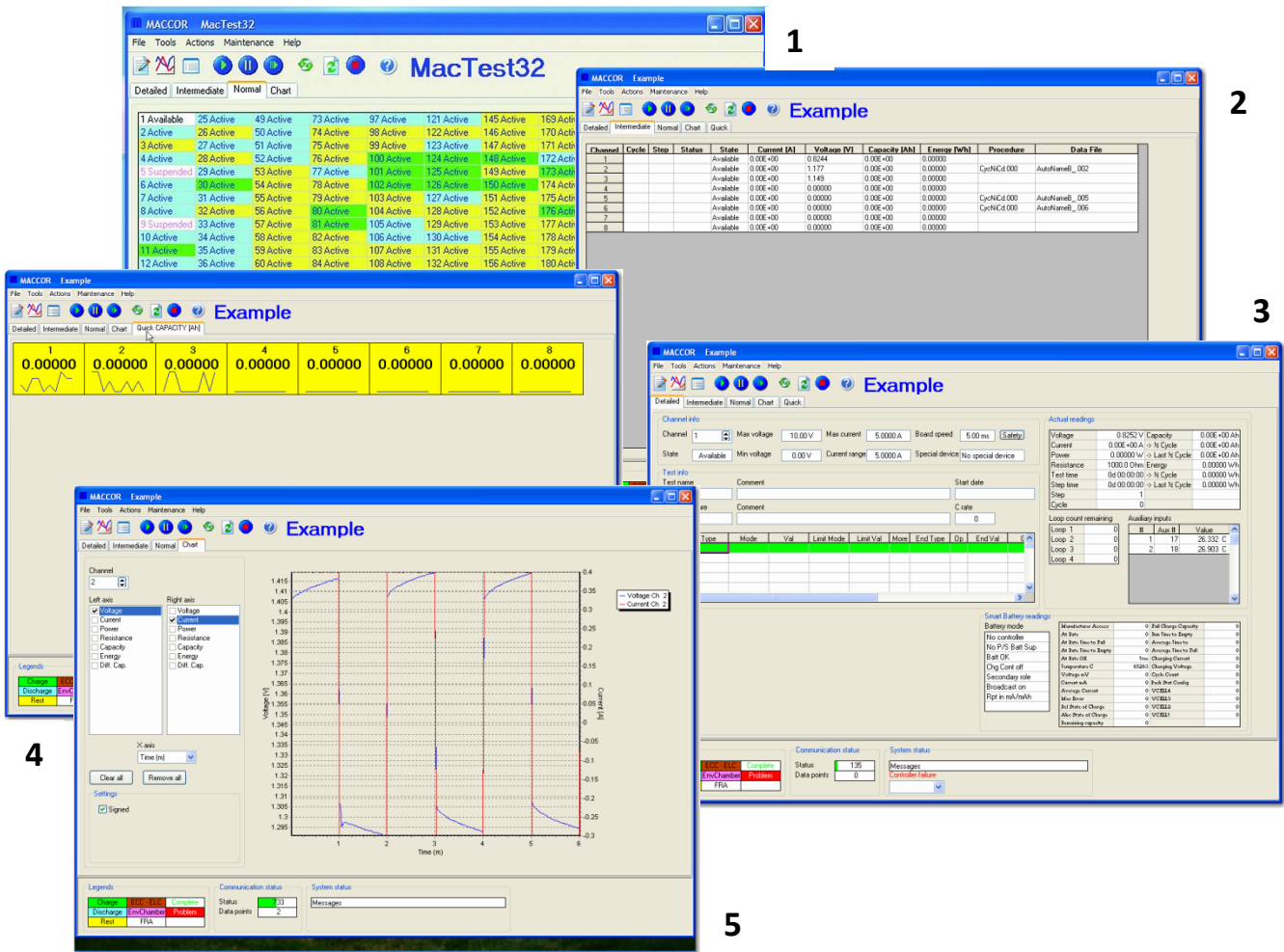
Typical Test Procedure



High Speed Multi-Level Pulse Program

- Use of pull-down menus simplifies programming
- Enter operating mode control value(s)
- Up to 16 end conditions per step allowed with conditional branching
- Select end condition operators based on actual value, change in value, maximum and minimum values and first and second derivatives
- Test data rate based on multiple choices of time and change in measured data
- Comment fields available for each step as well as the overall procedure
- View entire Step parameters on one screen
- Insert or delete test steps
- Integrated syntax error checker
- Cut and paste capability to save time
- >65,000 cycles possible

System Status Screens



1. Displays the overall status of the test system. The color and legend changes as the tests progress
2. For each active test channel, the voltage , current and capacity are displayed in real time
3. This screen displays all of the detailed information for a selected test channel.
4. Displays voltage, current, or capacity in a bright, bold format that can be seen from a distance
5. A real time graphics display viewable during the test with one click of the mouse

View Data

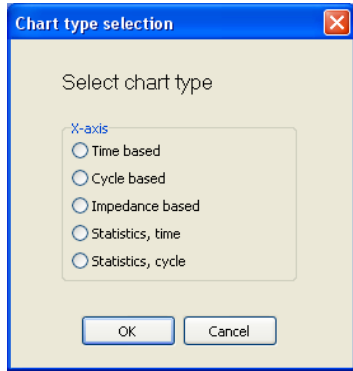
The 'View Data' window displays a table of test records. The table has the following columns: Rec, Cycle, Step, Test Time, Step Time, Capacity (mAh), Energy (mWh), Current (mA), Voltage (V), MD, ES, DPT Time (min), AClmp/Dhms, and DCR/Dhms. The data shows multiple cycles of testing with varying parameters.

Test data can be easily viewed in either spreadsheet or graphic form while the test is active as well as after the test has been completed. During the test the data is stored in an Active file, and when the test is complete, and the test channel reset, data is transferred to an Archive file. Test data can either be analyzed using the Maccor Client program, or exported in ASCII format for processing with an external program.

MIMS Client Processing Software

The MIMS Client is a powerful statistical and analysis tool, which greatly simplifies the evaluation of test data. MIMS Client provides operators and scientists with the ability to view and print test data in a format that is meaningful to them and which readily allows analysis of the test data.

Various chart types are available

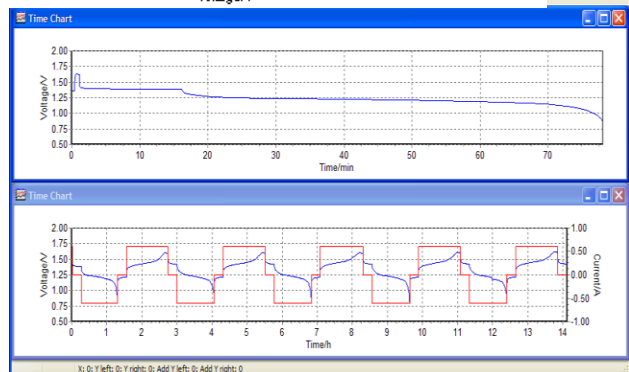
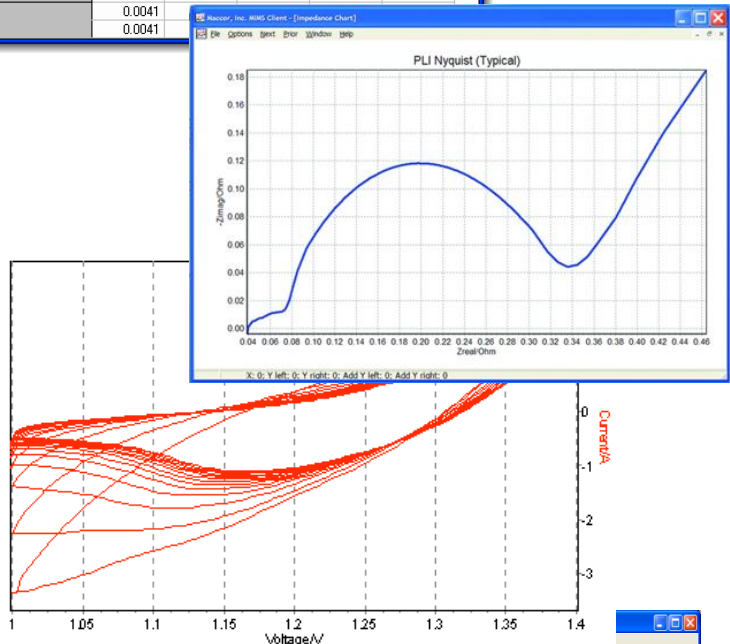
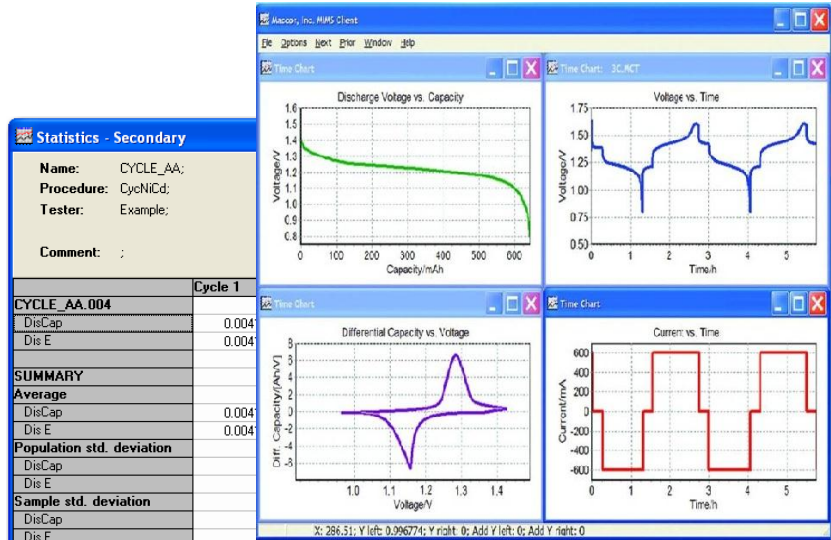
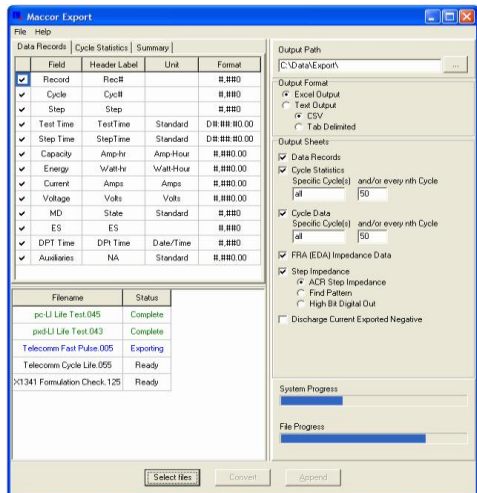


An extensive range of graphs can be realized, based on such parameters as:

Voltage	Resistance
Current	Diff. Capacity
Time	Conductivity
Capacity	Pressure
Temperature	Capacitance
Energy	SMB/arbitrary
Power	Ratio

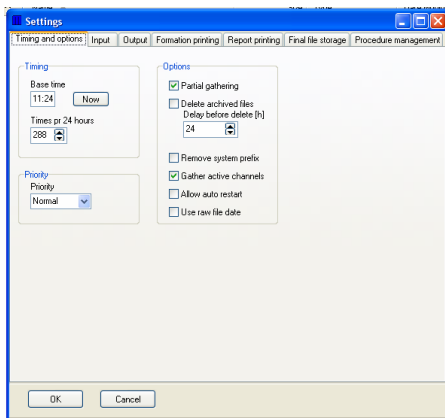
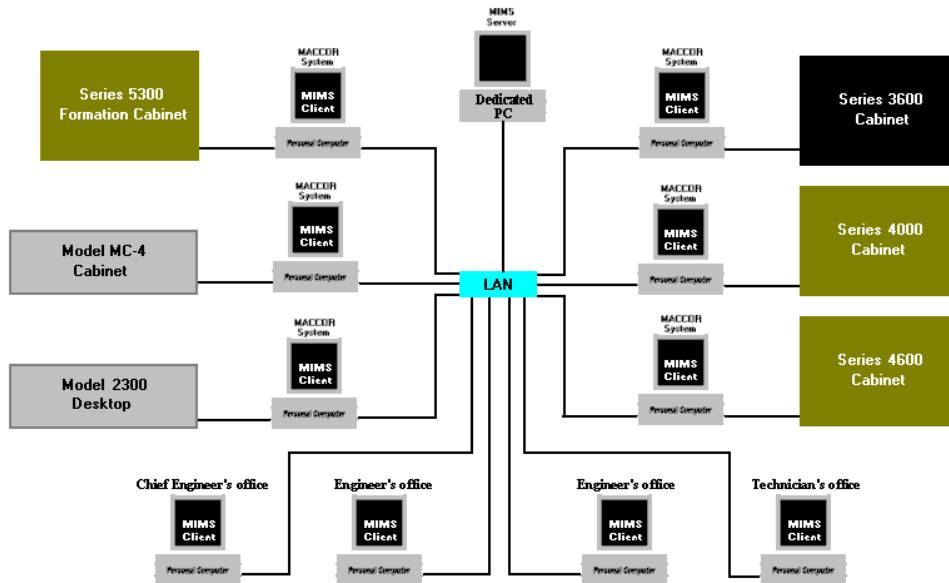
Data Export

This program allows the user to export test data in Excel or Text Output for processing in an external program. The user can select which data fields to export and in what format. It also allows the capability to append data files.



MIMS Server

The MIMS Server program will perform a fully automatic, safe, and secure collection of data from multiple battery test systems over a local area network for backup and further data processing. The MIMS Server program also performs a backup of critical configuration and calibration files from each of the Maccor test systems connected to it. This program which is located on a separate server PC allows conversion of test data into an optimized file format (binary indexed engineering unit format) for fast and easy data access. Optionally, the data can be saved into standard ASCII text files. With the Server PC connected to the user's company network, test data can be viewed and processed on any remote PC with access to this network.



The Settings Menu allows the user to program various functions including:

- When to automatically transfer and backup test data
- What data to gather
- The locations of where to gather the data from and where to place it
- What to do with old data
- Synchronize test procedures across the network

Maccor Inc. is a USA based manufacturer of battery test systems. We design and develop all of our own hardware and software. For over 25 years this has been our only business and we are considered the Gold standard in the battery test industry worldwide. With voltage ranges from 5V to 1000V, and currents spanning 300nA to 2000A, systems are available for multiple applications ranging from R&D to manufacturing to end-users. The accuracy, capability, and reliability of our test systems are second to none, and our products are backed by experienced technical sales and support personnel.

