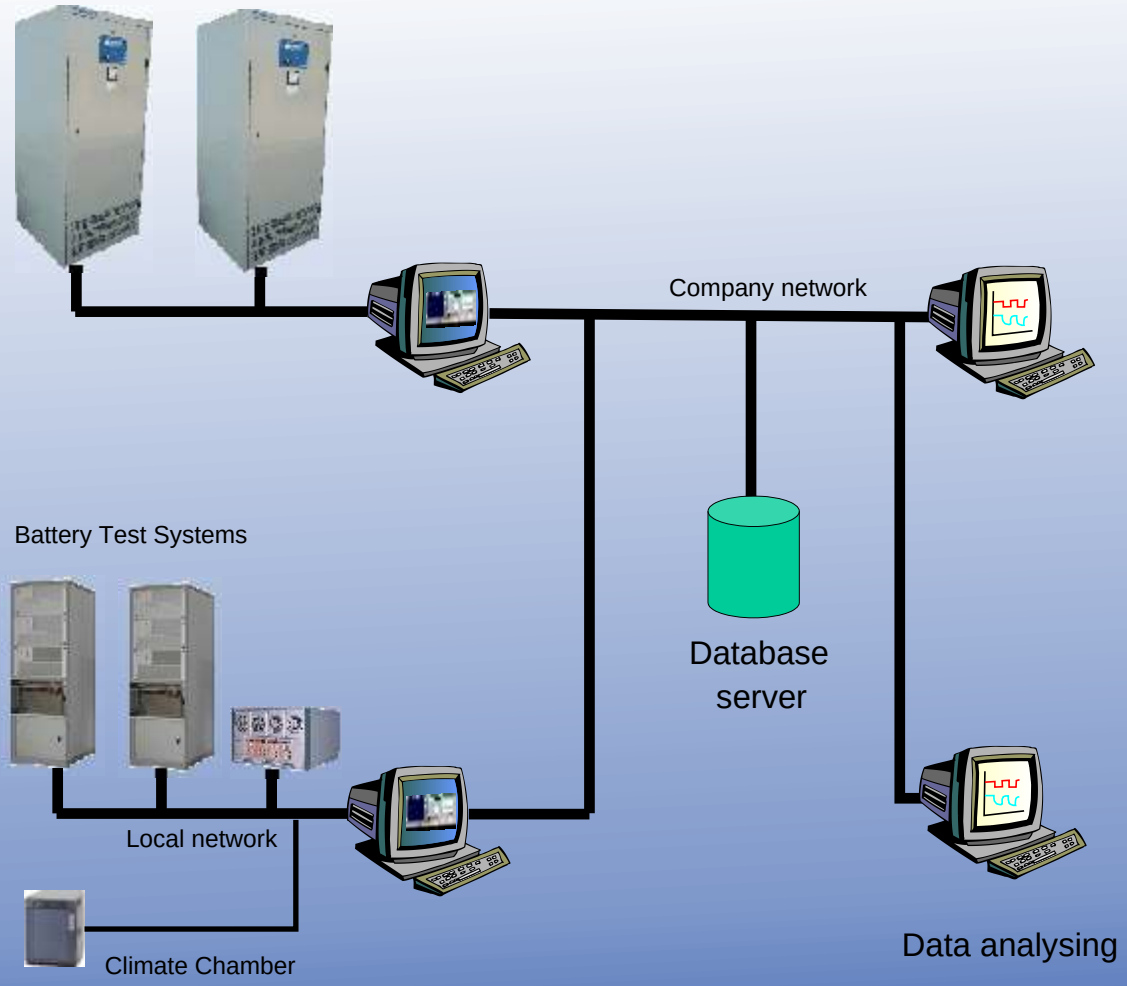
BaSyTec

Battery - System - Technology



The complete battery test solution

Research
Development
Production
Quality control

BaSyTec, fulfills all battery test requirements

BaSyTec Product Range

	CTS	CTS-LAB	CTS-LAB XL	XCTS 25A	XCTS 50A	MDS	GSM	LPS	HPS	RPS
Voltage range	6V	6V	6V	4.5V	6V	5-10V	2-10V	15-70V	2-70V	100-1000V
0V Option	no	yes	yes	no	no	yes	optional	no	optional	no
bipolar output	no	yes	yes	no	no	yes	optional	optional	no	no
FS voltage resolution / precision	16Bit / 1mV			16Bit / 1mV		16Bit / 0.02%				
FS current range	5A	3A	5A	25A	50A	500µA-50mA	50mA-120A	1A-60A	10A-600A	50A-900A (1500A)
FS current resolution / precision (each current range)	16Bit 0.5/1mA / 50µA / 2.5µA / 50nA			16Bit / 50mA	16Bit / 50/100mA	16Bit / 0.05%				
current ranges	4	4	4	1	2	1	1	1	1-3	1-3
automatic dynamic range switching	yes	yes	yes	no	yes	no	no	no	no	no
automatic range switching	yes	yes	yes	no	yes	no	no	no	yes	yes
parallel operation / max. channels max. current	yes / 4 20A	yes / 4 12A	yes / 4 20A	no	optional / 6 300A	no	optional / 4 480A	no	yes / 4 2400A	optional / 3 2700A
Max. output power / channel	30W	18W	30W	110W	220W	500µW	600W	1kW	6kW	400kW
Output type	linear			switched		linear				switched
Energy recovery	no			yes		no				yes
Energy feedback to grid	no			optional		no				yes
constant voltage operation	digital					analog and digital				
constant power operation	digital									
constant resistance operation	digital									
standard auxiliary inputs / channel	NTC temperature input					2 pcs Pt100 temperature inputs, 2 pcs +/-10V				4 pcs Pt100
BSD	no						optional			yes
SSMS Interface	no						optional			
Digital-IO or relais outputs	optional Dig-IO			no		optional				
External charger option	no					optional				
Water cooling	no								optional	
Software	BaSyTest with Open Software Interface (OSI) and Remote Control Interface (RCI)									
Datalogger	optional to be combined with BasyTec CMU datalogger. Up to 480 inputs per logger, up to 10 loggers per installation. Inputs can be combined to groups, statistical variables (minimum, maximum, mean value, spread and standard deviation) availiable for sampling and test control. Different types of inputs availiable: Cell voltage (with up to 1000VDC common mode voltage), type-k thermocouples, Pt100/4W, Pt1000, high impedance reference voltage									

RPS

GSM

CTS

HPS

LPS

XCTS

Status: 2/2015

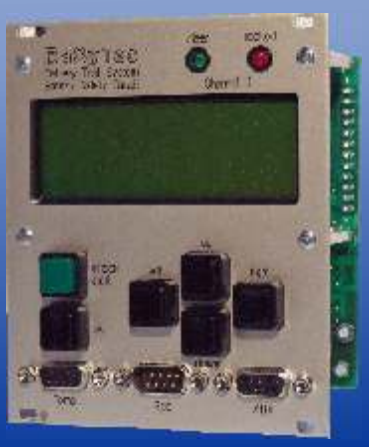
Flexible and simple to use

Main Features

The BaSyTec Battery Test System is the most powerful and comfortable one. The product range covers all requirements from material research to big batteries within one common software environment. The various hard- and software interfaces allow easy and cost-effective integration of additional hard- and software. The powerful analyzing tools with optional central SQL database server allow fast and convenient data access.

Safety

Basytec battery test systems have a multi level emergency stop system. Fundamental for safe operation is the embedded control. The test system does not need the PC while tests are running. Different hardware and software watchdog systems detect malfunctions and initiate an emergency stop.
The BaSyTec Battery Safety Device (BSD) is an optional extension of the BaSyTec Battery Test Systems. It will independently monitor all critical parameters of the battery and it's ambient and will switch off the battery current by locking the main output relay if any parameter exceeds it's safe range. The BSD is mechanically included into the BaSyTec Battery Test System but operates completely independently, so offering a second backup safety circuit to the main control system of the BaSyTec Battery Test System.



The BSD monitors:

- 🕮 single cell voltages
- 🕮 temperatures
- 🕮 gas concentration
- 🕮 main voltage
- 🕮 main current
- 🕮 digital inputs

System Integration

The BaSyTec Battery Test System offers different interfaces for the integration in other systems.
The simplest method is the use of **digital inputs and outputs or analog inputs.**
The **Open Software Interface** (**OSI**) is used to integrate additional hardware into the battery test environment. One example for this is **CAN,** a bidirectional driver with configuration tool is available for BMS communication. But also any other hardware can be integrated with bidirectional data exchange.
The **Remote Control Interface** (**RCI**) is used to integrate the BaSyTec system into a higher ranking environment.
The Superior Safety Monitoring System interface (**SSMS interface)** is used for safety interlocks, for example door lock of the test chamber or test lock related to the inertialisation of the climate chamber.

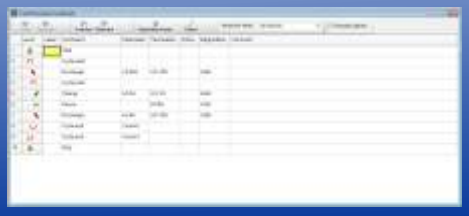
Climate Chambers

In many cases the battery temperature must be controlled. The BaSyTec Battery Test System allows to control climate chambers and temperature controllers. Today we offer drivers for many different climate chambers and temperature controllers. While starting a test the test channel can be linked to a climate chamber. Several channels can use the same climate chamber, the software is then synchronizing the tests.
Even if your climate chamber is not listed as supported product, it is simple to write your own driver or we can do it for you. On one system different climate chambers can be used at the same time. In total 16 climate chambers per system are possible.

BaSyTest - The Battery Test Software

General Features

The BaSyTec Battery Test Software runs under Microsoft Windows and is improved continuously. The software works with all BaSyTec Battery Test Systems, even with different types on one computer at the same time. The software is used to define test procedures, to start and control tests and to analyze test results. Once a test is started the whole test procedure is transmitted to the test system where it is executed by the test system independent from the PC. Data administration is based on a database system that allows multi-user, project and battery based structures.



A simple test plan

Powerful Data Analyses

The sophisticated data analyzing tools reduce the time to report significantly. Some of the highlights are:

- Numerical data analysis with powerful filter
- Scripting tool for comprehensive analysis
- Charting tool with unlimited number of curves
- Chart templates for frequent charting tasks
- Data export to ASCII files, Microsoft Excel or via cut and paste to any Windows application
- Chart export to Microsoft Excel
- Report generator based on Microsoft Word
- Open database structure allows to use your own analyzing tools with direct data link

Numerical data analyses

Powerful Control

The BaSyTec Battery Test Software includes different control methods:

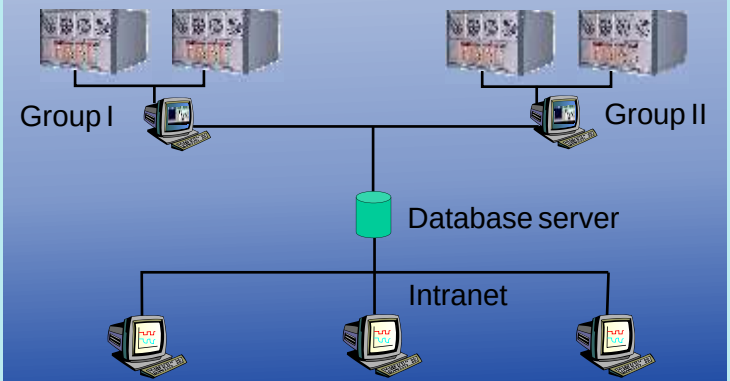
- Constant current
- Constant voltage
- Constant power
- Constant resistance
- Current and voltage ramps
- Current/voltage/power profiles defined by tables
- Current/voltage/power defined by equations, for temperature compensated charge methods, pulse charging etc.
- Impedance measurement (optional feature)

The program flow is defined by

- Step termination by time, voltage, current, analogue input signal, any calculated value
- Cycles and loops, where nested structures are allowed
- Subroutines simplify complex test procedures
- Conditional jumpes

Client Server Database

The optional Basytec client server database automatically copies measured data from all connected test systems to a central database. The client software allows to analyze and to export the data as it is known from the Basytec Battery Test Software. The project oriented data structure simply allows to select related data.



Clients for test definition, data analyzing, reporting, and data management

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