

# Battery Materials Scale-up & Cell Pilot Line



## Equipment List



# Dry Room



## Specification:

Size	9m x 5m
Population	Up to 5 personnel
Relative humidity	less than 1%
Dewpoint	-40°C or less

## Features:

- Personnel enter/exit through a controlled airlock
- Dry room contains all the pouch cell making equipment where moisture sensitivity on cell materials becomes an issue after drying of electrodes This includes:
  - Electrode Drying and Cropping
  - Stacking into cell stack
  - Cell Tag welding
  - Insertion into Pouch
  - Electrolyte filling
  - Degassing and final sealing of cells after formation
- Karl Fischer titration of electrolytes is carried out in the dry room to measure the moisture picked up by the electrolyte

# Pilot Scale Mixing



## Dissolver SEM-HS-2

**Motor: 1.5 kW**  
**Batch working**  
**volume: 2-5 l**

High efficiency mixer with variable electro-mechanical drive for dispersing solids in liquids and wetting products of low to medium viscosity

### Features:

- High Speed mixing and dispersing
- Easy to change mixing blade
- Stainless steel wetted parts



## FILMIX™ Model 56-50

**Motor: 5.5 kW**  
**Capacity: 11 l/hBatch**  
**working volume:**  
**50-90 ml**

FILMIX thin-film, spin methodology ensures sharp distribution of nanometer-sized particles that has been impossible with conventional mixers.

### Features:

- Allows for a high level of precision in particle engineering. (Dispersion is created at the nanometer scale and results show very uniform distribution.)
- Prevents secondary agglomeration.
- Consistency in particle size without any damage to structure.
- Dispersion is instantaneous.
- Ideal for battery slurry and other such applications



## Mixer SEM-HT-5

**Motor: 3.7 kWBatch**  
**working volume: 2-10 l**

Low speed high efficiency mixer with variable controlled electro-mechanical drive for dispersing and homogenizing of medium to high viscosity products with large proportion of solids. Shear forces between container and mixer are responsible for maximum effect of mixing and dispersing

### Features:

- Wide variety of uses from mixing of dry powder particle materials to kneading of high viscosity material

- Vessel can be sealed, allowing for mixing in a vacuum

# Lab-Scale Mixing Equipment



**HOMO DISPER  
Model 2.5**

**Motor: 0.2 kW**  
**Working volume:  
100-300 ml**

For uniform dispersion  
testing and dispersion of  
small volumes

## Features:

High Speed mixing and  
dispersing  
Easy to change mixing blade  
Stainless steel wetted parts



**FILMIX™  
Model 40-40**

**Motor: 0.75 kW**  
**Working volume:  
15-30 ml**

FILMIX thin-film, spin  
methodology ensures sharp  
distribution of nanometer-  
sized particles that has  
been impossible with  
conventional mixers

## Features:

Allows for a high level  
of precision in particle  
engineering. (Dispersion is  
created at the nanometer  
scale and results show very  
uniform distribution).  
Prevents secondary  
agglomeration.  
Consistency in particle size  
without any damage to  
structure.  
Dispersion is instantaneous.  
Ideal for battery slurry and  
other such applications



**HIVIS MIX™ Model  
2P-03**

**Motor: 0.22 kW**  
**Working volume:  
100-300 ml**

Small-Batch Mixer /  
Kneader for uniform mixing,  
kneading and vacuum  
de-aeration

## Features:

Wide variety of uses from  
mixing of dry powder  
particle materials to  
kneading of high viscosity  
material  
Vessel can be sealed,  
allowing for mixing in a  
vacuum  
Contains two twisted  
blades moving  
simultaneously on their  
own axis while orbiting the  
vessel in a planetary motion  
to reduce "dead" space,  
ensuring uniform and  
homogeneous processing

# MEGTEC Coater



## Specification

Size	270mm web width
Speed	0.3 to 5m/min +/- 0.1m/min
Dryer Length	6 m

## Slot Die Coating head

### Features:

- 3 Zone dryer with air-impingement nozzles
  - Slot die coating to +/-1 micron accuracy
  - Comma-bar coating head – for small coating runs
  - Capability for continuous, patch and stripe coating
  - Slurry delivery system
  - Alignment to coating foil – better than 1mm
  - Ultrasonic wet coat thickness measurement
  - Ultrasonic dry coat weight measuring system
  - Standard 76mm cores sizes
  - Solvent Monitoring System
  - Solvent Recovery System via Carbon Adsorption
- 35° to 180°C +/-2°C  
stripe width 100-200mm  
coat width 50 – 250 mm

# Draw-Down Coater



## Micrometer Adjustable Applicator

This applicator incorporates an adjustable spreading blade using micrometers, to accurately set substrate/blade-gap from 0–10mm in 10 $\mu$ m increments, providing an extremely versatile tool. It gives a coating width of 100mm, and produces a wet film thickness of 50–80% of the gap setting, depending on the solids content of the mix

## Specification:

### K Control coater Model 101.

Used for the application of battery slurries for small scale cells such as coin cells to produce highly accurate and repeatable coatings in an instant. The machine uses gap applicators to coat onto aluminium or copper foil. This may then be used for many applications including quality control of electrodes, or making coin cells for testing small amounts of novel battery materials

## Features:

- A custom version of the K101 created especially for battery coatings.
- May be used with most standard gap applicators including Bird, cube, 4 sided etc.
- ASTM D823 – 95(2001) – producing films of uniform thickness.
- Aluminium vacuum bed with fine holes to give accurate coatings on foils



## Bird Applicator

Precision ground all over, these stainless steel applicators provide a coating width of 1–mm and are available with various gap sizes. The size we have initially provided is 70 micron gap as this is deemed suitable for standard li-ion cathodes.

The wet film thickness produced is 50–80% of the gap size, depending on the solids content of the mix.

# IMC Reel-to-Reel Calender



## Specification:

Size	200mm web width
Speed	1 to 10 m/min +/-0.1%
Accuracy	2 micron TIR
Calendering Capacity	50 tonnes
Calendering Arrangement	Two roll vertical

## Features:

- Unwind – Magnetic brake – with ultrasonic constant tension control
- Rewind – Magnetic clutch and ultrasonic tension control
- Constant to 50% taper tension control
- Electrically heated rolls to 150°C maximum
- Web Cleaner - to remove contaminants before calendering
- HMI interface to store recipe set-up
- Splice Table with knife guide slots and web clamps
- Trim slit to remove scrap edges prior to calendering
- Bump Roll – Imperfections (fold-overs, creases, thick coatings) are detected by bump roll and line shuts down to prevent Calender rolls from damage



# Small IMC R&D Calender



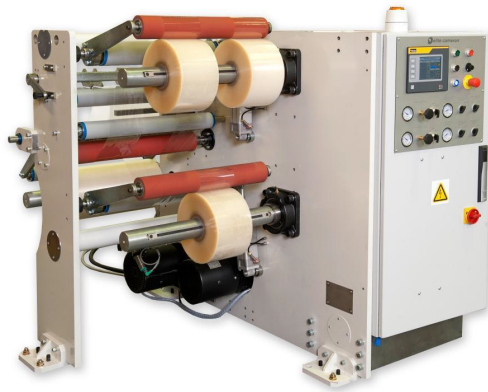
## Specification:

Size	100mm web width
Speed	0.1 to 10 m/min
Accuracy	2 micron TIR
Calendering Capacity	36 tonnes
Calendering Arrangement	Two roll vertical

## Features:

- Stainless Steel material feed and delivery trays
- Electrically heated rolls adjustable to 150°C maximum
- In-going nip guard protection
- HMI interface to store recipe set-up
- Safety system compliant with OSHA standards and CE safety guidelines

# Elite CW500 Slitter



## Specification:

Maximum Material Width	400mm web width
Maximum Unwind Diameter	500mm
Minimum Slit Width	25mm
Rewind Core Sizes	76mm
Speed	Up to 30 m/min

## Features:

- Shear Slitting System
- Automatic Rewind Tension Control
- Web cleaning system to include two extraction nozzles, suction fan, filter and container
- Unwind Brake Automatic Tension Control
- Interlocked Guards
- CE Mark

# Innovative Glovebox



**Intended for coin cell construction and investigation of new battery chemistries**

## Specification:

- Glove Box Module - Type 304 Stainless Steel Construction
- Internal Dimensions - Metric (mm) - 1250 W x 900 H x 780 D
- ALL Stainless Steel Gas Flow Piping & Fittings
- Six (6) Outlet Power Strip per Glove Box Module
- Chemical Resistant Lexan Window
- Both Modules joined by a T-CHAMBER
- Nitrogen, Argon or Helium Operable
- Programmable Logic Controller (PLC) with Six (6) Inch Color Touch Screen Interface
- Foot Pedals for Pressure Adjustment
- Password Protected HMI
- Parallel piping upgrade to allow one gas purification system to be shared between 2 independent gloveboxes
- Oxygen Analyzer - Designed to measure trace amounts of oxygen within an inert atmosphere. Measures between 0 - 1000 ppm
- Moisture Analyzer - Designed to measure absolute content of moisture within an inert atmosphere. Measures between 0 - 1000 ppm

# MD5 Solvent Purifier



**Intended for the purification of novel and new electrolyte chemistries**

## Features

- 5 pipe unit to allow 5 different solvents to be purified
- Populated frame dimensions: 43"W x 29"D x 77"H
- Multi-Way Valve
- Integrated manifold system to facilitate proper air free dispensing techniques
- The Pure Solv MD includes customer's choice of 24/40, 14/20, 29/32 stainless steel glassware adaptors as standard.
- The Pure Solv MD allows for multiple users to operate air free dispensing system simultaneously without any risk of cross diffusion of solvent.
- Large capacity 5 gallon reservoirs include custom designed leak tight screw cap and Swagelok quick disconnect valves for easy handling and refilling.
- Pure Solv MD is bonded and grounded to remove hazards associated with electro static discharge The Pure Solv MD Solvent Purification System can purify up to 800 liters of solvent before column replacement or regeneration is necessary.

# Retsch PM100 Ball Mill



## Type PM 100

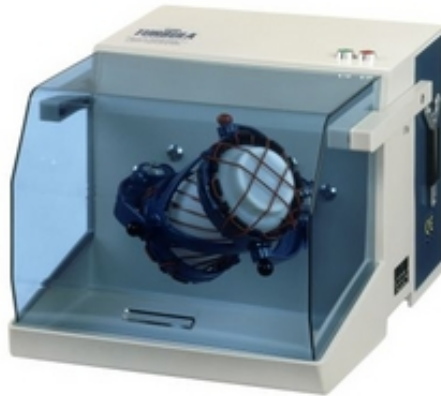
For grinding and preparing battery powders down to the nanometre range. RETSCH Planetary Ball Mills are used wherever the highest degree of fineness is required. Apart from the classical mixing and size reduction processes, the mills also meet all the technical requirements for colloidal grinding and have the energy input necessary for mechanical alloying processes. The extremely high centrifugal forces of the Planetary Ball Mills result in very high pulverization energy and therefore short grinding times. The PM100 is a convenient bench-top model with 1 grinding station for grinding jars with a nominal volume of 12 to 500 ml. A 500ml jar and 2mm Zirconia beads is provided for initial trials.

Both PM 100 models feature Free-Force-Compensation-Sockets (FFCS) which ensure a safe low-vibration run and minimal oscillation transfers to the laboratory bench.

## Features:

- Efficient grinding process for excellent results down to the submicron range
- Grinding jar volumes from 12 ml to 500 ml, in 6 different materials
- Suitable for long-term trials and continuous use
- Automatic direction reversal helps to avoid agglomerations
- FFCS technology compensates vibrations and ensures perfect stability on the bench (PM 100)
- Reproducible results due to energy and speed control
- Programmable starting time
- Memory for 10 parameter combinations
- Graphics display and ergonomic 1-button operation
- Automatic grinding chamber ventilation
- 2-year warranty, CE-conforming

# WAB T2F Turbula



## TURBULA® - T 2

Container volume of up to 2 litres

The mixing basket can hold any form of container from test tubes to containers having a maximum volume of 2 litres. The containers are secured by twisted rubber clamping rings. The basket is driven by a belt drive and an eccentric gear. The rotational speed can be varied by adjusting the position of the round drive belt on the 5-step pulleys. It can also be adjusted by means of an optional frequency converter arranged next to the machine. The TURBULA® T 2 F is used in any industry and application, especially in R&D and analytics.

## Function

The TURBULA® mixer is used for homogeneous mixing of powdery substances with different specific weights and particle sizes. Producing dry-to-wet and wet-to-wet mixtures is also possible. The production process is hygienic and dust-free because the product is mixed in independent containers of variable sizes

## Advantages

Mixing in independent containers, therefore:

No contamination and emissions

No extra cleaning

Time-saving, fast exchange of the container due to simple and fast mounting of the container

Excellent homogeneity of the mixture due to interaction of rotation, translation and inversion as per the geometric theory according to Schatz

# WAB Dyno-Mill ECM-AP 05



## For fine dispersion and wet milling down to nano size particles

Generally used for sizing carbon pastes prior to addition to li-ion battery mixes. Bead sizes down to 0.1 mm can be used. The DYNOMILL ECM-AP mills improve milling times and reduce production costs when suspensions with particle size distributions in the nanometre range are needed such as using carbon nano-tubes.

### Features

- Features:
- Batch sizes of 1 litre can be processed continuously
- Housing made of stainless steel for universal applicability
- High throughputs and production capacities
- Easy processing of highly viscous products
- Longer lifetime of the screen
- Ability to grind in the nanometre range
- Designed for running in single/multi-pass or circulation, with a constant efficiency in both processes for the achievement of narrow particle size distributions
- The patented DYNOMILL-Accelerators produce a powerful, hydraulic movement of the beads which guarantee a high and constant energy input
- The mill has a low energy uptake due to its efficient energy input
- Soft milling and soft grinding capability
- Ideal cooling properties allow the processing of temperature sensitive products
- Possibility for fast product changes at low costs

# Karl Fischer Titration – CA200



## Karl Fischer Analysers for Low Level Moisture Detection

For measuring the moisture content of electrolytes and electrodes at the <math><10\text{ppm}</math> level. Mitsubishi is considered the gold standard in Coulometric and Volumetric Karl Fisher Titration. The CA-200 continues the legacy, providing the user the ultimate in simplicity and flexibility for Karl Fischer. The CA-200 can simultaneously measure Karl Fischer moisture in two cells when configured with the dual channel option and two separate titration cells. The titration cells can be coulometric, volumetric or a combination of both depending on application needed. Samples which directly interfere with the Karl Fischer reaction can be easily analysed when combined with special water vaporisers.

### Features

- Analyse 1ppm - 100% water in any matrix.
- Single or dual channel options (coulometric or volumetric)
- Simultaneously measure & display coulometric/volumetric Karl Fischer moisture
- Large, easy to read 5.7 inch colour LCD display
- Automatic electrode conditioning to remove contaminants before measurement
- Flexible configuration & small footprint saves valuable bench space
- Password protected administrative user levels and functions
- Liquids, gas, solid or LPG measurement options



# Anton-Paar Rheometer



## RheolabQC Rotational Rheometer for Quality Control

This instrument will measure the rheological properties of battery slurries and mixes. It can be used as a quality control tool and as a research instrument investigating the rheological properties of new battery chemistries. The RheolabQC is a rotational rheometer which works according to the Searle principle. It consists of a high-precision encoder and a highly dynamic EC motor. You can select between controlled shear rate (CR) and controlled shear stress (CS) test settings, options which are usually only available with high-end research rheometers. These options, together with the wide speed and torque ranges and very short motor response times, bring innumerable benefits for the application. As well as conventional flow and viscosity curves, the RheolabQC is also ideal for investigations into the mixing and stirring behaviour of emulsions and dispersions, for testing the sagging and levelling behaviour of coatings, and for determining the yield point of gels and pastes.

### Features:

The following features make it possible to investigate the quality of products from a wide variety of applications, to the required standards and under conditions which simulate the actual process:

- Password-protected user management for setting up different user rights
- Application manager for selecting the most suitable test profile
- One-page result report with table and graphics
- Bar code option for sample identification
- Analysis and checking the measuring results according to defined tolerance limits (passed check: yes/no)
- Software with 21 CFR Part 11 function (electronic signature, audit trail and data archive)
- LIMS/SAP interface

# Xigo Nanotools



## Xigo nanotools acorn area for surface area measurement

This instrument will measure the surface area of particles in battery mixes. The Acorn Area is a revolutionary instrument designed to measure the surface area of nanoparticles dispersed in a liquid. This patented nuclear magnetic resonance based method offers many advantages in comparison with conventional surface area techniques.

Measurements take about 5 minutes from start to finish. No sample preparation such as drying or degassing is required. High concentration dispersions are measured directly; without dilution. Acorn Area measurements are orders of magnitude faster than any other surface area measuring technique.

### The Acorn Area Advantage:

- Low cost
- Measurements without dilution
- No sample preparation
- Results in minutes
- Compact
- No moving parts
- Suitable for QC or R&D
- Simple to use

### Specifications:

**Interface:** PC or PDA via USB

**Power:** 100-240 VAC 50/60 Hz, 3 amps

**L x W x H:** 240 x 360 x 160 mm

**Wt.:** 7 kg

# Beckman Coulter

## LS 13 320 Particle Size Analyzer



### The Beckman Coulter Particle Size Analyzer

This instrument will measure the size and distribution of particles used in battery electrodes. The LS 13 320 Series is a versatile and sophisticated laser diffraction particle size analyzer. Using the Fraunhofer and Mie theories of light scattering, the LS 13 320 Series offers the highest resolution, reproducibility and unsurpassed accuracy. In fact, the LS 13 320 can measure unknown sample distributions without having the analyst guess the type of distribution mode to pre-program the instrument. Equally at home in research and development, quality control and manufacturing, the LS 13 320 particle size analyzer provides the analyst with a system that is easy to use, producing fast and reliable results, yet technically advanced for dry, aqueous and non-aqueous samples to satisfy all particle sizing requirements.

### LS 13 320 Specifications:

Low angle forward light scattering

Particle Size Range

0.4  $\mu\text{m}$  - 2000  $\mu\text{m}$

Power Consumption

$\leq 3$  amps @ 220 – 240 VAC

Dimensions

25.4cm x 100.7cm x 44.5cm

Weight

32.5 kg

Typical Analysis Time

15 - 90 sec

Illuminating Sources Diffraction:

Solid State (780 nm)

PIDS:

Tungsten lamp with high quality band-pass filters (450, 600 and 900 nm)

Humidity

0 - 90% without condensation

Temperature Range

10 - 40°C

# Binder Vacuum Drying Ovens



## Binder Vacuum Drying Ovens – 4 off Available

These ovens are specifically designed for drying materials containing flammable solvents, such as the NMP used to coat battery cathodes. These ovens will be used in the dry room to dry electrodes, anode and cathode in separate ovens to avoid cross-contamination. The inner chamber of the VDL safety vacuum drying oven is designed according to ATEX guidelines for Zone II 3 G. Units come complete with integrated vacuum pump system.

## Performance Characteristics

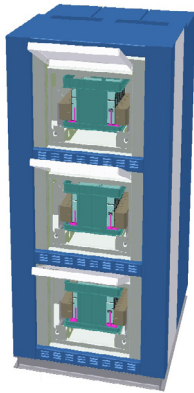
- Temperature range from 15 °C above ambient temperature to 200 °C
- Digital temperature setting with an accuracy of one degree
- Controller with 2 programs with 10 sections each or switchable to 1 program with 20 sections
- Integrated weekly program timer with real-time function
- Elapsed time indicator
- Spring-mounted safety glass panel with shatter protection
- Precision-adjustable ventilation valve
- Precision-adjustable inert gas valve with Cross-Flow-Technology

## Safety features

- Pressure control device for heating activated < 125 mbar
- Analogue pressure gauge (displays pressure difference between the inner chamber and ambient pressure)
- Electro polished inner chamber, suction and ventilation tubes, pressure container, expansion racks, and ball valve are made of stainless steel
- Door gasket made of tempered silicone
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm

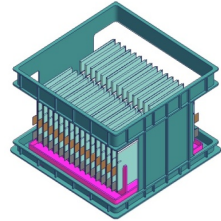


# Cell Formation Station



## Cell Tray

Tray is capable of holding 32 cells in two rows of 16. Cells are back to back positioned with tabs extending from pallet sides.



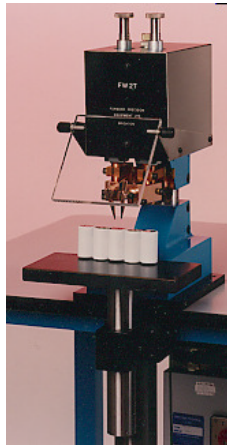
## Solith/Bitrode Formation system

Modular Formation Chamber MFC 96 can be used as stand alone formation system or together with several modules to build an high productivity cell formation system. The MFC 96 is composed of 3 docks each one capable of containing a pallet with 32 cells for formation, grading and test cycling. We will have two of these stations totalling 192 channels

## Formation system

- Composed of 3 unit of Bitrode Model SMF32-10-6 formation system controlled via the Bitrode Visual software and network computer system.
- User-defined constant power, constant current and constant voltage or ramp set points for each step. Each step may be terminated by limit conditions including cycles, current, voltage, power, AH, WH or time.
- The Bitrode Model SMF uses state of the art switch-mode technology for superior performance and reliability.
- Discharge is regenerative back onto the AC grid to lower heat dissipation in the room.
- Cell grading is provided by sorting cells into 9 different capacity classes, these classes are programmable
- Interface of each circuit to the control computer via a two wire network system.
- Automated cell contacting for each cell on formation pallet
- Voc Sensor - For detection of carbon monoxide, volatile organic compounds, volatile sulphur compounds, nitrogen dioxide
- Smoke sensor - For early detection of any fire in the formation dock.
- Temperature Conditioning - A system composed by an heat exchanger and an electrical heater is capable of maintaining constant temperature within the cell dock during formation process. Temp. range : from 20 to 40 C  $\pm$  2 C
- UPS unit - System is equipped with an UPS unit capable of collecting data from each formation channel for a minimum period of 30 minutes after a power shut down

# Battery Tab Welder



## The Gatwick Technologies Model FW2T/BW 3kVA PX1500 is designed for Welding Battery Tabs

It is also suitable for single-sided, step, series, indirect series and opposed welding. It is intended to be used with all types of coin cells, cylindrical cells and pouch cells within the Energy Innovation Centre. This system utilises the proven FW2/T head in conjunction with a quickly adjustable single post support platen suitable for battery packs up to 230mm high. The FW2/T head operates via a mechanical mechanism and cable, connected to a foot pedal. It has independent control of electrode thrust on each moving electrode, essential for miniature and delicate work. Weld initiation occurs simultaneously when preset electrode force is reached, assuring repeatable, high confidence level welds. Universal electrode settings and adjustments combined with large throat depth for difficult positioned welds makes this system extremely versatile.

## Specification:

- Welding head: FW2/T
- Maximum welding power: 3 KVA
- Supply voltage: 400V 50 Hz 2 phase
- Electrode diameter: 6 mm
- Electrode travel: 19 mm
- Electrode force: 4.5 to 133 N (1 to 30 lbf) standard
- - Foot pedal
- Controls: Electrode Force control Stroke adjustment
- Transformer primary tap panel

# Multi-Channel Potentiostat



## BIO-LOGIC SAS VMP3 MULTI-CHANNEL POTENTIOSTAT/ GALVANOSTAT WITH IMPEDANCE 16 channel Research Grade Potentiostat System

The **VMP3** is a research-grade multi-channel potentiostat. With its modular chassis design, up to 16 independent potentiostat channels can be installed. The VMP3 can be equipped with additional capabilities, including low current measurement, impedance and high current via plug-in modules.

Each potentiostat installed in the VMP3 can be connected to an external high current booster channel.

The VMP3 is a multiple user system. Thanks to the Ethernet LAN connection capability, several computers can be connected to the unit at the same time.

- Provided with System:
- VMP3 chassis – 16 slots - NO channel - including EC-Lab software package
- Potentiostat/galvanostat board with EIS(/Z) option for VMP3 (including 1.5 m cell cable) – uses one slot. Built-in EIS analyser: 10 $\mu$ Hz to 1 MHz
- VMP3 booster chassis – 8 slots – NO board – Max: 20 A (includes a dummy cell for booster)
- 20A board for VMP3 booster (including connection cable & 1.5 m cell cable) – uses 8 slots
- Each VMP3 potentiostat channel can be boosted with one booster channel, although the specific channel can be chosen by the user
- Battery cell holder
- Coin cell holder
- Test box 1 – 16 independent dummy cells



# HIOKI 3563 Battery Tester



## Hioki BT3563 Battery Tester

This instrument is used principally for the quality control testing of battery cells, however this is a comprehensive instrument capable of a range of analytical and testing requirements for battery cell, packs and fuel cells.

### Features

- High-precision cell voltage measurements (accurate to 0.01% of reading)
- Ranges from 3 m $\Omega$  to 3000  $\Omega$  support coin-size to large-cell batteries
- Measurement circuitry employs enhanced current regulation
- Battery module testing
- Fast 10 ms response and 8 ms sampling time for high-speed measurements
- Large (low-resistance) cell testing
- High-speed testing of coin batteries
- Fuel cell stack measurements
- Battery research and development measurement applications

# HIOKI 3154 Battery Tester



## Hioki BT3154 Battery Tester

This instrument is used principally for the insulation testing of cell packs prior to being filled with electrolyte to check the insulation resistance of the separator. Any holes in the separator or potential short-circuit mechanisms can be detected using this instrument. Appropriate leads are available for pouch cell or coin cell testing.

### Features

- Six test voltages from 25V to 1000V
- Stores 10 setting states
- Comparator and timer functions facilitate easy testing in accordance with various safety standards
- Start, Stop, or other configuration external control is provided
- Measuring terminals in rear panel is convenient to build system

### Specifications

- Insulation resistance (Applied DC voltage method)
- Testing voltage / measurement ranges (Auto / Manual) 25/ 50V: 2.000/20.00/200.0 M $\Omega$ ,
- 100/ 250/ 500/ 1000V: 2.000/ 20.00/ 200.0/ 2000M $\Omega$  (at 500 or 1000V testing, up to 4000M $\Omega$ )
- Basic accuracy  $\pm 2\%$  rdg.  $\pm 5$  dgt. : at 25/ 50/ 100V [0 to 20M $\Omega$ ], 250V [0 to 100M $\Omega$ ], 500/ 1000V [0 to 999M $\Omega$ ]
- Measurement speed: Fast: 10 times/s, Slow: 1 time/s, selectable, Response times: less than 0.5 second





#### Excellent transport and road links

- 1 hour to London by train
- Nearest airport – Birmingham International – 20 minutes
- Nearest train station – Coventry

For more information about our research, equipment and facilities please visit our website:

[www.wmghvmcatapult.org.uk](http://www.wmghvmcatapult.org.uk)

If you are interested in working with WMG centre HVM Catapult please contact us. We would be happy to meet with you and/or give you a tour of our facilities.

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