



Customcells



Tailormade Energystorage Solutions

www.customcells.de



CUSTOMCELLS

Europe's most versatile manufacturer in the Lithium-Ion cell industry.

After the foundation of our company in 2012 in Germany, based on technologies researched more than 16 years by Fraunhofer, the company started to grow fast and became a significant and recognized brand in the European battery industry. Custom Cells nowadays holds various patents and licenses of battery technologies. We are running a modern and superior production plant in Germany with an annual production of more than 80 MWh of electrodes with continuously growing capacity.

Breaking the barriers.

Custom Cells outstanding technology is overcoming the conventional limits in battery performance and brings your work one step closer to the future. We are manufacturing the most recent electrode technologies, offer fast research products and Lithium-Ion cells for special applications. Therefore customers around the world are trusting in us.

Partners

Custom Cells is offering development services together with its preferred r&d partner Fraunhofer ISIT. The Altana AG is working in several fields with Custom Cells and holds shares of the company.



BATTERY RESEARCH PRODUCTS

BATTERY ELECTRODES

PROTOTYPES

INDUSTRIAL BATTERIES

BATTERY SYSTEMS

SPECIALIZED ENERGY STORAGE SYSTEMS



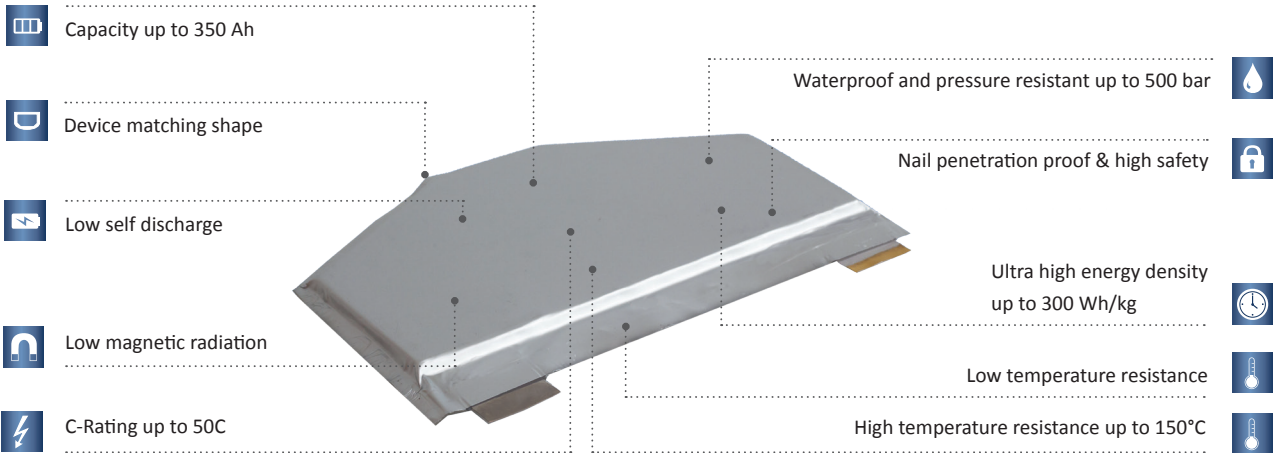
MULTI-OPTION LITHIUM-ION CELLS

Extreme markets are standard to us.

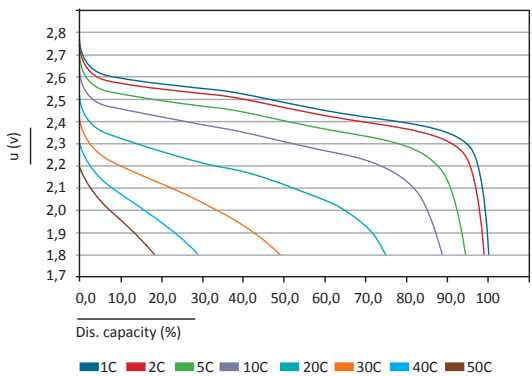
While standard cells only feature standard performance, Custom Cells offers individualized Multi-Option cells suiting exactly to your application. Electrodes based on future materials, high safety configurations and unrivaled performance make these cells perfect to suit even the roughest applications.

Material overview:

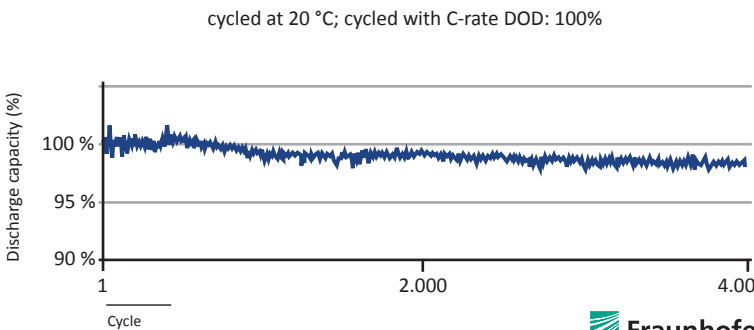
NCM (111/523/622/811), LFP, NCA, LMNO, LCO, LMO	Cathodes
C, LTO, Si/C	Anodes



High power cell developed by Fraunhofer ISIT



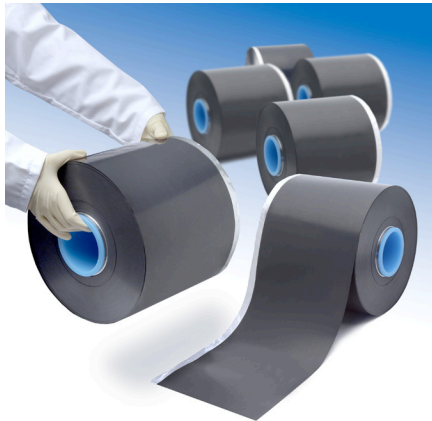
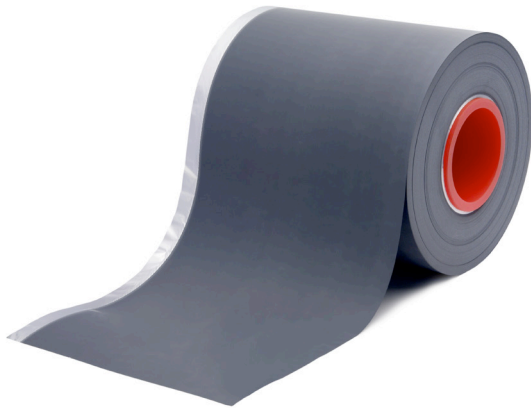
High energy cell developed by Fraunhofer ISIT



ELECTRODES

Custom Cells offers various electrodes to customers from own production in north Germany with superior performance. We are also recognized worldwide as a trustable partner in contract coating and electrode supply based on your own chemistries and recipes. Our production plant offers numerous mixing machines from 1 liter up to 200 liters, supreme coating equipment from batch coating up to reel to reel processes for serial production. Various coating heads, drying chambers, calendaring, slitting and full quality control (PDA) can be found in one place. A team of senior chemical scientists and a very experienced operative team support the ramp-up and production of your electrodes for batteries, supercaps or new battery technologies in record-breaking speed at comparably low cost. The team is experienced in processing all modern active materials even on aqueous binder systems.

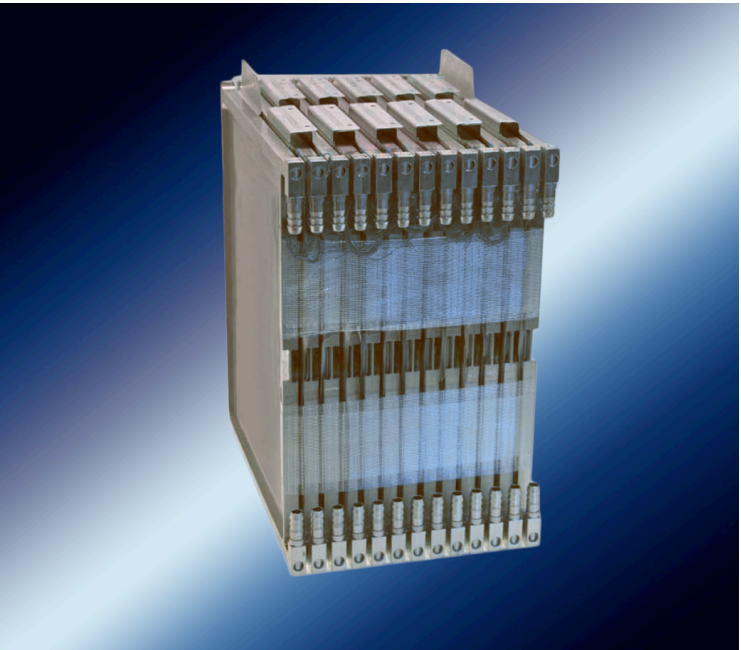
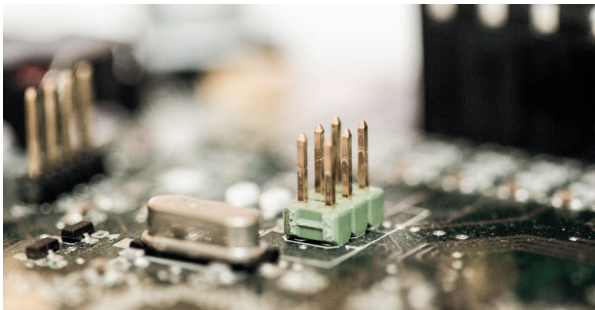
- COATING LINE: Mathis (Switzerland)
- COATING SPEED: 0,1 – 10 m/min
- COATING HEADS: Reverse roll, slot die, doctor blade
- QUALITY CONTROL: Betacontrol, laser, optical
- DRYING CHAMBERS: several infrared and recirculating air dryers
- CALENDERING & SLITTING



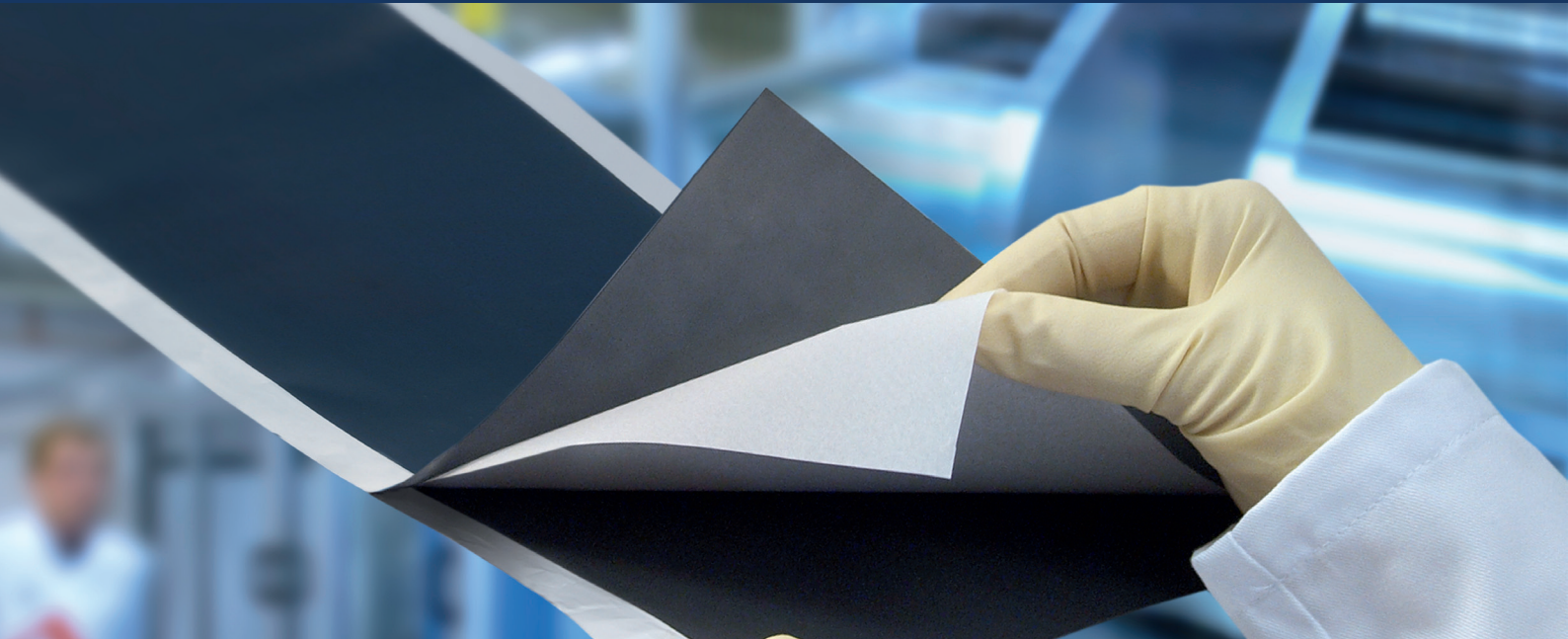
- // Adjustable area capacity / weight
- // Individual calendaring
- // Wide portfolio of active materials
- // Adjustable coating width and slitting
- // Modern water based solvents

BATTERY SYSTEMS

Custom Cells manufactures customized energy storage systems in cooperation with technology partners. We combine the most recent Lithium-Ion cell technology on the market with excellent battery- and thermal management systems, including individual sensing, communication busses and a voltage on system level of up to 1000V. For underwater vehicles Custom Cells offers pressure neutral battery system for diving depth up to 5000 m.



- // Chassis adapted design
- // Lithium-Ion cells up to 350 Ah
- // Individual sensing
- // Ruggedized housing
- // Wide voltage spectrum
- // Optimized weight
- // Individual connectors and communication busses
- // Advanced battery- and thermal management system



SCIENTIFIC BATTERY PRODUCTS / LAB-LINE

Custom Cells manufactures various products for professional battery research and development. Scientists which need to depend on reliable data and focus on high quality research rely on the scientific portfolio of Custom Cells. There are no other battery research product which bring you as fast to reasonable results as the Custom Cells Lab-Line does. All products come with extensive data which make it possible to compare your measurements.

- STANDARDIZE YOUR RESEARCH
- INDUSTRIAL QUALITY
- REACH YOUR GOALS FASTER
- LOWER YOUR R&D COST



Fields of use

The Custom Cells Lab-Line offers a unique approach to shorten r&d times dramatically to the following scientific fields:

Cathode materials	Binder	Additives	Manufacturing equipment
Electrolytes	CUSTOMCELLS LAB-LINE		Electrodes
Packaging			Substrates
Anode materials	Carbon black	Cell design	Benchmarking

ELECTRODE COINS

Standardise your high quality measurements.



ELECTRODE COINS REDUCE YOUR EXPERIMENTAL TIME UP TO 53%.

Electrode Coins are pre-punched electrodes of highest quality for EI-Cell electrochemical test equipment and Swagelok half cells. Electrode Coins are provided ready-to-use in inert atmosphere packaging and come with extensive electrochemical data. This will save you effort, time and cost.



- // Ready-to-use Electrode Coins save your time and effort
- // High quality electrode materials
- // Fully standardised
- // High uniformity in cycle life, area capacity and energy density
- // Prepared and optimized for half-cell and full-cell testing
- // Industrial quality
- // Simple glovebox handling due to single packaging
- // Pre-dried and sealed in inert gas atmosphere
- // Punched coins with EL-CELL standard diameter (18 mm) and Swagelok diameter (13 mm)



ELECTRODE SHEETS

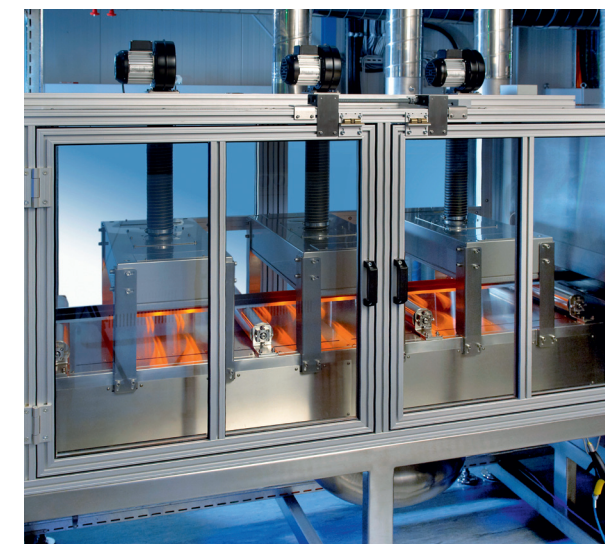
Focus on what matters.

ELECTRODE SHEETS SAVE YOU UP TO 49% R&D COST.

High quality electrodes and consistent electrode compositions are mandatory to be successful in material or cell development. The Electrode Sheet product line provide all modern active materials and fulfil the gap between the half cell and the full cell.

The wide tab area allows even the fast set up of multilayer cells.

HIGH QUALITY
MADE IN
GERMANY



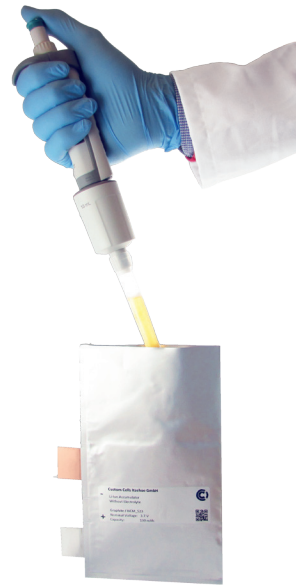
- // Reduces equipment costs
- // Less machine hours
- // Faster results
- // Single cell and multilayer cell set ups
- // High quality
- // Fast supply

TEST CELLS

Tools for the professional researcher.

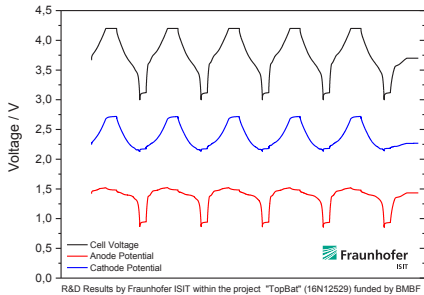
ELECTROLYTE DEVELOPMENT CELLS

Screen your electrolytes in ground-breaking speed in a real Lithium-Ion Pouchcell. The pre-dried cells are ready for immediate use: Just fill in your electrolyte composition, seal and cycle. The fastest and cheapest way to operate your own electrolyte laboratory.



3-ELECTRODE CELLS

The most effective way to screen your materials. Based on a Fraunhofer ISIT patent, the 3rd electrode allows to monitor anode voltage separately from cathode voltage and impedance. The technology eliminates all costly and slow intermediate steps in cell or material development.



REFERENCE CELLS

State of the art Lithium-Ion test cells. We equip cells with your reference materials and our electrodes and cells meeting your specifications. Benchmark your own materials and learn about the latest technologies.



ALL CELLS CAN BE EQUIPPED WITH YOUR MATERIALS.

CATHODES

Active material	Characteristic	Area capacity		Coins 18mm	Coins 13mm	Sheets	Foils	Coils	
Lithium-Nickel-Manganese-Cobalt-Oxide (NCM-111)	High Energy	3,5 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							
Lithium-Nickel-Manganese-Cobalt-Oxide (NCM-523)	High Energy	3,5 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							
Lithium-Nickel-Manganese-Cobalt-Oxide (NCM-622)	High Energy	3,5mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							
Lithium-Nickel-Cobalt-Aluminium-Oxide (NCA)	High Energy	3,5 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							
Lithium-Iron-Phosphate (LFP)	High Energy	3,5 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							
Lithium-Cobalt-Oxide (LCO)	High Energy	3,5 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							
Lithium-Manganese-Oxide(LMO)	High Energy	3,5 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							
Lithium-Manganese-Nickel-Oxide (LMNO)	High Energy	3,5 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							

ANODES

Active material	Characteristic	Area capacity		Coins 18mm	Coins 30mm	Sheets	Foils	Coils	
Graphite	High Energy	3,8 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,2 mAh/cm ²							
	High Power	1,1 mAh/cm ²							
Lithium-Titannate (LTO)	High Energy	3,5 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,0 mAh/cm ²							
	High Power	1,0 mAh/cm ²							
Silicone/Graphite (Si/C)	High Energy	3,8 mAh/cm ²		✓	✓	✓	✓	✓	
	Balanced	2,2 mAh/cm ²							
	High Power	1,1 mAh/cm ²							



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