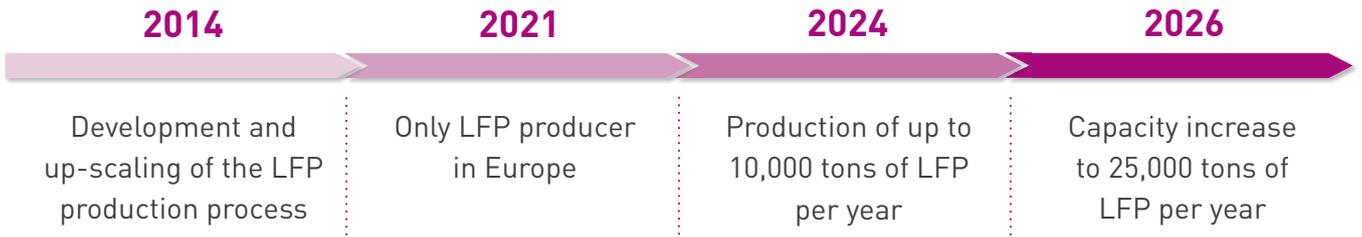


■ **IBUvolt battery materials GmbH**  
a company of **IBU-tec advanced materials AG**

# **EUROPE'S LEADING LFP CATHODE MATERIAL SUPPLIER**



**IBUvolt – EUROPEAN PIONEER IN LFP PRODUCTION**



At IBU-tec's headquarters in Weimar, Germany, we have been working with LFP long before the launch of IBUvolt® in 2021. In fact, the first research and development activities date back almost ten years.

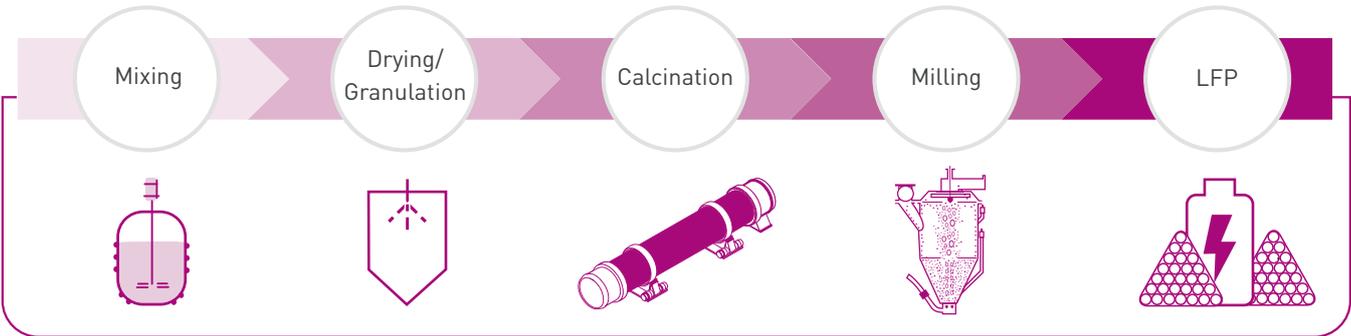
At that time, IBU-tec successfully conducted trials with LFP on behalf of a customer and was subsequently commissioned to produce up to 4,000 tons of cathode active material. Since then, the material produced in our rotary kilns has proven its qualities in numerous applications globally.

Today, we are the only producer of LFP battery material in Europe currently supplying its customers.



■ Aerial photo of IBU-tec HQ

**PRODUCTION PROCESS**



We monitor these process steps using a combination of chemical, physical, and electrochemical analysis techniques to ensure that the material meets the specifications required by our customers. IBUvolt® LFP embodies our values of quality and decades of experience in chemical processing in the heart of Europe.

**IBUvolt® LFP – POWER WITH STABILITY**

Item	IBUvolt® LFP400	IBUvolt® LFP402
PSD d50 (µm)	10	1
Carbon (wt.-%)	3.5	1.5
Discharge capacity (mAh/g)	≥149	≥153
Electrode density (97% LFP) (g/cm <sup>3</sup> )	2.1	≥2.4
Typical application	Power cells / Dry coating	EV, EES / NMP coating

**OPTIMIZED FOR DURABILITY AND HEAVY USE**

**ELECTRIC VEHICLES**

LFP is a cornerstone of the global transition to electric vehicles. Smaller, everyday vehicles benefit from the durability and safety of LFP at a significant price advantage.


**TRUCKS**

The combination of safety, longevity, temperature tolerance and environmental friendliness, along with adequate energy density, makes LFP cathodes an excellent choice for truck batteries.


**ENERGY STORAGE**

Residential and commercial energy storage solutions must function for decades. LFP400 is the cathode material of choice for this application. The exceptionally long cycle life enables the design of durable battery storage systems.


**CONSUMER ELECTRONICS**

IBUvolt® LFP can be processed with all common electrode coating techniques. This enables the custom design of specialty batteries for small electronics such as headphones or medical devices.

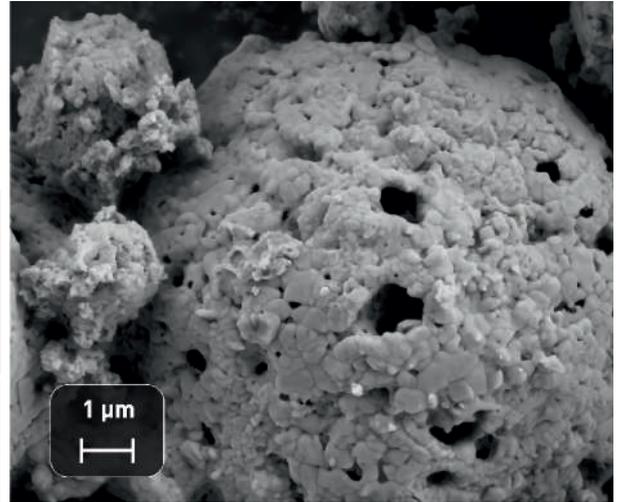
## IBUvolt® LFP400

The engineered particle shape results in:

■ **LOWER VISCOSITY OF ELECTRODE SLURRIES:**  
Coating cathodes is easier and can even be done in a 3D printing process.

■ **BETTER CONDUCTIVITY:**  
The primary particles are connected in a spongy network which improves electric conductivity and accessibility for lithium.

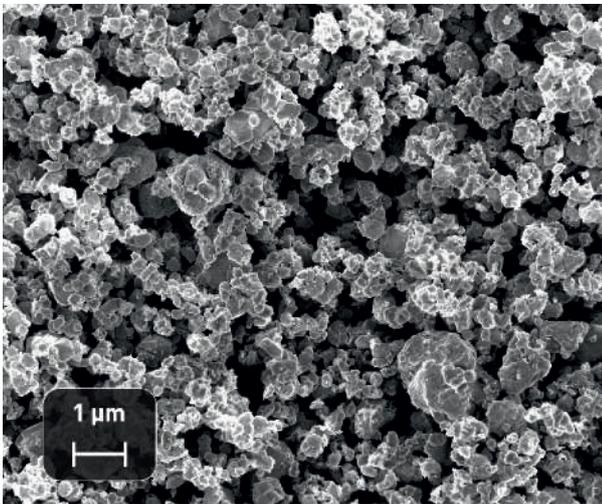
■ **HIGH CYCLE LIFE:**  
The defined structure results in less chemical and physical degradation during battery cycling.



■ SEM of IBUvolt® LFP400

## IBUvolt® LFP402

High energy density cathode material:



■ SEM of IBUvolt® LFP402

■ **HIGH ELECTRODE DENSITY:**  
The narrow particle size distribution enables a high compactation of the electrode film.

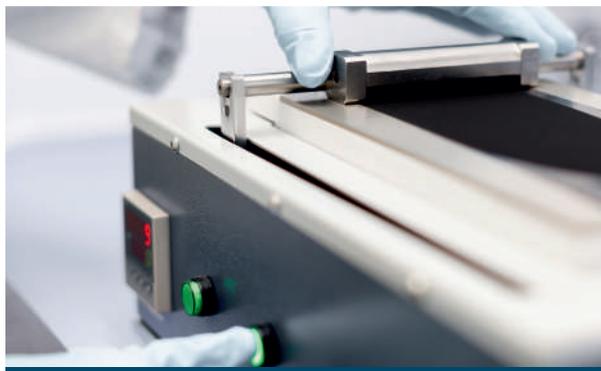
■ **IMPROVED CAPACITY:**  
Chemical modification of the LFP400 formula lead to less impurities and higher capacity.

■ **OPTIMIZED FOR NMP COATING:**  
IBUvolt® LFP402 was optimized to show optimal performance in the most common coating process.

## ELECTRODE COATING WITH IBUvolt® LFP RECOMMENDED BY IBU-TEC:

### NMP COATING

is a commonly used technique for coating cathodes. The use of NMP (N-methyl-2-pyrrolidone) solvent allows uniform deposition of electrode slurry on the substrate. IBUvolt® LFP402 forms easily mixable NMP slurries with relatively low viscosity, allowing for better mixing of the components and a more uniform coating thickness.



#### ► Recommendations for NMP based coatings

Solid composition by wt.-%			Solids in slurry (wt.-%)	Loading (mAh/cm <sup>2</sup> )	Density after calandring (g/cm <sup>3</sup> )
LFP402	Carbon	PVDF			
97	1	2	50-55	3-5	2.3-2.7

### AQUEOUS COATING

has emerged as a safer and more sustainable alternative to NMP coating. In this process, water-soluble binders and dispersants are used to create a homogeneous slurry of LFP particles. IBUvolt® LFP400 is more resistant to surface degradation from water contact, making it an excellent choice for waterbased electrode coating.



#### ► Recommendations for water based coatings

Solid composition by wt.-%			Solids in slurry (wt.-%)	Loading (mAh/cm <sup>2</sup> )	Density after calandring (g/cm <sup>3</sup> )
LFP400	Carbon	CMC/SBR			
90-93	3-6	4	40-45	3-5	2.0-2.3

## CONTACT



### **Dr. Nico Zobel**

Managing Director IBUvolt battery materials GmbH  
Department Head · Sales LFP

Phone: +49 3643 8649-38

E-Mail: [zobel@ibu-tec.de](mailto:zobel@ibu-tec.de)



### **Dr. Stefan Schwarz**

Head of Sales  
& Business Development · LFP

Phone: +49 3643 8649-386

E-Mail: [schwarz@ibu-tec.de](mailto:schwarz@ibu-tec.de)

**IBU** | tec

### **IBU-tec advanced materials AG**

Hainweg 9-11  
99425 Weimar  
Germany

Phone: +49 (0) 3643 8649-0

Fax: +49 (0) 3643 8649-30

E-Mail: [mail@ibu-tec.de](mailto:mail@ibu-tec.de)

Website: [www.ibu-tec.de](http://www.ibu-tec.de)