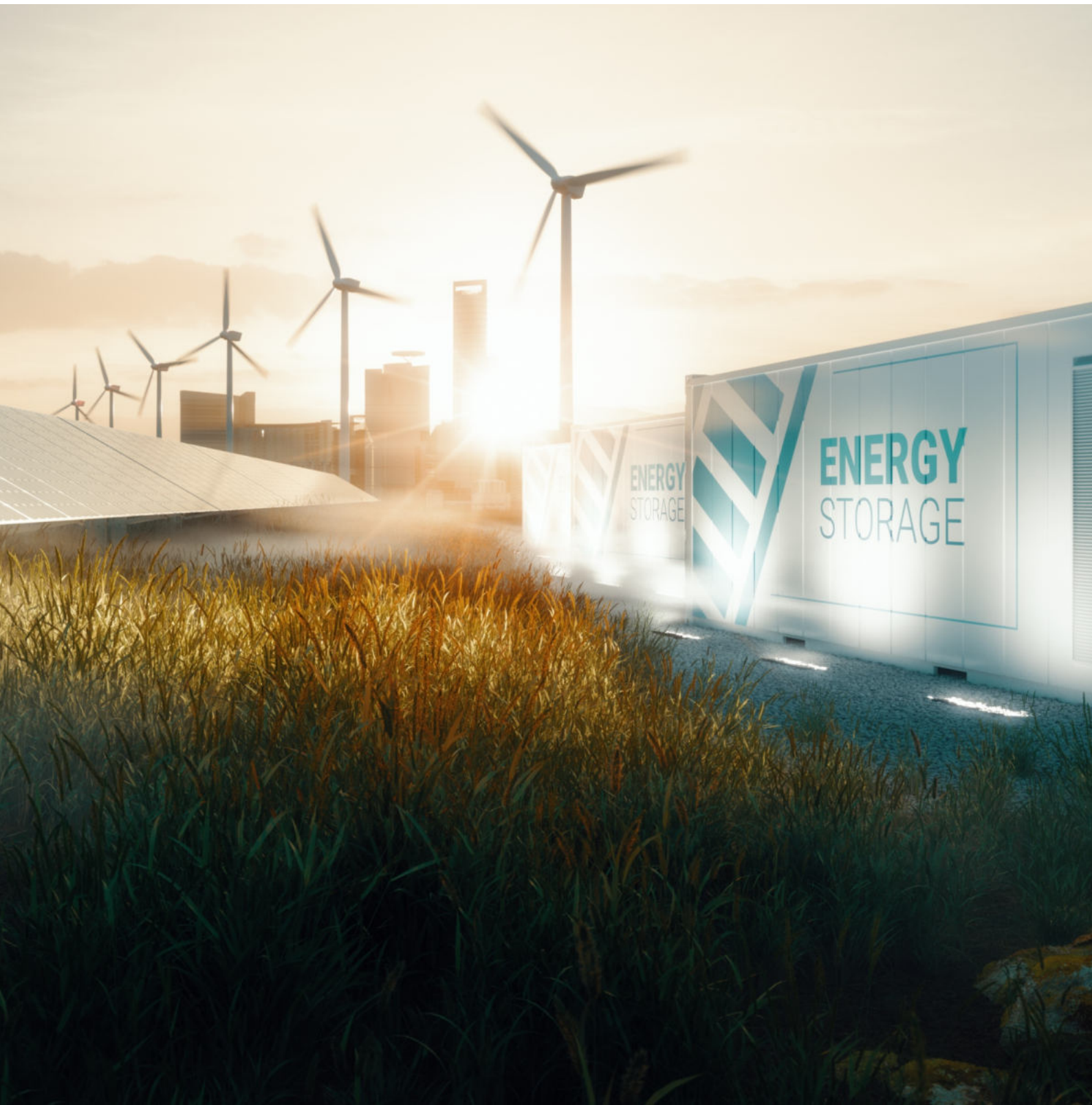
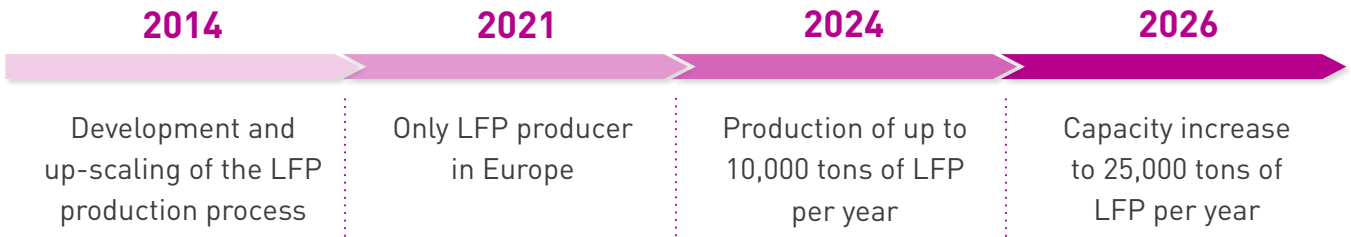


■ **IBUvolt battery materials GmbH**  
a company of **IBU-tec advanced materials AG**

# **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.

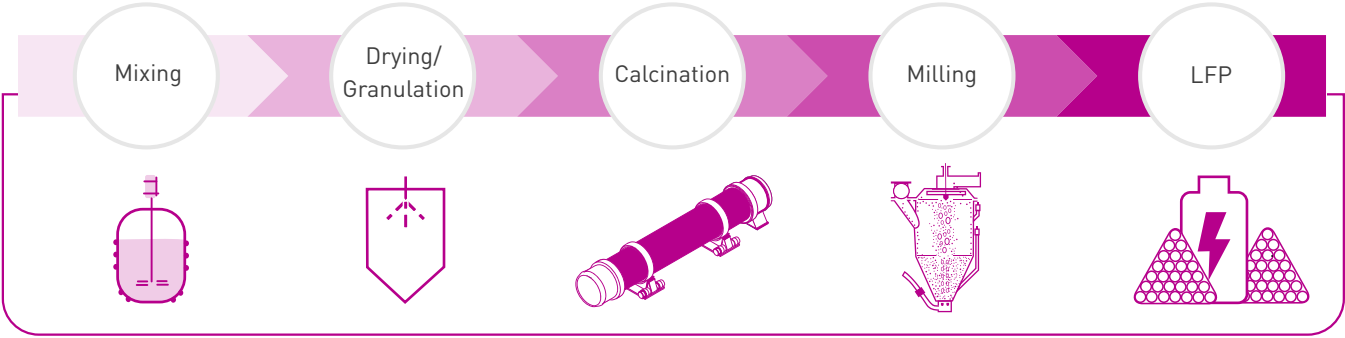
At that time, IBU-tec successfully conducted trials with LFP on behalf of a customer and was subsequently commissioned to produce up to 4,000 tons of cathode active material. Since then, the material produced in our rotary kilns has proven its qualities in numerous applications globally.

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



■ Aerial photo of IBU-tec HQ

**PRODUCTION PROCESS**

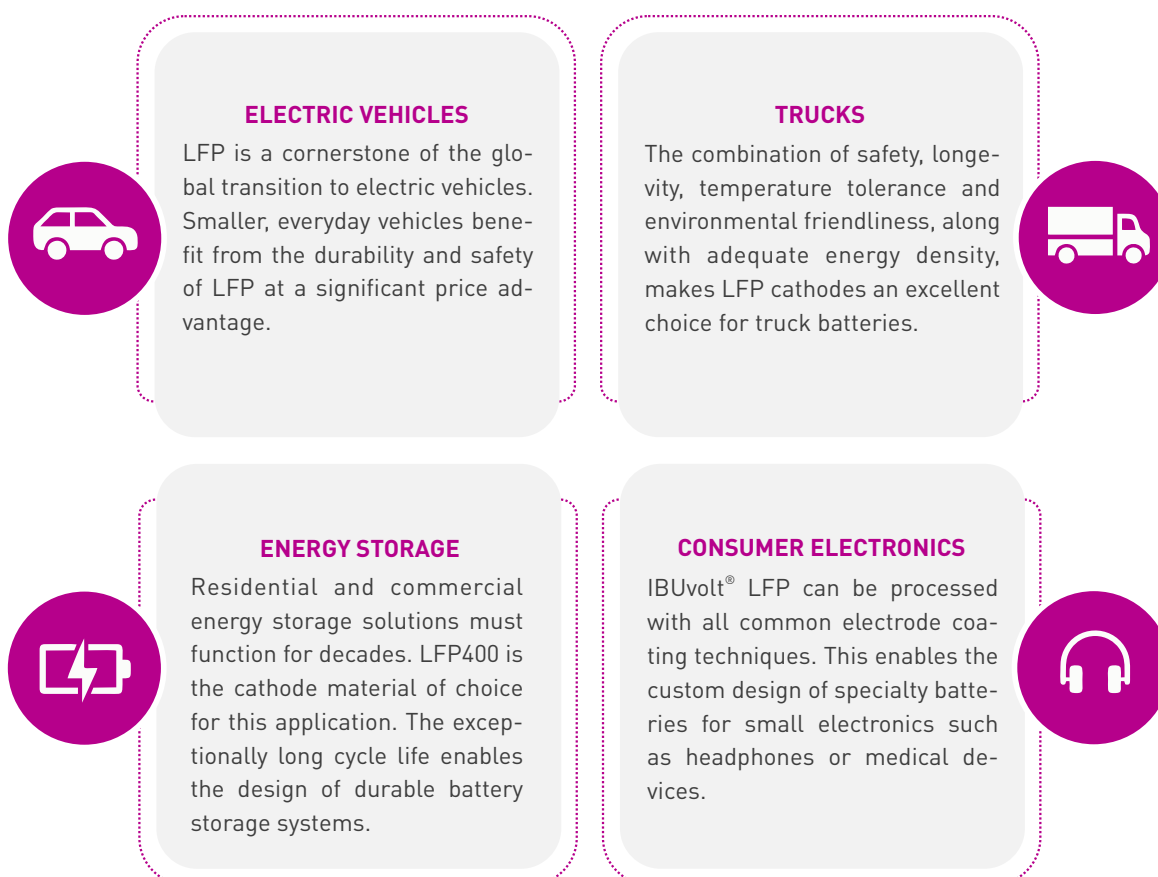


We monitor these process steps using a combination of chemical, physical, and electrochemical analysis techniques to ensure that the material meets the specifications required by our customers. IBUvolt® LFP embodies our values of quality and decades of experience in chemical processing in the heart of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

## IBUvolt® LFP – POWER WITH STABILITY

	IBUvolt® LFP400 Power-grade CAM	IBUvolt® LFP200 High-energy additive
Particle size d <sub>50</sub> (µm)	9-13	5-8
Particle size d <sub>90</sub> (µm)	20-28	11-15
Tapped density (g/cm <sup>3</sup> )	1.0-1.4	0.9-1.3
Specific surface area (m <sup>2</sup> /g)	19-25	19-25
Use case	Standard grade for all applications	Blended with LFP400 for higher electrode density after calendaring

## OPTIMIZED FOR DURABILITY AND HEAVY USE

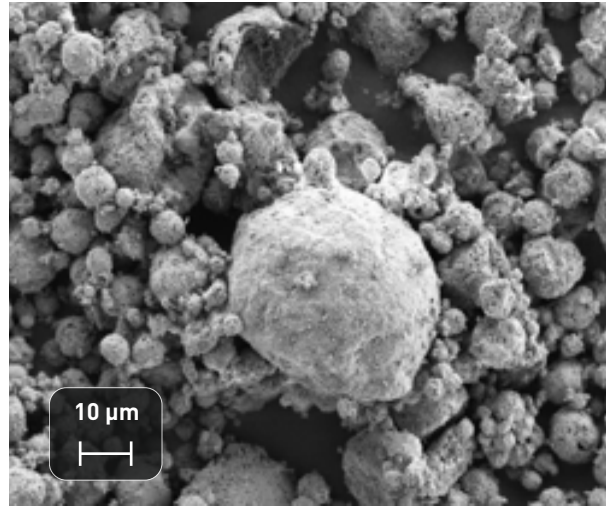


**THE APPLICATION SPECIFIC ENGINEERED PARTICLE SHAPE RESULTS IN:**

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

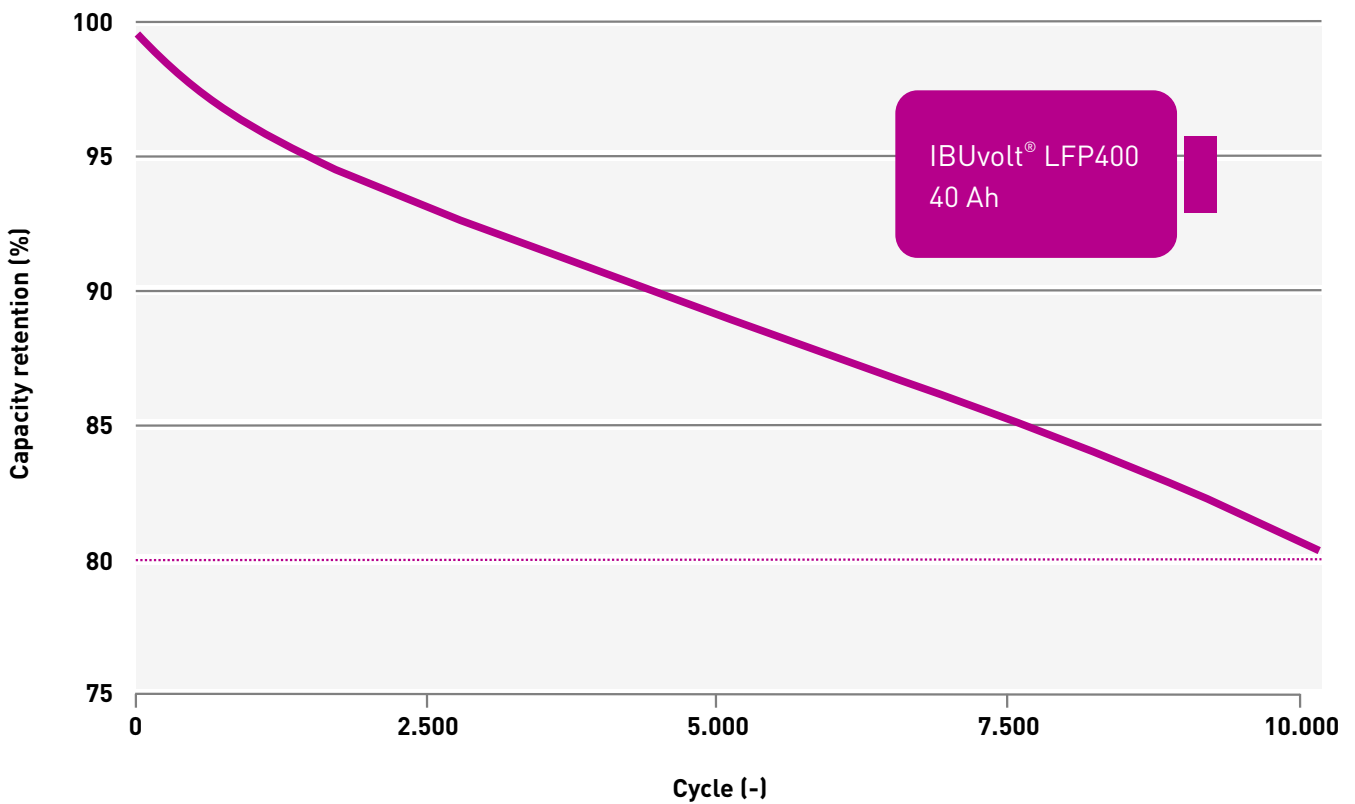
■ **BETTER CONDUCTIVITY:**  
The primary particles are connected in a spongy network which improves electric conductivity and accessibility for lithium.

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



■ SEM of IBUvolt® LFP400

**CYCLE LIFE OF 40 Ah CYLINDRICAL CELL**



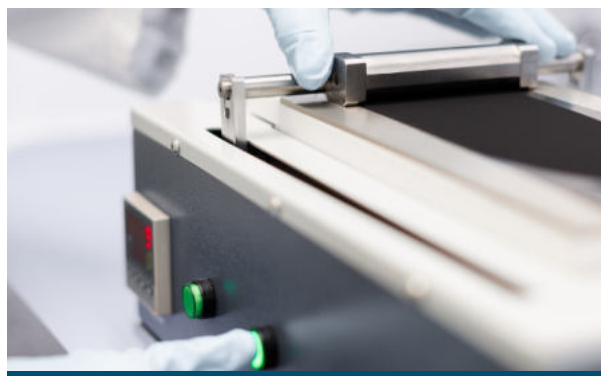
▶ Graphite anode, proprietary electrolyte, 80 A charge/discharge, 2.5 - 3.6 V.



## 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® 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

Cell format	Solid composition by wt.-%			Solids in slurry (wt.-%)	Loading (mAh/cm <sup>2</sup> )	Density after calendaring (g/cm <sup>3</sup> )
	LFP	Carbon	PVDF			
Coin	90-93	2-5	5	50-55	3-5	2.0-2.3
Pouch	95	2	3	60	3	1.9-2.1

### 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® LFP is more resistant to surface degradation from water contact, making it an excellent choice for waterbased electrode coating.



#### ► Recommendations for water based coatings

Cell format	Solid composition by wt.-%			Solids in slurry (wt.-%)	Loading (mAh/cm <sup>2</sup> )	Density after calendaring (g/cm <sup>3</sup> )
	LFP	Carbon	CMC/SBR			
Coin	90-93	3-6	4	40-45	3-5	2.0-2.3
Pouch	90-92	3-5	5	50-55	5-6	1.8-1.9

## CONTACT



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