



Providing energy for an ever-changing industry

Powering the evolution of lithium-ion battery technology

We're a part of PRETTL

Provision of production and development capacities

As a strong partner in many areas, we are always on site where our customers and partners need us. We are represented on all continents and in all target markets. This guarantees our customers fast and targeted support in order to meet the constantly changing requirements. This high performance demand on ourselves drives us to top performance.

PRETTL
group

5 industries

AUTOMOTIVE

**APPLIANCE
SOLUTIONS**

ENERGY

ELECTRONICS

**STRATEGIC
BUILD-UP**

PRETTL at a glance



5
industry segments



20
countries



40
locations



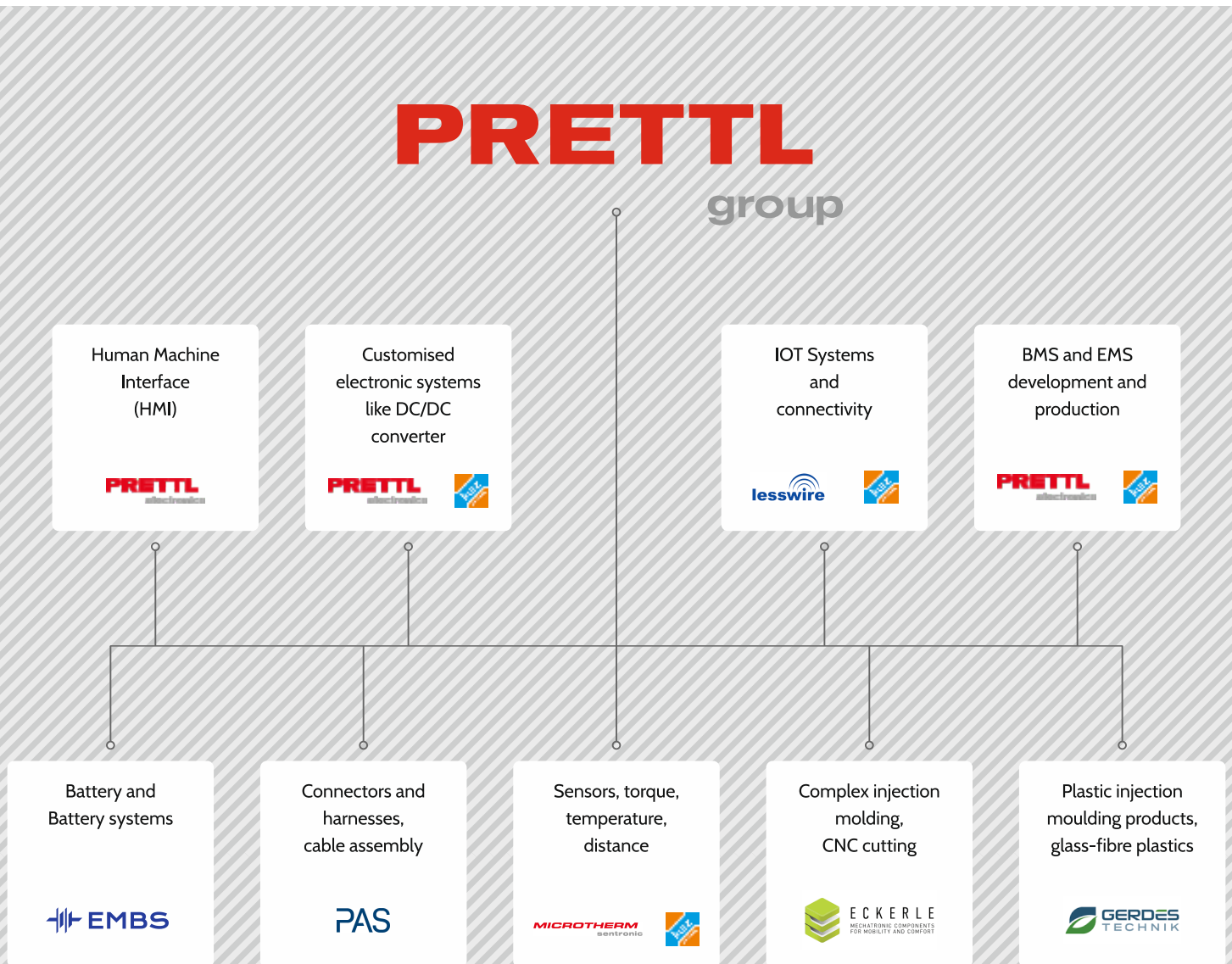
>10.000
employees worldwide
within Prettl Group

PRETTL Group

Components PRETTL provides for different industry segments

Being part of the PRETTL group significantly broadens our capabilities at EMBS, enabling us to offer an expanded range of high-quality components and solutions. This strategic collaboration allows us to leverage PRETTL's extensive global expertise and resources, enhancing our ability to provide components for different projects for our customers.

By aligning with PRETTL, we are positioned to provide more comprehensive, cutting-edge solutions, meeting the evolving needs of our clients with the utmost precision and reliability. This partnership strengthens our commitment to driving technological progress and delivering exceptional value across all industry segments.



Advanced Battery Systems

Industry leaders in bespoke battery systems for over 25 years

Specialists in battery systems

We're a leading designer and manufacturer of bespoke advanced battery systems and have had a presence in the industry for over 25 years. Located in Gliwice, Poland, we specialise in rechargeable lithium-ion battery systems, producing a wide range of battery packs with varying specifications. We offer a complete engineering solution, along with flexible manufacturing capabilities and cost-efficient services, plus we provide full support for the entire life cycle of a project.

Close collaboration with customers

We ensure we work closely with our customers, to make sure they receive the exact product they require – a product that stands out in a highly competitive market. In an environment where technology is constantly evolving, we understand you need to see a quick return on investment. To ensure this, we leverage our global presence and existing supply chain, plus use our world-class manufacturing facilities, to ensure your product is brought to market as quickly as possible.

>800

employees within Battery Systems Division

Up to 60 V

manufacturing capacity

~85 million

cells used per year

~2.7 million

lithium-ion batteries produced a year

3.6 – 48 V

design capacity



Over 25 years of experience
in pioneering battery systems design
and production.



Internal and external alternative cell tests
to expedite time to market and promote savings.



In-house laboratories
for efficient and cost-effective testing – including
UN 38.3 – and R&D.



Rapid and agile prototyping
to ensure brief compliance and enhanced
speed to market.



Battery design and manufacture
to meet the requirements of all external
certifications.



Easily scalable production lines
to facilitate speedy manufacture of products
regardless of order size.



Produced in Europe
with easy access to high-quality components.



Knowledgeable and highly trained engineers
involved in all aspects of design and production,
to ensure superb service and exceptional products.

How we work

The pathway to powering your application

1 Consulting and planning

Working carefully to understand your business needs

Before we start working, we listen carefully to your needs, taking time to understand your challenges. We're then best prepared for finding innovative solutions for your business. Our expertise and resources allow us to strategically consult, plan, and execute every project to provide cost-efficient, tailored solutions. Our team will be available to you throughout the product development process, providing technical support and guidance on the suitability and feasibility of your battery system design.

3 Thorough testing

Comprehensive testing throughout the design process

We offer thorough testing services to an incredibly high standard. Our in-house testing laboratory is modern and well-equipped, enabling us to carry out periodic quality assurance testing for complex products. We can perform transportation tests UN 38.3, IEC 62133, and ESC to IE61000-4-2, as well as several mechanical tests, including IP.

5 Production

Producing complex solutions

We continuously invest in innovation and manufacturing capabilities, to ensure we consistently provide the best-quality products for our customers. Our production capabilities include manual, semi-automated, and automated solutions. Our experience in high-volume production allows us to design cost-effective production lines.

2 Rapid prototyping

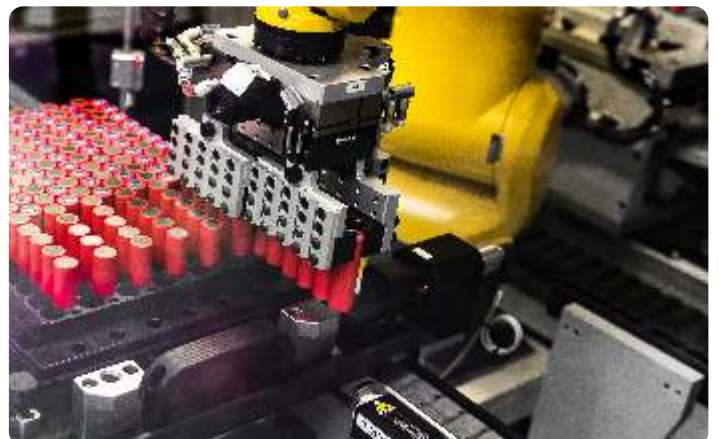
Thorough prototyping to aid effective product development

Rapid prototypes are crucial in the early stages of battery design, as they allow the quick exploration of all types of interactions and the assessment of whether a specific design suits the intended application. We can deliver highly representative functional prototypes for mechanical, plastic, metal, and electronic components in a timely manner. Our dedicated in-house prototyping laboratory ensures confidentiality and allows us to adapt quickly and easily to your evolving prototyping and product development needs.

4 Cell selection

Using our expertise to identify your best fit

We can tailor the required chemistry to deliver the optimum cell type for each application. This allows for greater flexibility when looking for the best solution, without needing to compromise on quality or cost. We also have a wide supplier based and strategic relationships with worldwide cell manufacturers, further increasing our options when deciding on the perfect cell type for your specific application.



Universal 36V battery system



Lawn & garden



AGV & AMR



Technical specifications

Parameters	Standard
Nominal voltage	36.3 V
Cell configuration	10S3P
Cell type	21700
Charging method	CC/CV (constant current/constant voltage)
Nominal capacity	14.7 Ah
Nominal energy	534 Wh
Nominal charge current	7 A
Maximum charge voltage	42 V
Maximum continuous discharge current	< 22 A
Cut-off voltage	25 V
Charge operating temperature	0...45°C
Discharge operating temperature	-5...60°C
Storage	1 month: -20...60°C 3 months: -10...45°C 1 year: 0...20°C
Communication	CAN
Compliance	CE
Ingress protection level	IP54
Weight	3.3 kg
Dimensions (L x W x H)	187 x 140 x 85 mm

Key features

Advanced BMS



Advanced Battery Management System (BMS) provides solid electronic protection, ensuring error-free application usage.

Thermal management



A unique outer design and increased cell contact surface help dissipate heat increasing the battery's performance.

S-tube 36V battery system



E-bike



Technical specifications

Parameters	Eco	Light	Standard	Ultra
Nominal voltage	36 V	36.5 V	36 V	36.5 V
Cell configuration	10S3P	10S3P	10S4P	10S4P
Nominal capacity	9.6 Ah	10.5 Ah	12.8 Ah	14 Ah
Nominal energy	346 Wh	384 Wh	461 Wh	511 Wh
Nominal charge current			2 A	
Maximum charge current			6 A	
Nominal continuous discharge current			4 A	
Maximum continuous discharge current			16 A	
Charge operating temperature			0...45°C	
Discharge operating temperature			-5...60°C	
Storage			1 month: -20...60°C 3 months: -10...45°C 1 year: 0...20°C	
Weight	~2.4 kg	~2.5 kg	~2.8 kg	~2.8 kg
Communication			CAN	
Connector			A&C Z624C male + female - or optional different type (customizable)	
Additional features			5 V, 12 V output - optional	
Housing			IP54, IPX4 - higher on request, Aluminium tube + plastic covers	
Compliance			EN 60529:2014, CE, UN 38.3, IEC 62133 - other certification possible	
Dimensions (L x W x H)			524 x 83.3 x 48 mm	

Key features

Overheating protection



Second independent protection against overheating 36V typically offered. Certification for the EU market.

High quality cells



18650 cells used as standard - can be changed to suit client needs. Flex PCV to save space and provide additional durability.

Power tool 18V battery system



Power tools



Surgery



Technical specifications

Parameters	Standard
Nominal voltage	18 V
Cell configuration	5S1P
Cell type	Li-ion 21700
Cell life cycle	>600 @ 6A/10A, RT
Charging method	CC/CV (constant current / constant voltage)
Charging level after 60 min.	~50%
Nominal capacity	4 Ah
Nominal energy	72 Wh
Nominal charge current	2 A
Maximum charge current	6 A
Maximum charge voltage	21 V
Nominal continuous discharge current	up to 35 A
Maximum continuous discharge current	up to 50 A
Cut-off voltage	12.5 V
Charge operating temperature	0...50°C
Discharge operating temperature	-15...60°C
Storage	1 month: 0...60°C 3 months: 0...45°C 1 year: 0...20°C
Communication	BT, CANBus - optional
Ingress protection level	IP20
Dimensions (L x W x H)	126.4 x 87.9 x 65.3 mm

Key features

Easily customizable



Tailor battery design to suit your exact requirements, ensuring perfect compatibility with a range of appliances.

Advanced BMS

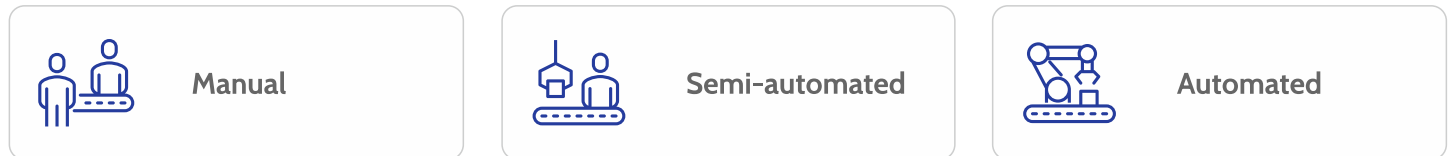


BMS designed in-house with several advanced features to aid functionality and optimize performance, including Bluetooth connectivity.

Technology excellence

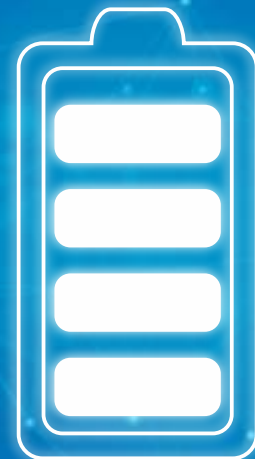
Getting ahead through innovation and exceptional technology

During the design phase, we specify the technology and type of production line, aligning them with the project's unique requirements. The production process is adjusted based on the project's volume and complexity to ensure high quality. We offer three types of production lines, tailored to different needs.



We can leverage your project by:

- short processing times,
- complete risk assessments,
- automated in-house testing,
- short-run to volume production processes,
- dedicated programme management for build-to-print contracts,
- simple scaling of production,
- quick response to volume changes.



Quality assurance



Leveraging our manufacturing capabilities

High-quality manufacturing capabilities to meet the demands of modern markets

We support our customers through every stage of the journey, including design, testing, and production. We manufacture over 2.7 million batteries annually, made possible by our efficient and economical production processes, which include manual, semi-automated, and fully automated production lines.

Our complete engineering solutions offer high quality, flexible production capabilities and are highly cost-effective, plus we guarantee support through your project's life cycle. We continuously invest in innovation and our manufacturing capabilities, ensuring we consistently design and manufacture products of the highest quality for our customers.

Validation & Testing

We provide a thorough testing service in our modern and well-equipped testing laboratory, where we carry out periodic quality assurance testing for complex products. Tests we regularly carry out include:



UN 38.3 transport tests



Drop test



Environmental IP tests



Periodic tests



Mechanical tests



Nail penetration tests



Cell tests



When you work alongside us, we will:

- effectively optimise battery packs for a more efficient assembly process,
- design complete battery systems focused on high performance and quality,
- source components for battery cells and other associated items,
- create in-house prototypes at every stage of your project,
- perform complex laboratory testing to ensure optimal performance,
- deliver cost-effective production lines and assembly processes,
- tackle all chemistry challenges to select the cells best suited to your needs.

Innovation through expertise

Battery systems tailored to all requirements

We offer both volume build-to-print and custom development solutions to our partners. Our specialist process designers and engineers can safely produce advanced battery systems reliably and efficiently.

When you partner with EMBS, you'll have access to a range of manufacturing options, facilitating the ability to scale quickly to meet the demands of evolving markets.

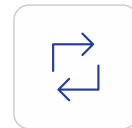
Advanced BMS for safer and reliable batteries.



Protecting cells and battery



Extending battery life



Maintaining the battery condition



Providing the application

Research and Development

Our experienced R&D department supports our customers with battery system design, mechanical and electrical engineering, BMS development, software management, system integration, and materials research.

MARKET APPLICATION



Power tools



Garden tools



Light e-mobility



E-bike



Healthcare



AGV & AMR



Industrial cleaning



Home appliances



EMBS_0124_10_ENG



25 years of delivering advanced battery system solutions

EMBS Sp. z o.o.
ul. Alberta Einsteina 36
44-109 Gliwice, Poland
+48 32 330 2650
sales@embatterysystems.com
www.embatterysystems.com

Get in touch

