PSTproducts GmbH

PSTproducts GmbH provides EMPT systems since 2003 and is recognized as the market leader for industrial solutions and manufacturing cells. It focuses on the automotive, packaging, E-mobility and lightweight sectors and has a lot of patents and innovations.

All machines and systems are designed and manufactured in Germany.

The Working Principle

The electromagnetic pulse technology (EMPT) is based on the physical law of the Lorentz force, which is generated, if a varying magnetic field induces counter flowing eddy currents in nearby electrically conducting materials, so that these materials are repelled from each other.

In optimized machines, these forces can be used to accelerate work pieces to a speed of up to 600m/s. The electro-magnetic forces can be used for welding, crimping, forming, cutting and compressing of technical products with the highest quality demands.

Our Portfolio

- Design and manufacture of industrial solutions
- Turn-key systems world wide
- Consulting and engineering services
- Finite element analysis (FEA)
- Parameter development studies
- Bespoke prototyping
- Customer specific automatization
- Active sales and customer service

EMPT manufacturing system of PSTproducts

Headquarters

PSTproducts GmbH
Junkersstrasse 1
D-63755 Alzenau
Germany
Phone: +49 (0) 6023 / 947826
Fax: +49 (0) 6023 / 947828
E-Mail: mail@pstproducts.com

Sales Office China

DESUN Zhuzhou Desun Technology Development Co. Ltd.
No.6, Jinkai Road, Liyu Industrial Park
Zhuzhou 412007
China
Phone: +86 (139) 186 / 96937

Sales Office USA

PSTproducts GmbH
Junkersstrasse 1
D-63755 Alzenau
Germany
Phone: +49 (0) 6023 / 947826
Fax: +49 (0) 6023 / 947828
E-Mail: mail@pstproducts.com

Sales Office Japan

CORRENS Corporation
Ark Yagi Hills 3rd floor,
8-7 Roppongi 1-chome Minato-ku
Tokyo 106-0032
Japan
Phone: +81 (0) 35114 / 0793
Fax: +81 (0) 90881 / 57554
E-Mail: takeshi.kimura@correns.co.jp

Sales Office South Korea

KOREA ILLIES ENGINEERING CO.LTD
3rd & 5th Fl., NAMDO Bldg. Dongbinggo-Dong,
12, Jangmoon-Ro, Yongsan-Gu
Seoul 140-809
Korea
Phone: +82 (2) 2276 0501-8
Fax: +82 (2) 2272 9288
E-Mail: seoul@illies.de

Picture sources: PSTproducts, fotolia

PST PRODUCTS

EMPT in Industry: E-Mobility and Battery Production

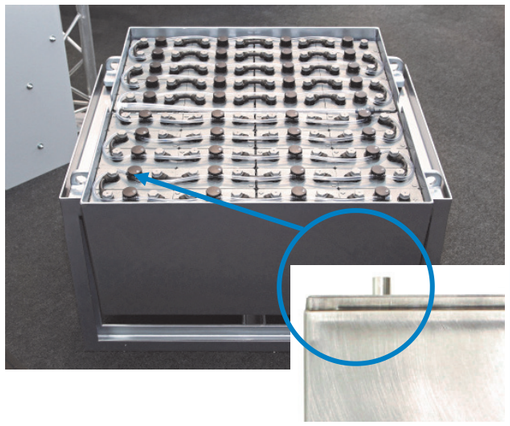
The trend towards mobility in the transport and communication sectors will predictably continue over the next years. High-capacity batteries are the enabling components of such devices and will become more and more important. Increasing their quality and reducing their cost are the key issues in high-volume industrial production. This creates new challenges for engineers and producers.

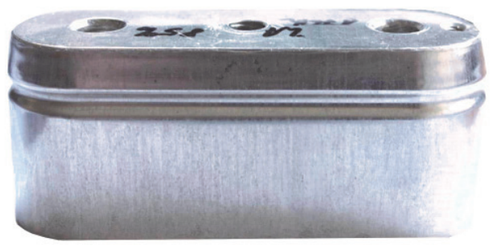
PSTproducts addresses these challenges and offers convincing solutions for the industrial production of high-quality battery components by the industrial application of the **Electro-Magnetic Pulse Technology (EMPT)**.

EMPT provides significant benefits in the production of high-capacity batteries

Design	Material combinations with dissimilar metals
No side effects	No heat, no mechanical contact, no contamination
Short processing time	Very fast cycle times are ideal for industrial high volume production
High flexibility	Easy and versatile automatization
Quality	High process stability and reproducibility
Cost	Low total cost of ownership (TCO) ‘Plug & produce’ systems

Battery Housings



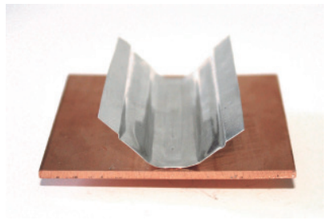


EMPT welded battery housings

The application of the electromagnetic pulse technology offers important advantages for the leak tight welding of vessels and canisters. Even complex parts can be welded or formed with one pulse within 20µs.

Benefits:

- **Product safety**
  Helium tight
- **Design**
  Leads to very small tolerances
  Geometric flexibility
- **Use in an industrial environment**
  No heat affected zones, low distortion
  Very short cycle times
  Very high reproducibility



Aluminium foil onto copper sheet

Cable Crimping

Perfectly crimped cables require high strength at both ends with a very low resistance. The EMPT systems of PSTproducts offer a very high compression for highest demands at up to 400mm² cross section cables.

Benefits:

- **Complete compression**
  No compaction gradient
- **Highest tensile loads and strength**
- **Lowest resistance**

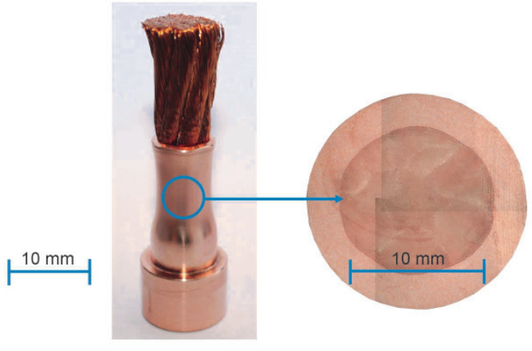


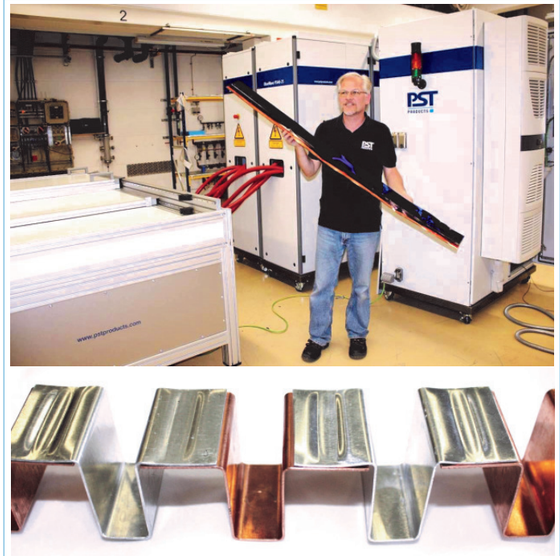
Photo and micro section of an EMPT crimped cable

Busbars

The electrical connections in busbars require attention to detail. It is required to minimize their resistance and maintain their strength even in very challenging service environments.

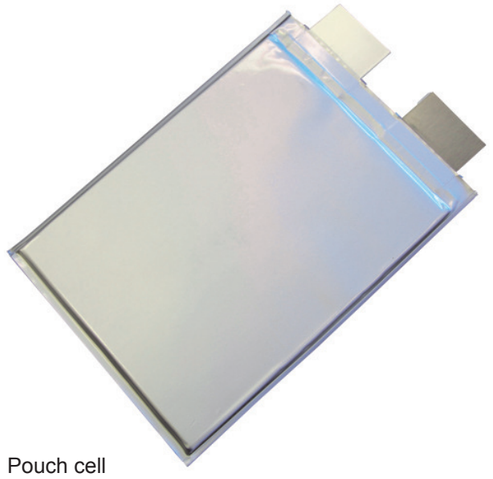
Benefits:

- **Best conductivity**
- **High strength**
- **Dissimilar material combinations**
  Aluminium to uncoated or nickel-coated copper
- **No intermetallic phases**
- **No heat affected zones**
- **Highest precision and reproducibility**



Busbar

Battery Pouches



Pouch cell

Pouches are advantageous due to their low weight and because they can easily be stacked on top of each other. However, they are very sensitive to heat input and require bespoke manufacturing methods. EMPT works without heat input and without touching the tabs. This results in optimum production processes when welding the plus polarity aluminium tabs to the minus polarity copper tabs, which might be nickel coated or uncoated.

Benefits:

- **Cold process**
  The plastic parts of the bags, insulators and sealing strips do not melt
- **Best conductivity**
  The resistance in the joint is equal to the parent metal
- **Very high productivity**
  Several welds can be made simultaneously with one pulse