Steinhagen and Rheda-Wiedenbrück, June 13th, 2024

**Two German Companies Revolutionize Battery Cell Production in the E-Mobility Sector**

Partnership between Plasmatreat and Venjakob replaces costly film wrapping process

**Local expertise from North-Rhine Westphalia (NRW) bundled, innovative solution developed for international battery production: Plasmatreat GmbH (Steinhagen) and Venjakob Maschinenbau GmbH & Co. KG (Rheda-Wiedenbrück) are now making battery production more efficient and reliable thanks to a newly developed process. For reliable electrical insulation, plasma-cleaned battery cells are given a special coating instead of a complex film wrapping. Battery manufacturers are benefiting from the proximity of the two companies, which are working together to simulate processes under realistic conditions and produce small batches.**

The e-mobility sector is looking for solutions to further improve battery reliability and safety. One starting point for optimization is electrical insulation. Traditionally, battery cells, especially prismatic cells, are wrapped with a film. The process is costly, time-consuming and contains sources of errors. Now an innovative process is making battery production more efficient, faster and more reliable: the battery cells are coated with a special lacquer instead of foil. The companies Plasmatreat and Venjakob have combined their expertise.

**Plasmatreat - Perfect lacquer adhesion through ultra-fine cleaning**

Plasmatreat is the world leader in atmospheric plasma technology and has developed Openair-Plasma technology. In this case, it is used for ultra-fine cleaning of the bare battery cell and enables reliable, long-term stable lacquer application. The Openair-Plasma is precisely applied to the metal surface of the battery cells in a plasma treatment unit (PTU) at atmospheric pressure using simple compressed air and electricity through specially designed nozzles. Compared to conventional cleaning methods, the process is much more environmentally friendly, selective and inline capable. The surfaces of the battery cells are reliably cleaned of wafer-thin layers of dust and residual traces from the production process, such as oil or grease. This allows the protective coating to be applied without gaps. Long-term adhesion is achieved.

**Venjakob – Contact-free coating, minimizing sources of error**

The mechanical engineering company Venjakob, a specialist in coating lines, has developed a fully automated system for a continuous contact-free coating process. Battery cells in various formats are coated with a 100% UV coating after ultra-fine cleaning using Openair-Plasma. A specially designed tool carrier ensures that sensitive areas and the electrical poles of the battery cells are reliably protected from overspray. Since the process requires no gripping, turning or other handling, the risk of damage to the battery cells is minimized. The contact-free process also allows for higher production speeds. The immediate curing of the UV coating means that the cells can be processed directly. This speeds up the entire battery manufacturing process.

**Successful alternative manufacturing process**

Various analyses confirm the high efficiency of the innovative insulating coating, which achieves adhesion values in excess of 15 MPa in tensile shear tests. The two partners attribute the success of the project primarily to the fact that they matched each other in key areas. These include extensive technological expertise, uniformly high-quality standards, flexible adaptability to changing customer requirements, and intensive communication based on mutual trust. In this case, the joint customers also benefit from the close proximity, which has made it possible to demonstrate and evaluate ultra-fine cleaning and coating in a near-series process in Steinhagen and Rheda-Wiedenbrück.

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**Visit Plasmatreat:**

The Battery Show Europe: Hall 8, Booth C10

The Battery Show North America: Booth 2911 and 3930 in the German Pavilion

**Visit Venjakob:**

The Battery Show North America: 4222

More information is available at: [www.plasmatreat.com](http://www.plasmatreat.com) and [www.venjakob.com](http://www.venjakob.com)

**Please find pictures and captions below!**

***Info box:***

**How Openair-Plasma and PlasmaPlus optimize industrial processes.**

When plasma with its high energy level comes into contact with materials, it changes the surface properties, for example from hydrophobic to hydrophilic. Plasma technology requires only compressed air and electricity for operation. Fine cleaning with Openair-Plasma gently and reliably removes dust, release agents, additives, plasticizers and hydrocarbons from surfaces. Especially with non-polar plastics, plasma treatment achieves surface activation. It supports the increase of surface energy by introducing hydroxyl groups and thus improves adhesion in subsequent processes such as bonding, printing, painting and sealing. Plasmatreat's PlasmaPlus technology can also be used to create targeted functionalized surfaces with defined properties by applying (depositing) nanocoatings, e.g. as an additional adhesion promoter layer.

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**About Plasmatreat**

Plasmatreat is an international leader in the development and manufacture of atmospheric plasma systems for the pretreatment of substrate surfaces.

Whether plastic, metal, glass or paper – the industrial use of plasma technology modifies the properties of the surface in favor of the process requirements.

Openair-Plasma® technology is used in automated and continuous manufacturing processes in almost every industrial sector. Examples include the automotive, electronics, transportation, packaging, consumer goods and textile industries, but the technology, cost and environmental advantages of plasma technology are used in medical technology and in the renewable energy sector as well.

The Plasmatreat Group has technology centers in Germany, USA, Canada, China, and Japan. With its worldwide sales and service network, the company is represented in more than 30 countries by subsidiaries and sales partners.

More information is available at: [www.plasmatreat.com](http://www.plasmatreat.com)

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**About Venjakob:**

Founded in 1963 in Rheda-Wiedenbrück, Germany, Venjakob is a third-generation family-owned mechanical engineering specialist and today is one of the world's leading suppliers of industrial finishing lines. The company develops individual solutions for the entire production line, including pretreatment, coating, drying technology, exhaust air purification and automation, which are individually tailored to the needs of users from a wide range of industries. Venjakob is headquartered in Rheda-Wiedenbrück, Germany, and employs 380 people worldwide. Venjakob's other production facilities, Venjakob Umwelttechnik GmbH & Co. KG in Sarstedt, Germany and Nutro Inc. in Strongsville, Ohio, USA.

For further information please visit: [www.venjakob.com](http://www.venjakob.com)

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**Images:**



Innovative process from Venjakob for contact-free coating of battery cells in a continuous process. (Image source: Venjakob, approved for use)

Ein Bild, das Elektrische Leitungen, Schrumpfschlauch, Verbindungsstück, Kabel enthält.

Automatisch generierte Beschreibung

View into the spray booth of the battery cell coating line.

(Image source: Venjakob, approved for use)



Using compressed air and electricity, the surfaces of the batteries are reliably cleaned of wafer-thin layers of dust and residual traces from the production process, e.g. oil or grease, so that the protective coating can be applied without gaps and long-term adhesion is achieved. (Copyright: Plasmatreat GmbH)