

IW0006

Plasma Technology for Energy Conversion and Storage: chances and challenges for flat steel sheet products

Bernd Schuhmacher¹, Stefan Puls¹, Janine Schauer-Paß¹, Michael Strack¹,
Krasimir Nikolov², Hanno Paschke³, Thomas Stucky⁴

¹ThyssenKrupp Steel Europe, Dortmund, Germany ²Technische Universität Braunschweig, Braunschweig, Germany ³Fraunhofer-Institut für Schicht- und Oberflächentechnik, Braunschweig, Germany ⁴Fraunhofer-Institut für Werkstoff- und Strahltechnik, Dortmund, Germany

bernd.schuhmacher@thyssenkrupp.com

The use of plasma technology offers significant opportunities for developing new products and semi-finished products on the base of steel-based materials such as flat sheet, black plate and precision strip. This is especially true for the field of energy conversion and storage, and is illustrated by several examples, such as metallic bipolar plates in fuel cells, steel-based mirrors for CSP plants and coated GO electrical steel.

However, in order to exploit these opportunities, there remain some significant challenges in the development of plasma processes to be overcome. This is especially true for the adaptation of these processes to the continuous treatment of fast-running wide steel strip. Here, a close cooperation of research institutions with industry is to be required.

Keywords

Steel sheet

Plasma technology

Energy conversion

Large area coating