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Industrial production of thin optical coatings on metal bands

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BlueTec, founded in 2005 and situated in the beautiful landscape of Weserbergland, is one of the leading companies in metal band coating using PVD techniques. BlueTec has specialized in the industrial production of thin optical coatings on metal bands. The optical films can be applied to any metal band with a thickness between 0.1 mm and 0.5mm and a width up to 1,300mm. With the experience of its engineering team in the field of vacuum coating, BlueTec designs and manufactures its own coating lines. Right from the start BlueTec has set important impulses to the solar thermal industry with its high selective absorber coating etaplus, a semi-finished product for use in solar thermal collectors. An air-to-air magnetron-sputter coater is used for the application of the coating to the metal substrate. etaplus is a highly selective coated metal band that enables the production of large-surface homogenous solar absorbers. The etaplus coating is a ceramic metal compound (CERMET) consisting of several single layers. The finely tuned absorption properties of the multi-layer system and the industrial process provide etaplus with a high absorption level of 95%, combined with the low thermal emittance of 5% on copper or aluminium substrates. etaplus is temperature stable and has long-term resistance, and is also adhesive and abrasion-proof.

In 2011 BlueTec has entered the lighting market with a highly reflective product R.plus for use as a backside reflector in luminaires. A special air-to-air coater has been designed, which allows to operate magnetron-sputtering in combination with electron-beam evaporation parallelly to apply the multilayer coating on metal bands. R.plus is a highly reflective coated aluminium band that is processed to reflectors of various shapes to direct artificial and natural light. The high reflectivity of R.plus can be achieved by applying pure silver or aluminium layers on aluminium surfaces. A tandem dielectric layer with a low as well as high refractive index enhances the total reflection of the metallic layer underneath and also serves as highly resistant protective top-layer. Such a layer stack has a total light reflection up to 98 % based on silver coatings.

Keywords

metal-band

magnetron-sputtering

electron-beam