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Novel types of multifunctional Electro-Ceramic-Coatings for Aluminum and Magnesium

Electro Ceramic Coatings (ECC) deposited by plasma-electrolytic-deposition (PED) on Aluminum offer superior corrosion protection over standard commercial pretreatments combined with high hardness and excellent wear protection. In this paper, novel types of Electro Ceramic Coatings for light metals and their advantages in industrial applications will be presented.

By adjusting the deposition parameters during the electrochemical deposition process, different types of coatings with specific properties, such as low friction, high hardness, etc., can be obtained. A new generation of the Electro Ceramic Coatings for high wear applications, such as cylinder liner coating in a combustion engine will be presented.

The outstanding corrosion resistance of such Electro Ceramic Coatings on light metals make them an interesting alternative to standard metal pretreatments for high performance applications in the general and automotive industry. A special type of ECC for Magnesium substrates, Bonderite MgC, enables the use of Magnesium in highly corrosive environments. The first time ever use of Magnesium sheet material for a car body application in a small serial production became possible just recently by the excellent corrosion performance of Bonderite MgC. Physical properties and corrosion performance of this coating will be discussed in the presentation.