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Development of Atmospheric Plasma Sprayed Dielectric Ceramic Coatings for High Efficiency Tubular Ozone Generators

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ABSTRACT

Oxidative degradation of hazardous materials by ozone treatment like in sterilization of water, dump waste, pulp bleach and chemical processing, is superior to the traditional chlorine chemistry with respect to by-products and environmental protection. For an efficient and cost effective production of ozone for applications in drinking water and wastewater purification, a new concept of tubular composite material components has been developed. A borosilicate glass tube was coated with a layer system consisting of an intermetallic electrode and a dielectric oxide ceramic surface layer. Thermo-mechanical and dielectric properties are investigated with respect to the use of different thermal spray powders as well as the use of a high and a low energetic atmospheric spray gun. The materials and ozone production system of thermal sprayed ozonizer tubes are described and analyzed.

KEYWORDS

Ozone Production, Water Treatment, Thermal Spraying, Dielectric Strength and Permittivity

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