

# Experimental investigation of influential parameters in the dust particles' charge in electrodynamic screen application

Arash Sayyah\*, Mark N. Horenstein, and Malay Mazumder  
Boston University  
e-mail: [arashs@bu.edu](mailto:arashs@bu.edu)\*

*Abstract*— Coulomb force is considered to be the predominant force in dust particle removal in electrodynamic screen (EDS) application. Other than electric field distribution in EDS, investigating particles' charge and how the geometric, operational, and atmospheric parameters affect the particles' electric charge is of utmost importance in order to have a more efficient EDS design. In this work, several EDS samples with different geometries; i.e. electrode width and inter-electrode spacing are being tested in an environmentally-controlled test chamber. The effect of relative humidity has been considered explicitly in quantifying the charge to mass ratio of the removed dust particles. Furthermore, the applied voltage has been varied in specified intervals to see how the particles' charge changes as a function of applied voltage. Different dielectric coating materials in different thicknesses can be used for a more thorough investigation of electric charge acquired by the dust particles.