

P2 Filtration Solutions to Mitigate PM2.5 Pollutants in Urban Air

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PM2.5 (Particulate Matter less than 2.5 μm) was established by the U.S. Environmental Protection Agency in 1997 as the standard method for sampling fine particles. The Particle Technology Laboratory (PTL) has developed many instruments and samplers to perform atmospheric measurements, which helped to establish the PM2.5 standard. The effects of PM2.5 pollutants on the atmospheric visibility and human health will be addressed. The two major PM2.5 sources in China have been identified to come from coal burning and vehicle emissions. Filtration is the principal means to control PM2.5 pollutants. The Center for Filtration Research (CFR) at the University of Minnesota, consisting of 19 leading international filtration companies, was established to find filtration solutions to mitigate PM2.5 and other environmental pollutants. CFR investigators perform fundamental and applied research on air, gas and liquid filtration. A Gasoline Particulate Filter (GPF) for Gasoline Direct Injection (GDI) engines has been developed to meet LEV3 and Euro 6 standard scheduled to be implemented in 2017. A disruptive innovation, namely, the Solar-Assisted Large-Scale Cleaning System (SALSCS), is proposed to mitigate PM2.5 pollutants in urban air. An integrative approach, from collaboration among academia, government, and industries, can effectively manage and mitigate the PM2.5 pollutants, particularly in China.