

Filtration Performance of Depth Filter Cartridge at Various Inlet Dust Concentrations

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Filter cartridges used for intake air filtration of heavy machinery such as gas turbines are made mainly of surface filter which are periodically cleaned using high pressurized air. Replacing the conventional surface filter cartridges with non pulsing depth filter presents a challenge since the filter cartridges have to operate with high collection efficiency and low pressure drop in order to reach long service time without being replaced. Depth filter are usually composed by a number of layers which build the filter media sheet. Multiple layer depth filter media should be made of an upstream thick layer of highly porous structure followed by one or more downstream layers to hold the particles inside the media. Gas turbines are located in various environments. The air surrounding these facilities is loaded with less or more airborne and other particles from various sources. In this study we focus on filter cartridge performance by varying the inlet concentration and by using the same type of test dust and same depth filter media. We found that for the high concentration of inlet dust the cartridge performed poorly compared to the test with low concentration which is used in ISO standard testing rigs.