EXPERIMENT STUDY ON NEW FILTER WITH SEA-ISLAND FIBER

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The objective of this study is to evaluate the filtration performance of sea-island fiber filter by comparing with membrane filter and needle felt filter. Sea-island fiber filter has finer and uniform fibers, the mean fiber diameter of around 1.51 μm is one-twentieth of normal felt filter. The static filtration characteristics as well as dynamic filtration performances of sea-island fiber filter were investigated to determine its feasibility. The filtration test results showed that as a new superfine fiber filter, sea-island fiber filter has a higher filtration efficiency than needle felt filter in collecting particles with the mass mean diameter of 0.26 μm. Meanwhile, the residual resistances of sea-island fiber filter are lower than membrane filter, the dust removal cycles are longer than membrane filter and needle felt filter in stabilized stage. Membrane filter with a layer of PTFE membrane presenting weak in bonding fastness, wear-resisting and strength, which causes the membrane easy to be separated and broken, while the sea-island fiber filter has better mechanical and filtration performances. The advantages will help to prolong the filters' life-time and reduce energy consumption.