



Technology Directions for the Filtration Industry

Dr. Michael Wynblatt
Donaldson Company

The next generation of filtration is coming. It is being enabled in part by new technologies, but also by changing some basic assumptions in the industry which no longer serve us well. One such assumption was that a filter is a “best-effort” device. Traditionally, companies have designed and tested filters rigorously, but not monitored their performance once they were in the field. The diminishing costs of connectivity and sensors now allow us to see a filter as an operating component, with a life-cycle. Not only is the useful life of such filters determined by actual conditions, instead of generic timetables, but the filter can be optimized for various stages of its life cycle. We call these intelligent filters. A second implicit assumption was that all contaminants are the same. Traditionally filters have been tested with standard dusts, regardless of the real-world conditions they faced. This led to generic solutions that were optimized for standard tests. Advances in materials science and chemistry allow us to build solutions which are customized for the specific contaminants an application will see in the real world, offering an order of magnitude improvement in performance. Intelligent and customized filtration are reinforcing trends, as more data about filtration performance allows more customization of performance. Together, they promise an exciting next generation of filtration.