



## **UPDATED DEVELOPMENTS ON A NEW TEST METHOD TO DETERMINE PARTICULATE FILTRATION EFFICIENCY OF SUBMICRON CARTRIDGE FILTERS**

C. PEUCHOT\*, CEO - [christophe.peuchot@ifts-sls.com](mailto:christophe.peuchot@ifts-sls.com)  
G. J. LYNCH, President – [jerry.lynch.us@ifts-sls.com](mailto:jerry.lynch.us@ifts-sls.com)  
N. PETILLON, Test Manager – [nicolas.petillon@ifts-sls.com](mailto:nicolas.petillon@ifts-sls.com)

International Filter Testing Services, Inc.

### **ABSTRACT**

Submicron cartridge filters are broadly used to clarify, purify or decontaminate many liquids in several industrial fields. Such applications are the processing of ultrapure liquids for making electronic components, the cold sterilisation of wines, bioliquids and pharmaceutical solutes and the decontamination of industrial solvents and washing liquids.

Reading technical brochures of submicron filters show they are mainly characterised by their microbial rating (sterilising if they reduce to a given ration the number of standard micro organisms). Very few brochures state a micron rating based on particle size and when they do, they do not refer to any test method.

To answer the need of several large end users, IFTS Inc. has developed a new protocol to measure the initial filtration efficiency of submicron and microfiltration cartridges. Previous papers have described the test equipment, products and protocols and showed first set of very encouraging results. However the need of measuring the instantaneous efficiency all over the life of the cartridge, i.e. till its differential pressure reaches the maximum value specified by the cartridge manufacturer, was not satisfied.

A research program has been launched to look for the materials, products and procedures which would comply with contradictory requirements. These are imposed by on one side, the need for clogging the cartridge in a limited period of time to give an economically acceptable test time, and on the other side, the technical characteristics of the particle counter sensor, generally blocked by large and too many particles and the ability of the test loop to maintain the concentration of contaminants in an acceptable range of concentrations.

The paper will describe the difficulties faced and the solutions adopted to fulfil these requirements. Typical results and criteria of validation of the test conditions and equipments will be explained and discussed. A first set of results obtained on different cartridges from industrial market shall be presented.