S3.5.4 DEVELOPMENT OF A WEB-BASED CROSS FLOW FILTER PERFORMANCE CALCULATOR

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We present a simulation tool based on models for cross flow filtration developed by Andreas et al. [N.H. Andreas and C.L. Cox, "New Cross Flow Filter Module Design Parameters: A Theoretical Analysis of Cross Flow Filter Performance Limits", Filtration, 13(4), 247-256, (2013)] and [N.H. Andreas, C.L. Cox, T. Kato, and M. Tamura, "A Model for Transient Cross Flow Filtration in a Narrow Rectangular Domain", Separation and Purification Technology, 156 (1), 36-41. (2015)].

The simulation package is flexible with respect to filter domain (cylindrical or rectangular), and checks to make sure that parameters input by the user yield a physically reasonable solution. The user can choose between mathematical models that yield an analytical solution and models that require a numerical solution computed using the finite element method. Model selection and parameter specification are accomplished using a web-based graphical user interface, so that the simulation can be executed either locally or remotely. The code is written in Python, and the Django framework provides connectivity between the server and the client front-end that uses HTML, Javascript, and CSS.

Example results that will be presented are based on the applications of interest that involve particulate filtration for deep space manned missions.

In addition to the authors, Clemson University graduate student Ashwin Srinath also contributed to this project.