FPSI Filt

A German–French collaborative research and innovation Project

Modeling of fluid interaction with deformable porous media with application to simulation of processes in industrial filters

FUNDING >

Federal Ministry of Education and Research (Germany)
Agence Nationale de la Recherche (France)

COORDINATORS >

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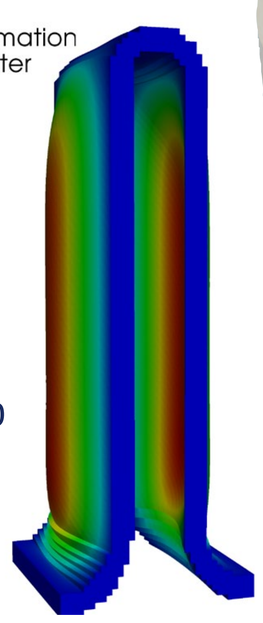
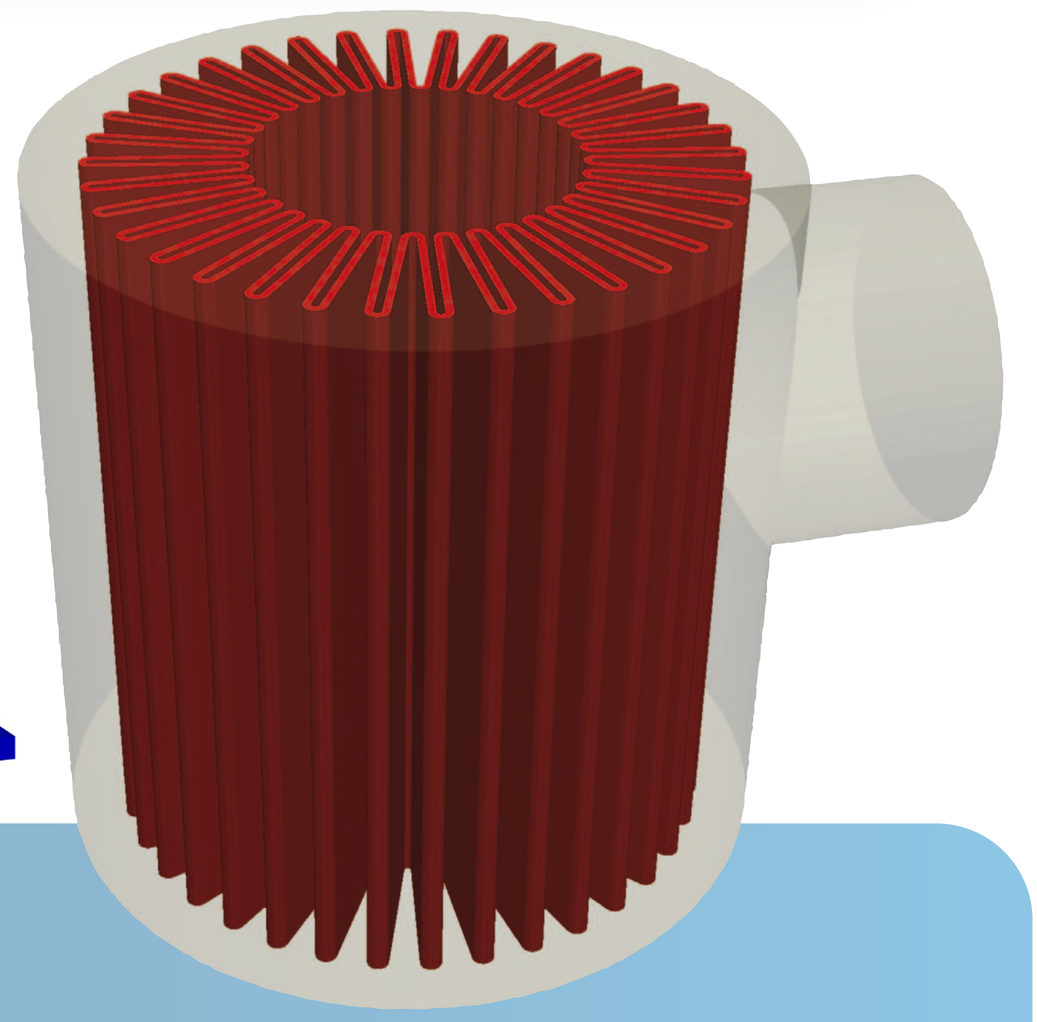
RESEARCH >

ITWM (Fraunhofer), Kaiserslautern
Ingénierie@Lyon (Carnot) - Fluid mechanics and acoustic Lab
Université Claude Bernard Lyon 1 – Institut Camille Jordan
FLUOREM


Deformation of a filter pleat



OBJECTIVES

Scientific objectives :

- Derive and study rigorous poroelastic plates and shells models and interface laws
- Perform high quality measurements of near wall flow and porous wall displacement
- Develop robust and reliable algorithm for solving coupled fluid/deformable porous media problems
- Develop and broadly test software tool, capable to efficiently simulate filtration processes in the case of deformable filtering media

Commercial objectives :

The ultimate goal of the project is to develop a new software product assisting the design of deformable filter elements.

EXPECTED RESULTS

A new software Tool, OptPleat, is the main final result of the project. The software will have a modular structure :

- Flow simulation module (no deflection)
- Filtration efficiency module
- Pleats deflection module
- Optimization module
- Input and Output module

CUSTOMERS AND MARKET

The customers for the new software tool are R&D departments in filter manufacturing companies: automotive and heavy truck industry, medical market, water filtration, gas turbine filtering, …

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