

Prince of Songkla University



Aerosol Collection Performance of a Cyclone-Filter

Thailand



Overview

Prince of Songkla University (PSU) is a comprehensive public university consisting of 5 campuses, located in the South of Thailand. The main campus is based in Hat Yai, Songkhla province, the largest trading city in the South, with other campuses located in Pattani, Phuket, Surat Thani and Trang provinces. The ultimate goals of PSU are to nurture students into good and well-educated citizens ready to serve society, to build wisdom and knowledge through research, and to transfer knowledge to students and society for the sake of mankind.

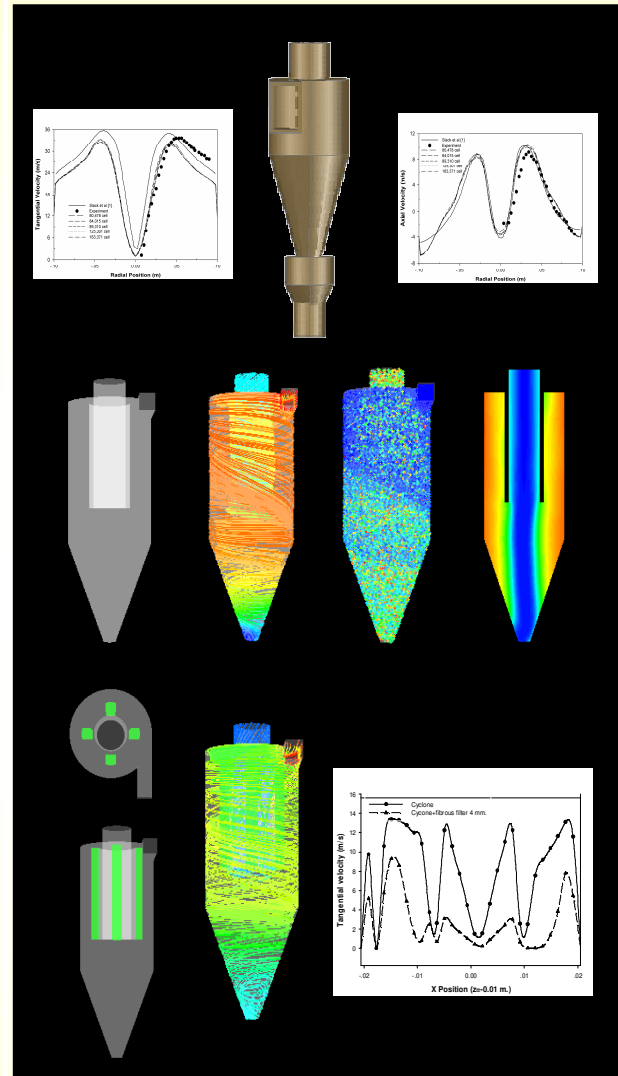
PSU was selected to be one of Thailand's nine National Research Universities in 2009. The research embraces all disciplines, including natural science and technology, medical science, social science and humanities. There are great challenges for the university to apply knowledge gained by the research to maximize the value of these resources, as well as decrease the rate of environmental deterioration.

Testimonial

ANSYS Fluent has been used in many CFD research in PSU including a cyclone-filter combination, ventilation improvement of rubber sheet production industries, and drug delivery systems.

In a cyclone-filter device, velocity field, pressure drop and particle trajectory are studied. Collection performance for small particle (0.3 to 1.0 micron) is studied. ANSYS Fluent provides robustness and convenience in the calculations which make analysis possible.

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Challenges

- Justification of experimental results of the cyclone-filter collection performance using CFD.
- Design of higher performance cyclone-filter for many purposes.

Solution

- ANSYS DesignModeler is used to generate the cyclone-filter model.
- ANSYS Fluent is used to calculate the velocity field, pressure field and pressure drop, and visualize the particle trajectory.

Benefits

- Calculation time is reduced.
- Adjustment of the design is flexible.
- Verification of experimental results is obtained.