



OpenFOAM CFD for mixing and aeration in wastewater, 6 month project

We're 13,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation. For more information about Xylem, go to www.xyleminc.com.

Xylem supplies analysis and handling equipment and processes for application throughout the cycle of water and in selected industrial segments. In the application of mixing and oxygenation technology to wastewater treatment and reuse, Computational Fluid Dynamics (CFD) is an indispensable tool for technical development, system design and illustration of biological treatment performance.

Computational fluid dynamics for process applications

Job Description

While a validated CFD methodology for such systems has been developed at Xylem in the framework of a high end commercial CFD code, applications using the open source CFD package OpenFOAM would fill gaps in a number of areas. This includes making CFD available to a wider specialist (but non-CFD-specialist) audience. It is therefore of interest to compare the quality of different OpenFOAM options and to build and customize a solver that produces sufficient quality results in a sufficiently short time for a predefined set of problems in mixing and aeration.

Given a successful tested OpenFOAM installation in our CentOS 6.4 environment (in a matter of a few weeks at most), the project is planned for 6 months. Ultimately, a user-friendly interface and a Windows port of the package is anticipated, whether building on existing solutions or not.

Flow problems and required features include stationary and transient turbulent incompressible flow, liquid-gas flow with mass transfer, non-Newtonian laminar and turbulent flow, actuators or momentum source terms, free surface/VOF.

Working in-depth with OpenFOAM development and deployment is a splendid opportunity to acquire and nurture critical CFD know-how that is increasingly demanded in industry.

The project consists of

- 1) building the OpenFOAM environment on a Linux/CentOS workstation
- 2) comparing performance of different OpenFOAM options for some type problems
- 3) building and documenting a dedicated solver/solvers
- 4) building a geometry and meshing tool for a limited class of geometries (snappyHexMesh will be investigated)
- 5) potentially building a user-friendly interface to the system
- 6) potentially porting/implementing the system to Windows
- 7) documenting and reporting the findings and achievements.



Qualifications

You are proficient in OpenFOAM, fluid mechanics and Linux/Unix, scripting and programming (C/C++ or similar).

We offer you an international environment, with engaged and helpful colleagues.

Apply for this position through our intranet or careers.xyleminc.com. If you are interested in this position and would like to know more, please contact Lars Uby, [Senior Application Treatment](#), +46 8 475 65 21 or Lovisa Sunnemar Berglund, Recruiting Responsible, HR, +46 8 475 62 47. Welcome with your application! We will start interviewing soon, so apply as soon as possible but no later than 2014 10 01. Work location: Sundbyberg.

The representative for Unionen is Sonja Wiedenhoeft and the representative for the Swedish Association of Graduate Engineers "Sveriges Ingenjörer" is Tore Strandberg, tel: +46 8 475 60 00.