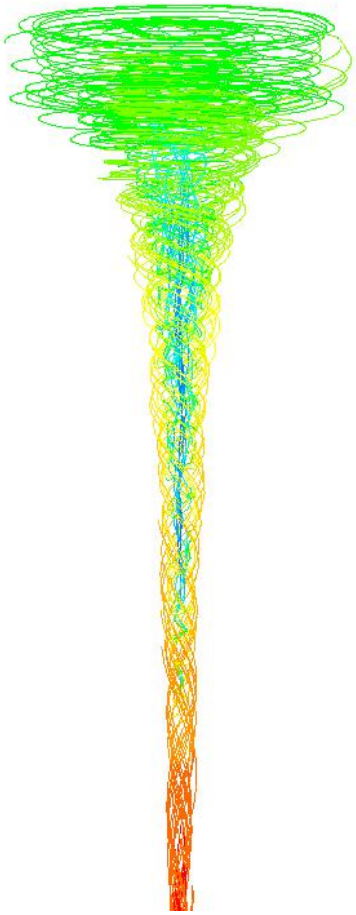
wetsus
european centre of **excellence**
for sustainable **water technology**

Masterthesis/internship project: Flow characterization of water vortices in a hyperbolic funnel

Background

Around one hundred years ago, an Austrian forester and bionics engineer named Viktor Schauberger performed many experiments with water. He used the tendency of water to move in circular paths as basis for his devices. Although it has not been scientifically proven, he claimed that the vortexing of water in a hyperbolic funnel had many advantages, like improved drinking water quality. The goal of this project is to characterize the flow structure of a water vortex induced by gravity in this funnel, in order to better understand the changes that may occur in the water. Specifically, you will investigate the rate of dissolved oxygen change and variability of the central air-water interface. It is hypothesized that vortexing water can be an energy efficient way of aeration, compared to aeration devices already on the market. Some work has already been done, but reproducing a correct interface remains a challenge.

Techniques used for this research are numerical simulations with the software ANSYS fluent. These results will be compared with already performed Particle Image Velocimetry (PIV) measurements. You will be working at something fundamental with possible applications in waste water treatment.



Requirements

The ideal candidate has had previous experience with (computational) fluid dynamics (CFD) and some theoretical knowledge in this field. You must be able to work precisely and persevere when things don't go as planned. Taking initiative and good communication are also important.
Starting date: ASAP
Duration: At least 4 months

Research institute

Wetsus, Centre of Excellence for Sustainable Water Technology is located in Leeuwarden, The Netherlands. The institute employs people from very different fields and backgrounds and there exists a lot of interaction between them, leading to a smooth transfer of knowledge. This project is embedded in the PhD project on vortices in a hyperbolic geometry. Wetsus has an international environment where the working language is English, so fluency is required.

Application

If you are interested in this project, please contact PhD researcher Maarten van de Griend
(maarten.vandegriend@wetsus.nl) for more information or directly apply by sending your CV to the same address. The internship includes a reinbursement for living expenses of 350 euro per month.