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Antti Mikkonen

Fluid Dynamics Engineer

About me I have worked in research and development since 2010. My main strength is my understanding of fluid and heat phenomena. Secondly, I am a programmer. I do analytical and numerical modeling, optimization, and software development. I am currently finishing my PhD thesis on glass tempering. For fun, I go kayaking, climbing, or read popular science.

Experience

2019 - present, Sweco Structures LTD

CFD Engineer

- Computational fluid dynamics in build enviroment.

2010 - present, Tampere University of Technology

PhD student (2014 - present)
Civil Engineering (2018 - present), Chemistry and Bioengineering (2017 - 2018), Mechanical Engineering and Industrial Systems (2010 - 2016)

- Lecturing and Design of a computational fluid dynamics course (2018, ongoing).
- Modeling of moisture transport and condensation in building walls (2018, ongoing).
- Glass tempering with impinging air jets (2015 - 2017).
- Oil well modeling (2010-2016).

2011 - 2016, Wellquip Ltd.

Research Engineer

- Development of oil field modeling software.
- Multiphase flow with phase change.
- Programming of fluid solver and user interface.

Education

2013, Master of Science (Technology) - with distinction.

Major: *Fluid Dynamics*. Minor: *Software Systems*.
Tampere University of Technology. Environmental and Energy Technology.
Exchange year in University of Waterloo, Canada.

Skills

Fields

- CFD
- Fluid Dynamics
- Heat Transfer
- Experimental work
- Programming

Software

- OpenFOAM/ANSYS
- FEniCS
- Python/Cython
- C++/Matlab
- Linux/Windows
- Web basics

Publications

A. Mikkonen, A. Aronen, M. Rantala, R. Karvinen. *Effects of Non-uniform Heat Transfer in a Tempering Process on Glass Quality.* GPD Glass Performance Days Finland 2017: Conference Proceedings. 2017.

A. Mikkonen, R. Karvinen. *Heat Transfer of Impinging Jet - Effect of Compressibility and Turbulent Kinetic Energy Production.* IX International Conference on Computational Heat and Mass Transfer (ICCHMT 2016).

A. Mikkonen, R. Karvinen. *Solar Panel Breakage During Heavy Rain Caused by Thermal Stress.* Engineered Transparency 2016: Glass in Architechture and Structural Engineering. Wiley, 2016.

A. Mikkonen, R. Karvinen. *Effect of heat transfer on glass quality in tempering.* GPD Glass Performance Days Finland 2015: Conference Proceedings. 2015.

A. Mikkonen, R. Karvinen. *Jet pump performance in liquid and gas pumping.* MFIP13, 13th International conference on multiphase flow in industrial plants, Mediterrean Foundation, Sestri Levante (Genova), Italy, 17-19 September 2014. Genova : Italian association of industrial plant enginnering; University of Genova Polytechnic school; Iltalian association of chemical engineering, 2014. s. 1-11.

Educational material

- Lecture notes and additional material on computational fluid dynamics. (https://github.com/amikkonen/NumericalTechniquesForProcessModelling/blob/master/lectureNotes/NumericalTechniquesForProcessModellingFiniteVolumeMethod.pdf). Ongoing project.
- Short lecture series on open source CFD. A compacted video tutorial on GUI tools available on Youtube: (https://www.youtube.com/watch?v=Ae3buNuHZPQ).
- An automated course exercise returning program for a basic heat science course at TUT. Web browser and Windows versions.

Hobby Projects

- 2D DNS solver for compressible flow in lid-driven cavity (https://github.com/amikkonen/lidDrivenCavityCompressibleFlowPython).
- Unofficial add-ons and utilities for OpenFOAM (https://github.com/osourceFlow/OpenFOAM/tree/dev).
- Many positions on World Championships of Academic Kyykkä (4000 participants). Most notably the head of security.

References

Prof. Reijo Karvinen, +358452191886, reijo.karvinen@tut.fi