

Nuclear Research & Consultancy Group (NRG) develops and provides sustainable nuclear technology for energy, environment, and health. NRG offers a wide range of services to energy utilities, government organizations and various branches of industry - including the nuclear, financial services and medical sectors. NRG is a major producer of medical isotopes in Europe.

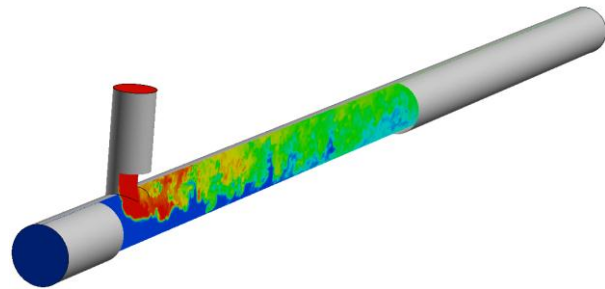
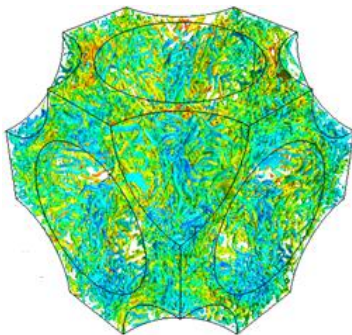
Within our department Safety and Power, we are currently seeking for a

MSc THESIS STUDENT: CFD - THERMAL MIXING

Your responsibilities:

CFD predictions of the turbulent mixing processes that take place in the cooling system of nuclear reactors used for electricity production need improvement. In that respect, CFD predictions of the flow and heat transport in nuclear fuel bundles, pebble bed reactor cores, and in T-junction type configurations have gained a lot of interest. Better prediction of the flow and heat transport in the considered configurations will contribute to an improved design, safety, and operation of nuclear reactors. In relation to this, you will execute a MSc thesis project on:

- 1) Learning the Nek5000 CFD solver. Nek5000 is an open-source high fidelity CFD solver based on the spectral element method and is actively developed at the Mathematics and Computer Science Division of Argonne National Laboratory
- 2) Further validation of NEK5000 for selected basic turbulent flows configurations with heat transfer
- 3) Application of NEK5000 in order to predict the flow and heat transport in one of the considered nuclear applications, e.g. a T-junction type geometry



Left: Iso-surfaces of Q-criterion in an FCC pebble-bed distribution (DNS). Right: Iso-contours of temperature field in a T-junction (LES)

Your profile:

- MSc student in applied science, with specialization in computational fluid mechanics
- Good knowledge of turbulence modelling and numerical methods
- Required computer experience: Linux, Windows, Fortran 77 and / or C
- Fluency in written and spoken English
- Good analytical and problem solving skills
- Dedicated, good communication and social skills

Our offer:

- A challenging thesis project to be executed within a successful team with an informal atmosphere and an excellent reputation
- Strong support from enthusiastic members of the CFD team
- Monthly allowance/stipend
- Housing and transportation for the period of stay

Information and applications:

Would you wish to know more about the opportunity? Then, contact Ed Komen (komen@nrg.eu, +31 224 564335). You can send your application to:

Ed Komen • NRG Petten • The Netherlands • www.nrg.eu • komen@nrg.eu