Master Thesis in Advanced Thermal Hydraulics
ASCOMP AG Switzerland
(early 2017)

ASCOMP Nuclear Energy Division provides consulting services over a range of technical areas and for all the stages of LWR plant life-cycle, including design, licensing and operation. We support Regulators, Utilities, Vendors, and Research Centers in design, review, development of models, and in helping to solve scientific challenges. We also work closely with Research Centers and Universities worldwide in order to remain at the forefront of modern and state-of-the-art methodologies.

Within one of these 'international' collaborative projects, ASCOMP are offering a Master project (which may lead to a PhD project) starting early 2017 with the description below.

Scope of work

The scope of work is subdivided in two parts: (I) Computational CFD/TH Sciences and Simulations, (II) Advanced full plant system code models and performance improvement. The first part, which would constitute the Master thesis program over 6 months relates to advanced TH/CFD simulations providing deep insight in phenomena and events influencing LWRs fuel assemblies. These cover spacer grids effects on pressure drop, temperature mixing, and heat transfer enhancement.

The second part consists in implementing a parallelization scheme based on shared memory protocol within the system code selected for this project. It also involves implementing a new Sparse Matrix Solver that could reduce substantially the computational time. The final objective is to be capable to couple TH system code to the CMFD code TransAT developed at ASCOMP, which will then be used for detailed (extensive 3D simulations) safety related issues such as DNBR, Boron distribution, flow in steam generator, PTS, etc. This 2nd part of the work should be part of the 3-year PhD project immediately following up the Master Thesis.

The work will be performed at ASCOMP Switzerland, although supervised by a Professor from the home institution were the candidate will officially be enrolled.

Ideally this combined Master/PhD position is best suited for a student enrolled in a thermal-hydraulics Master project, or in a similar Engineering curriculum (e.g. Mech. Eng.) interpreted broadly. A strong basis in fluid mechanics and convective heat transfer is a prerequisite, added to a good knowledge of TH system code and CFD principles. Experience in programming with Fortran and C++ is required though. Knowledge in solvers implementation and code Parallelization is a plus.

The position is limited to Swiss, EU, US and Canadian citizens only.

Interested candidates should send their application by Email to Ms LG: Guarcello@ascomp.ch