Internship – Systems modelling applied to waste valorisation plants

VERI (Who we are)
Veolia Research and Innovation (VERI) is Veolia corporate research entity with projects in the water, waste and energy domains. Thinking that smart ideas can have their part in climate change mitigation and resource preservation for this planet, we provide innovative solutions to these key challenges.

At VERI, the Modelling & Information Technologies Department is a nodal centre when it comes to renewing our business with smart and digital initiatives. Acting as a catalyst in constant connection with our business units, the department put its mission on the fast delivery of high value and user-oriented services. Spectrum for interventions ranges from bringing performance jumps to our core processes for water or waste treatment, enabling operation excellence by better planning or decisions, fostering new digital services to extend our traditional activities and business models.

The context (What you will contribute to)
As an intern in the Systems Modelling and Fluid Mechanics lab, you will contribute to ongoing project that develop a new tool for solid waste treatment plant design. There is a pressing need that society moves to a circular economy. Decreasing waste and recycling more the remaining is one of the many areas where effort should be put to make it possible. Veolia provides services for design and operation of large plants for mechanical and biological treatment of solid waste meant to recover compost, biogas, metals, plastics …

Taking advantage of our extensive knowledge on operation of these complex units, we feel that this now a good timing for both renewing our engineering methods in using systems engineering tools and looking for new ways of handling solid waste streams. This challenge will be addressed by a “dream team”: VERI researchers from process engineering (thermal, biological) and modelling departments and Technical and Performance experts (waste sorting, design), working in close connection with our Recycling and Valorisation business unit specialists and operators. A special attention will be put on ensuring that the output is operational.

The missions (What you will do)
As part of your internship, you will:
- develop and refine process unit models in our waste model library – from experimental results, paper review, expert interview, …
- develop workflow for simulation and result processing and analysis
- design and implement relevant Key Performance indicators for the system analysis and dashboard for efficient examination and communication of the results
- run simulation to validate models behaviour, at the reactor scale as well as at the system level (mass and energy balance, consistency tests, qualitative and quantitative check, …)
- identify possible enhancement in our operation practices, propose evolution in the material flows management so we move to higher performance, less issues, lower footprint and better recycling rates; set up and run in-silico experiments for proof of concept of these new ideas (ideally sprint-based mode: design, test, validate in short cycles)
- write studies report, present findings to various audiences (intern and extern)

**Expected Profile (Who we are looking for)**

We are looking for people who are smart and determined, and we favor ability over experience.

**Competencies**

You are Master student from university or engineering school. You think that simulations and models are key tools in our day to day job and can help solve critical challenges for a better environment. You are happy with data analysis and workflow automation. You have demonstrated capability to be efficient in some programming or scripting languages and you are willing to develop new skills and programming paradigm. Previous experience in relevant field such as computational science, operational research or modelling and simulation applied to environmental sciences, process engineering, chemistry or physics is expected.

You have a clear and efficient communication style, orally as well as written. Fluency in English is required (writing technical reports and participation in technical or business meetings in an international context).

**Attitude**

You have fun thinking the world in concepts and using equations and simulations to test ideas and solve concrete problems. You are curious and willing to learn when it comes to discovering new methods or new application fields. You are not shy to try. Your open mind will make it easy for you to integrate smoothly and contribute efficiently to multidisciplinary project teams. You are self-driven and team player as you think that great ideas comes where personal intuition meets group emulation.

Does it sound familiar to you?

These are very good news: we are looking for someone like you.

**INTITULE DU POSTE** : Stagiaire modélisation filières de valorisation des déchets
**SITE** : Maisons-Laffitte
**Période** : 1er semestre 2016
**RATTACHEMENT HIERARCHIQUE** : Pôle Mécanique des Fluides et Modélisation des Systèmes
**Contact** : pascal.boisson@veolia.com ; référence INTERN_MOD_001 ;
joindre cv et lettre de motivation