

Research Topic 18 for the ParisTech/CSC PhD Program

FOR APPLICATION, PLEASE CONTACT ADVISOR(S) BY EMAIL WITH COPY TO:

ali.siadat@ensam.eu AND yvon.velot@ensam.eu

Subfield: (Applied Physics, Chemistry, Mathematics, Mech. Eng. etc...)

ParisTech School:

Title: Influence of the uncertainty in design for environmental impact

Advisor(s): (name, email, website)

Bertrand LARATTE, ENSAM-I2M-IMC, bertrand.laratte@ensam.eu

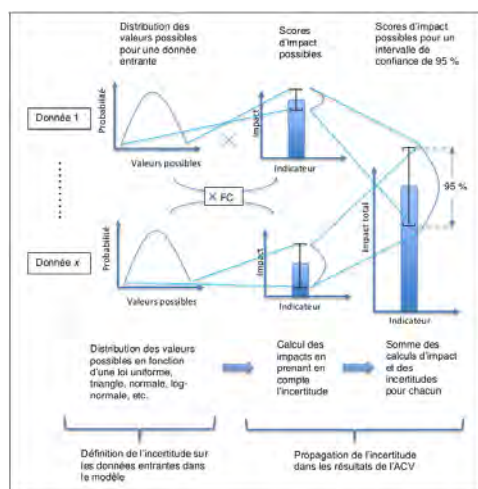
Nicolas PERRY, ENSAM-I2M-IMC, nicolas.perry@ensam.eu

Sébastien REMY, UTT-ICD-LASMIS, sebastien.remy@utt.fr

Short description of possible research topics for a PhD: (10-15 lines in English + optional figure)

Life cycle assessment is one of the most famous methodology to assess the environmental impact contributing to ecodesign a product. However, one can identify many sources of uncertainties of the LCA indicators like the uncertainty of the mass flow or the uncertainty of the characterization factor. Another source of uncertainty is up to now, not evaluated that is the influence of the process design and the influence of the tolerances in manufactured product to the environmental impact.

This project aims to assess the propagation of the uncertainties from the design process to the uncertainties of the environmental indicators (using life cycle assessment methodology). Up to now the uncertainty is only done for the mass flow of the substances in the environmental assessment, then the challenge is to consider



Required background of the student: (Which should be the main field of study of the applicant before applying)

Mathematic, statistic, mechanics, programming

A list of 5 (max.) representative publications of the group: (Related to the research topic)

B Laratte, B Guillaume, J Kim, B Birregah, Modeling cumulative effects in life cycle assessment: The case of fertilizer in wheat production contributing to the global warming potential, Science of The Total Environment 481, 588--595

G Grimaud, N Perry, B Laratte, Life cycle assessment of aluminium recycling process: case of shredder cables, Procedia CIRP 48, 212-218

D Panasiyk, B Laratte, S Remy, Steel Stock Analysis in Europe from 1945 to 2013, Procedia CIRP 48, 348-351

B Laratte, G Sonnemann, SYSTEM DYNAMIC AND SPATIAL MODELLING IN LCA, Life Cycle Approaches to Sustainable Regional Development, 85