

ICB PhD public presentations

OPTIMIZATION OF INDUSTRIAL WASTE-TO-ENERGY NETWORKS

Vasco Bolis

Safety and Environmental Technology Group
Supervisor: Prof. Dr. Konrad Hungerbühler
Co-examiners: Prof. Dr. Massimo Morbidelli
und Dr. Elisabet Capón García

ETH Hönggerberg, 13/10/2017
HCI H 8, 10.30 h



Project Summary: Project summary: Increasing pressure to diminish the dependence on non-renewable sources poses a complex future scenario for energy-intensive industrial sectors. This represents a challenge but also an opportunity to explore alternative energy sources that were previously considered of secondary importance, such as hazardous waste incineration. In fact, the chemical and pharmaceutical industry generates significant amounts of high-calorific liquid residues that are often incinerated in centralized plants for simultaneous treatment and energy recovery. In this sense, an optimized management of industrial waste-to-energy networks stands for an efficient tool to decrease both primary energy consumption in integrated chemical sites and waste shipments. Given a set of waste streams with generation forecast and a set of incineration sites, this project creates the network model and uses mathematical programming to investigate new opportunities arising from systematic design and management. Such methodology is then applied to evaluate the reliability of different investments and long-term operational strategies, as well as to determine relevant trade-offs between economic and environmental aspects.

CV: Vasco Bolis, born 1990 in Locarno TI, studied Chemical and Bioengineering at ETH Zürich before joining the Safety and Environmental Technology Group in February 2015.