

Master Project (30 ECTS)/Semester Project (10 ECTS)

Administrative

Supervision: Martin Gay, Prof. J. Van Herle

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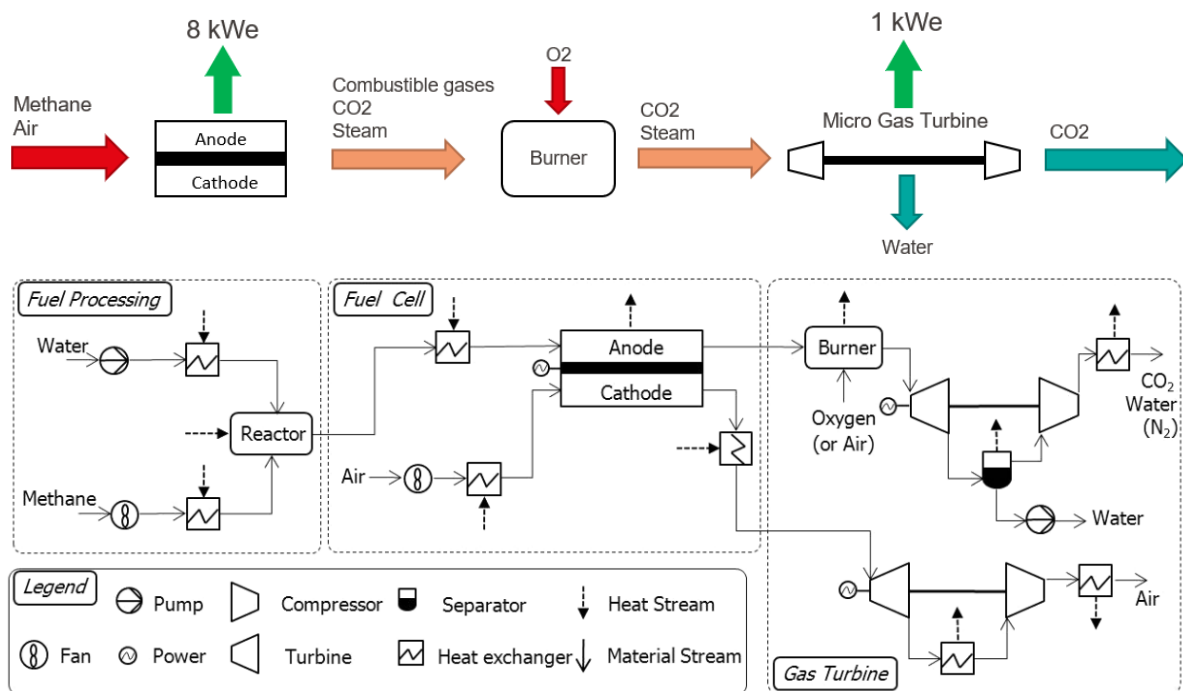
Location: Sion or remotely (travel allowance offered)

Remarks: If interested, please send your CV, with a short motivation letter, to Martin.

Project description:

An 8 kW SOFC is coupled to a micro gas turbine (mGT) to maximize the conversion of methane into electricity. Coupling these two technologies has never been done before and requires a complex Balance of Plant (BOP) to maximize the heat exchanges and thus maximize efficiency. The consequence is a strong interplay between the two technologies and the intermediate components. Steady-state simulations have been made for the sizing of the components and the efficiency maximization.

The goal of this project is to perform a multi objective optimization for this setup. The heat integration and the cost are the main decision parameters. Multiple layouts will be defined and optimized. The models of each component will be modified to integrate the real performances, thus closing the gap between theory and reality. This project is mainly programming, and this can be done remotely, with no need to come to Sion regularly.



Your tasks:

1. Define the parameters to be optimized, what are the challenges of such system.
2. Using existing code, adapt the models and develop the optimization strategy.
3. Perform multiple optimizations for different layouts.
4. (optional) make a sensitivity analysis in case of lower performances, issues with components, etc.

Knowledge in coding is required.