

OxiGEN

Next generation SOFC solutions



**NEXT-GENERATION
SOLID OXIDE FUEL CELL STACK
AND HOT BOX SOLUTION
FOR SMALL STATIONARY
APPLICATIONS**



INNOVATIVE METHODOLOGY FOR DESIGNING FUEL CELL SYSTEMS TO MAXIMIZE END-USER VALUE (ENGIE)

- > Define hot box specifications, in particular regarding size and operation mode; define the right power output and power efficiency to address a wide European market with a unique product.
- > Define the market requirements for mCHP in terms of power output and efficiency.

SOME RESULTS

- > For single family houses, power output of 0.6 kW can fit all European countries.
- > For commercial sector, Health and Hotels sectors appear attractive with 5 kW and 50% power efficiency.



<http://oxigen-fch-project.eu>

HERE IS HOW THE OCSYGEN VBA BASED TOOL WORKS

- 1 Simulation of the building needs
- 2 Simulation of the systems to fulfill those needs
- 3 Custom-made economic analysis

INPUTS

- Weather
- Insulation
- Systems used (cooking heating, air conditioning)
- Inhabitants or type of building (usage profile)
- Comfort setpoints (heating, air conditioning)
- Electricity usage



CALCULATED VARIABLES

- Calculated demand heat profiles with an hour sampling (heat, hot, water)
- Calculated demand power profile with a minute sampling

OUTPUTS

- Energy supplied by the different systems (electricity, heat)
- Consumption of the systems (NG, electricity)
- Data about the behavior of the systems (operating time, number of stops...)

MACRO-ECONOMIC ANALYSIS

- Set of equations to maximize benefit according to product sizing
- Analysis on each building configuration



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This project has received funding from the Fuel Cells and Hydrogen Joint Undertaking (FCH JU) under grant agreement No 735918. This publication reflects the views only of the author, and the FCH JU cannot be held responsible for any use which may be made of the