

COMPANY

Hager

RESEARCH CENTRE

CEMOSIS.
Centre for modeling and simulation
in Strasbourg

PRODUCTIVE SECTOR

Energy and Environment

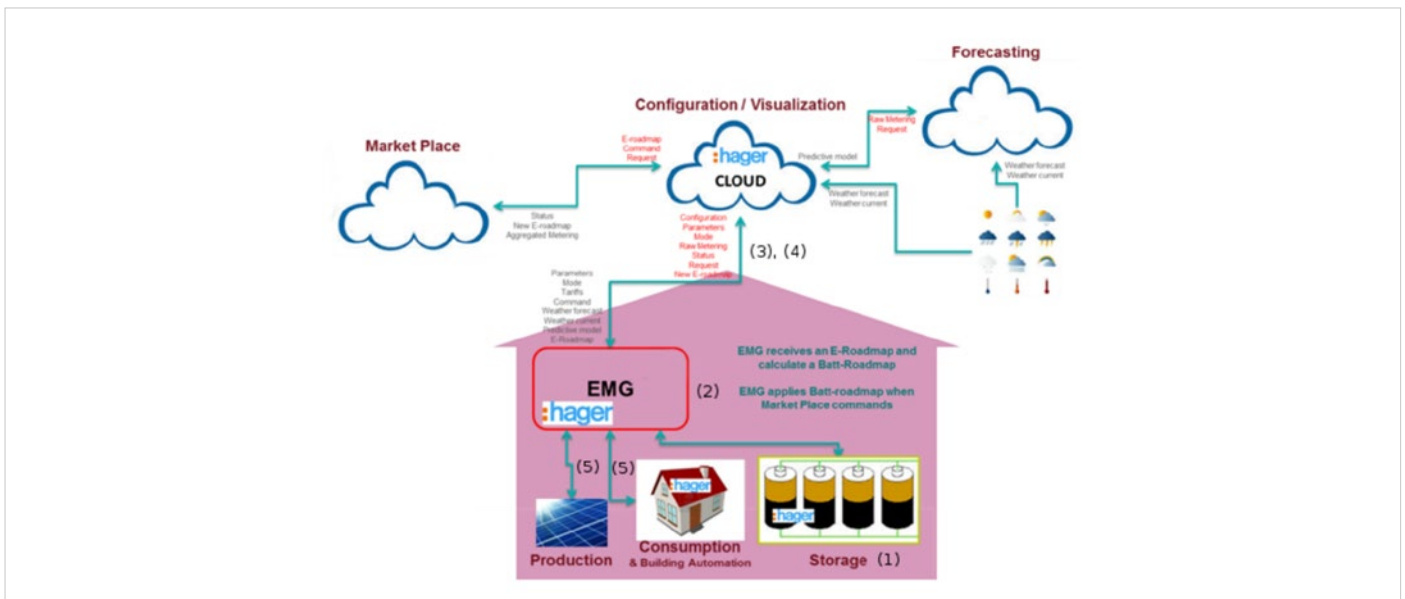
[More info](#)

SS_020_2019

HAGER

M4SE Math for Smart Energy.

Optimization of energy storage within house holds.



PROBLEM DESCRIPTION

New problems emerged with the rise of photovoltaic panels, wind turbines and the ability to own its energy production: Network disturbances, regulated consumption in function of spot prices and waste of non- consumed or non-sold energy.

CHALLENGES AND GOALS

Control energy storage via energy buffers (batteries) and rejection in the electrical network with respect to distributors consigns (eroadmap)

Minimizing energy costs, maximizing energy resale during free schedule.

MATHEMATICAL AND COMPUTATIONAL METHODS

This project involves an optimization problem with constraints as well as knowledges (predictive data):

- ✓ Minimize a cost function to fit the eroadmap in function of real energy production.
- ✓ Introduce constraints in the problem (Battery types, household production law imposed by governments).
- ✓ Add predictive data (weather prediction, house energy knowledges,...) in the model to handle free schedule.

COMPANY

Hager

RESEARCH CENTRE

CEMOSIS.
Centre for modeling and simulation
in Strasbourg

PRODUCTIVE SECTOR

Energy and Environment

[More info](#)

SS_020_2019

HAGER

M4SE Math for Smart Energy.

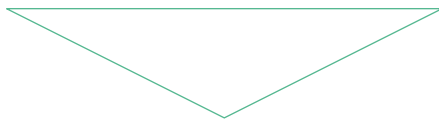
Optimization of energy storage within house holds.

RESULTS AND BENEFITS

A prototype algorithm has been proposed within a funding from AMIES (6 months) and a master internship.

Solving a blocking problem, it proposes a strategy to fit the roadmap including predictive data.

The company implemented the patented algorithm in its EMG controller for production.



Reduce energy waste, control consumption, optimize energy resale.

Energy storage to reduce energy wastes, guaranty safe electrical network for distributors, control energy resale for households.