

# Micro Stockage Intelligent Distribué (OFEN MSID)

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## Summary

The OFEN MSID is a 3 years project that brings together the interests of 4 distribution grid operators. Their objectives include remote network stabilization (use cases 1 and 2), optimization of self-consumption and co-creation of new business models to make photovoltaic storage profitable (use cases 3 and 4). This project aims to aggregate micro-storage systems (electric vehicles, batteries, heat-pumps) and develop associated business models.

The pilot site of EnAlpin is located at the railway station and includes several shops, offices and the car park with electric vehicles (EV). The company has installed 80kWp of photovoltaic panels and would like to manage the flexibility of 6 car charging stations and a stationary battery.

## Introduction

The first result is an economic study on the sizing of stationary batteries that provide the basis for the implementation of dynamic energy pricing in this microgrid. The first simulation results show a photovoltaic storage cost around 5 ct/kWh with dynamic tariffs (Figure 1). Sizing simulations based on the optimization method described by Weniger, J et al (2014) were applied to the Enalpin site. At this pilot site, the costs of PV storage are at their lowest with a battery capacity between 180 and 240 kWh (Figure 2).

## Partners

SEIC-TELEDIS  
GROUPE



OIKEN



ELECTRINFO

icare

EnAlpin



FORCES MOTRICES  
DE L'AVANÇON



## Methods

The optimization method is described in the article "Sizing of residential PV battery systems" (Weniger, Tjaden, & Quaschning, 2014).

1. Calculation of the storage price
2. The annual cost of the annuities
3. Average electricity cost
4. Objective scheduling function
5. Constraints of optimization

## Conclusions

- The current market conditions do not allow the costs of PV storage to reach the 0.04-0.06 CHF (Figure 2).
- The cost of 13.20 CHF /kWh of the current batteries does not result in a positive return on investment (ROI).
- The price of the batteries should continue to decrease, and it could become profitable to install the system when it reaches 133 CHF/kWh (Figure 3)

## Results

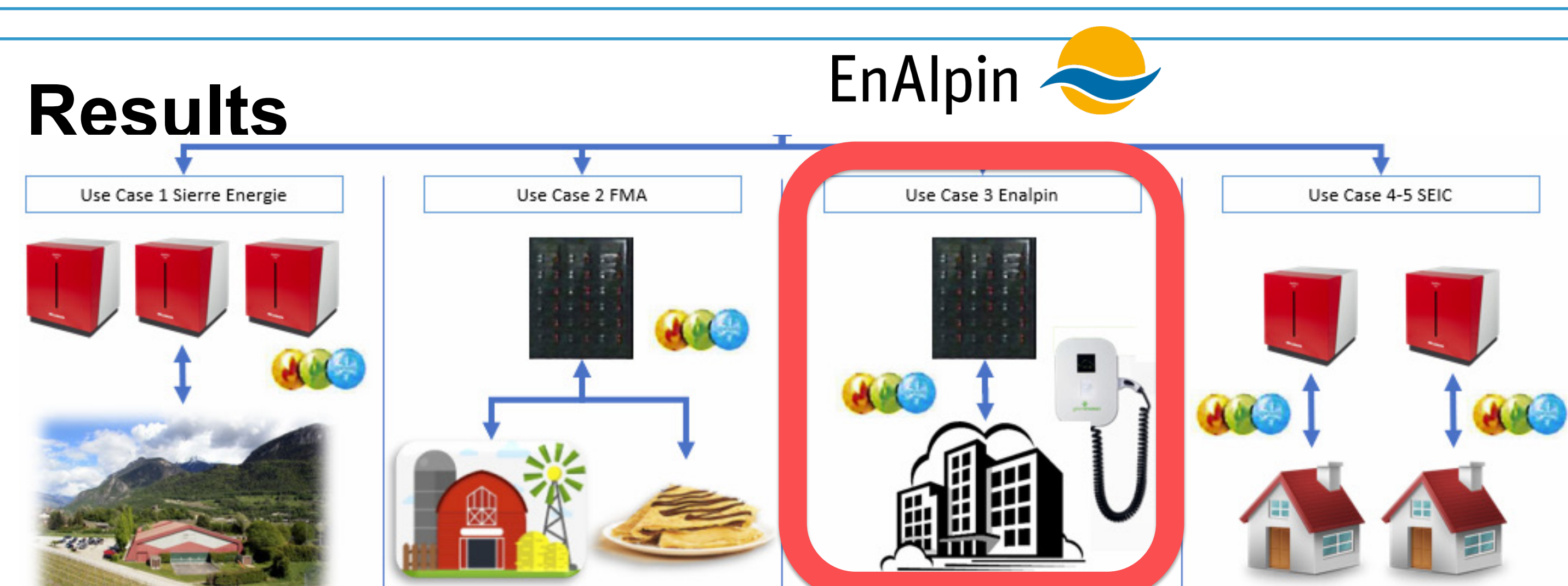


Figure 1 : Overview of the 4 microgrids



Figure 2 : Cost of photovoltaic storage regarding the price strategy



Figure 3 : Optimization of the capacity regarding the tariff strategy

