Pilot Region Aosta Valley

The Smart Node Pilot Project

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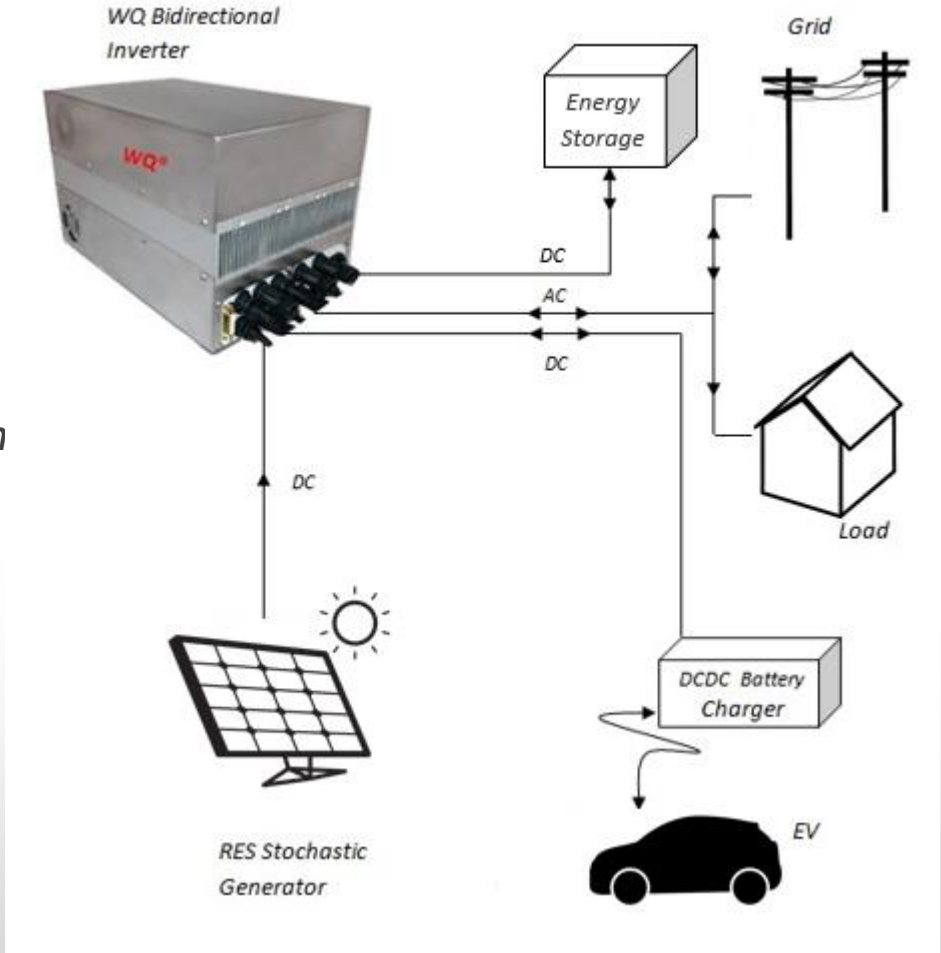
Before AlpStore: Our Challenges

- A rapid growth of distributed, stochastic generation from renewable energy sources. Which are effects on the energy system? Which is the role of storage solutions?;
- To successfully implement a real life application of a low-budget, small-scale, energy management system;
- To address a large user group on the territory;
- To get some “on field” data of the system and
- To increase our expertise for the planning phase.

During AlpStore: Our Activities

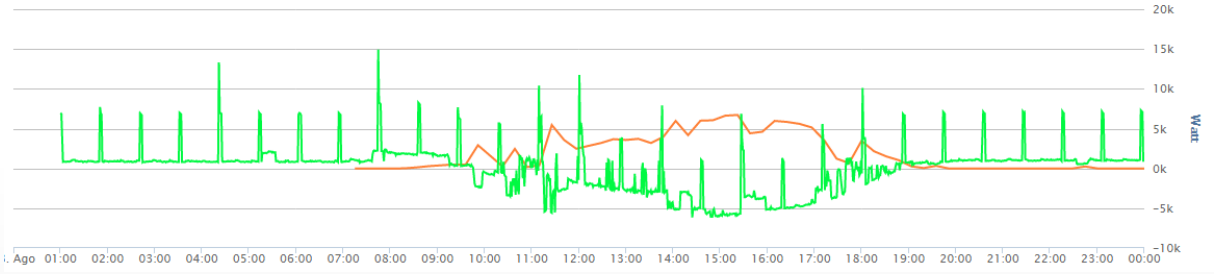
- **Permitting:** bureaucracy and a lack in the regulatory framework
- **Testing:** running two different objective functions:
  - User added value: *maximum self-consumption*;
  - Grid/System added value: *maximum load leveling;*
- **Electric Vehicle:** demand side management;
- **Simulation:** building the mathematical model and running large scale simulations.

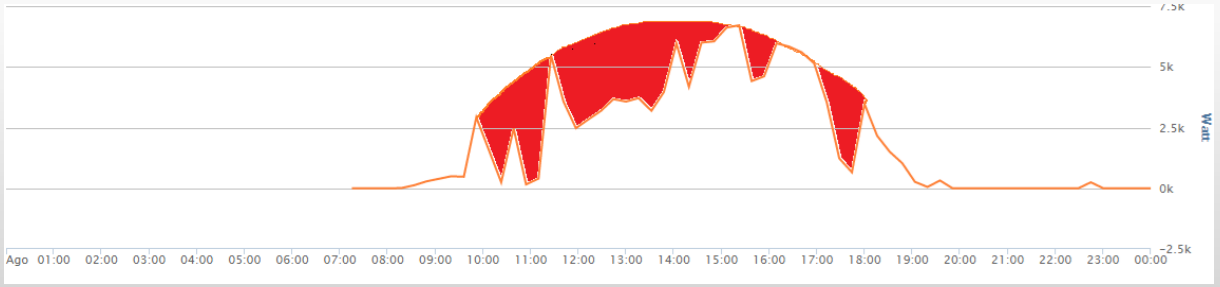


After AlpStore: Our Achievements

- ✓ Successfull energy management;
  - ✓ +27% of self consumption (not-working day);
  - ✓ Load leveling for long periods.
- ✓ No major drawback or problems for the users;
- ✓ Calculated battery average efficiency 83,3%;
- ✓ + 10% of self consumption due to the EV recharge priority;

- ✓ Economics:
  - ✓ Some value for the user; the business model?;
  - ✓ Relevant added value for the system and the grid





After AlpStore: Our Recommendations

1. Consider coupling a PV system and a battery storages, it does create value for the user and the energy system;

2. A correct sizing maximize the benefits: the AlpStore studies offers some preliminary design information;

3. The Smart Node model applies and fits many kind of target users and load;

4. In the next future we expect a significat battery cost reduction and an increase of performances.

5. Use a simulation tool to fully understand the behaviour of the system.