BUILDING ENERGY MANAGEMENT SYSTEM

FORMATD2 TRAINING SESSION

26 NOVEMBER 2019

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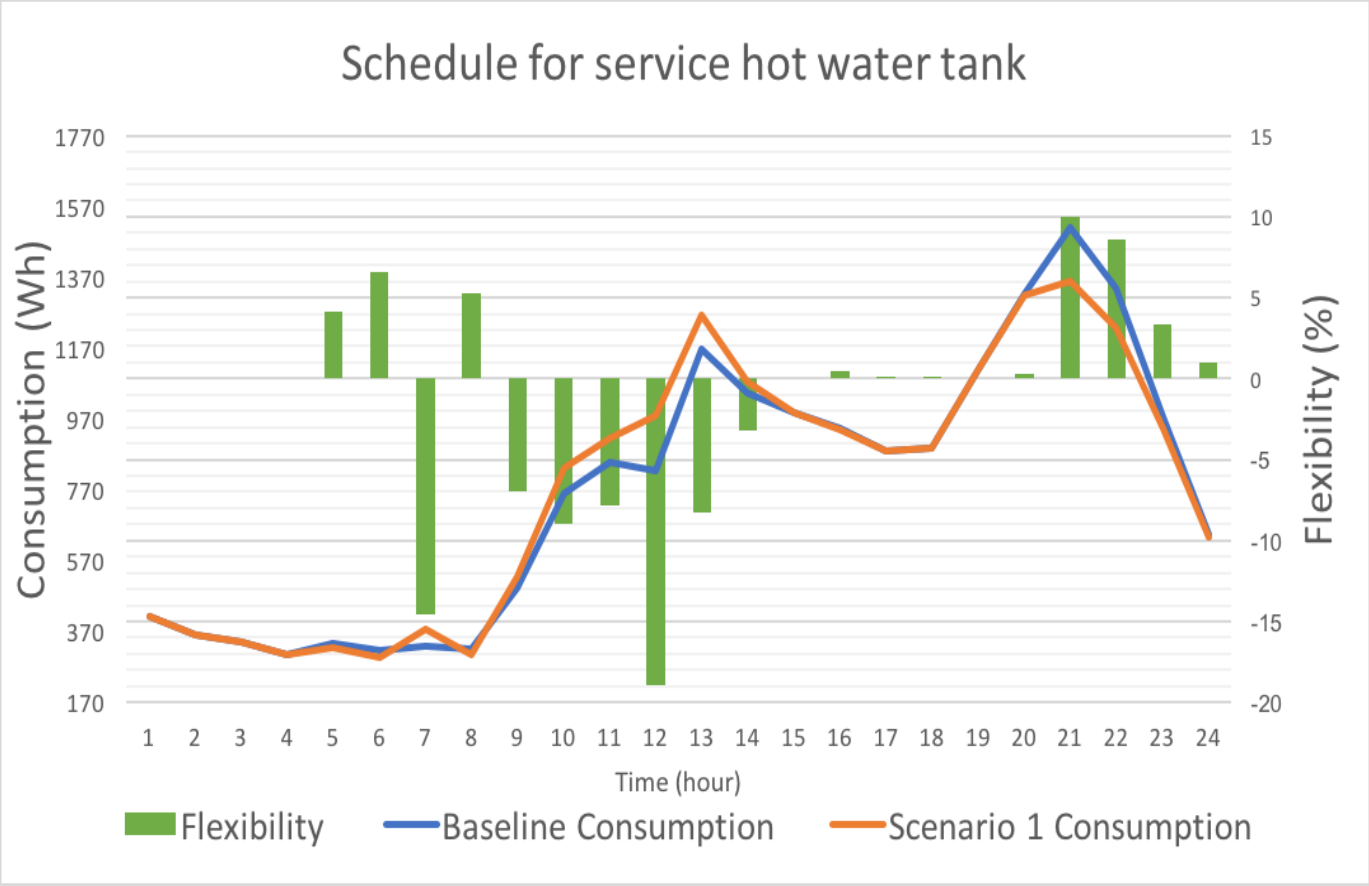
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 691768

Manageable Loads

✓ They allow **to displace consumption to match BIPV excess**, but their flexibility is limited.



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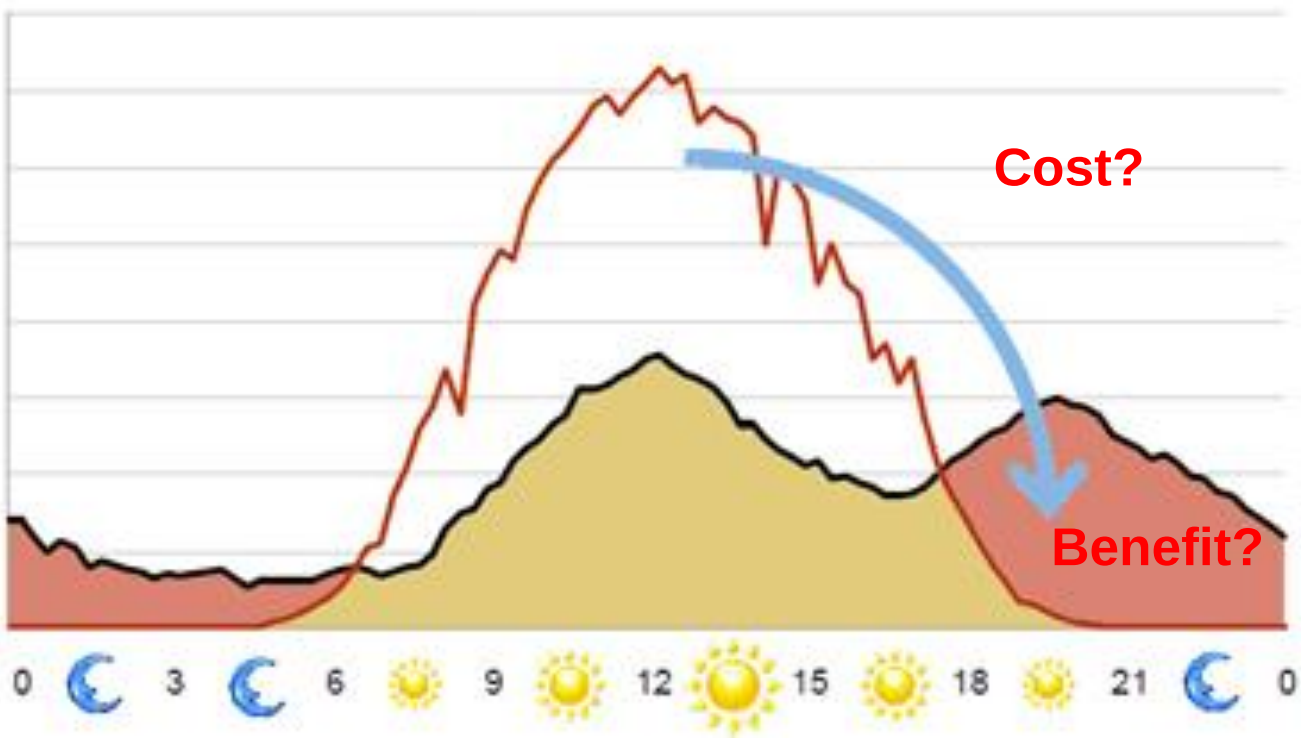
Storage PV Systems

✓ They allow **to displace BIPV excess to match consumption**, but cost and potential benefit must be examined in detail.



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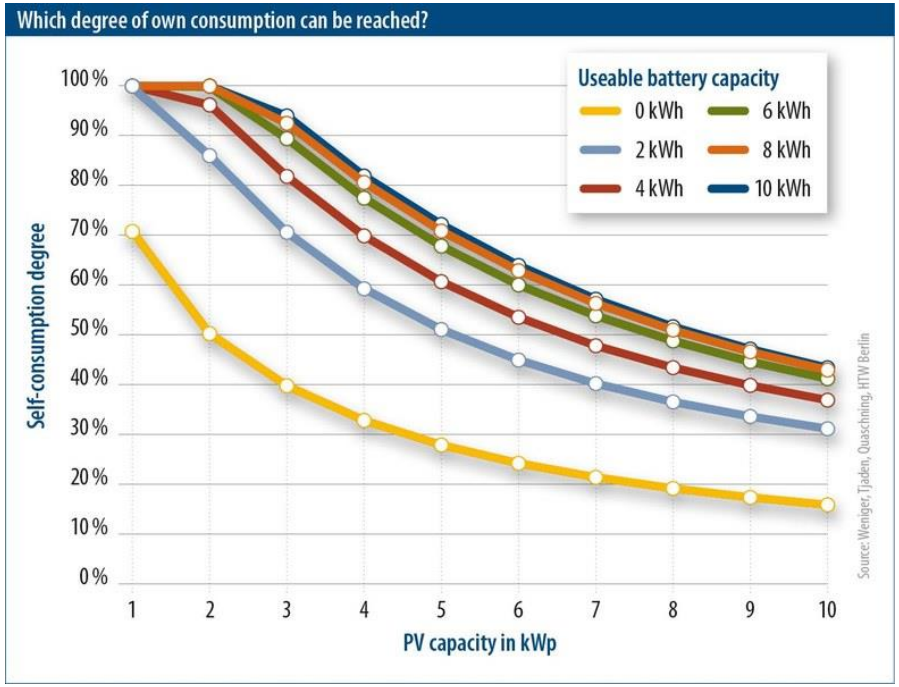
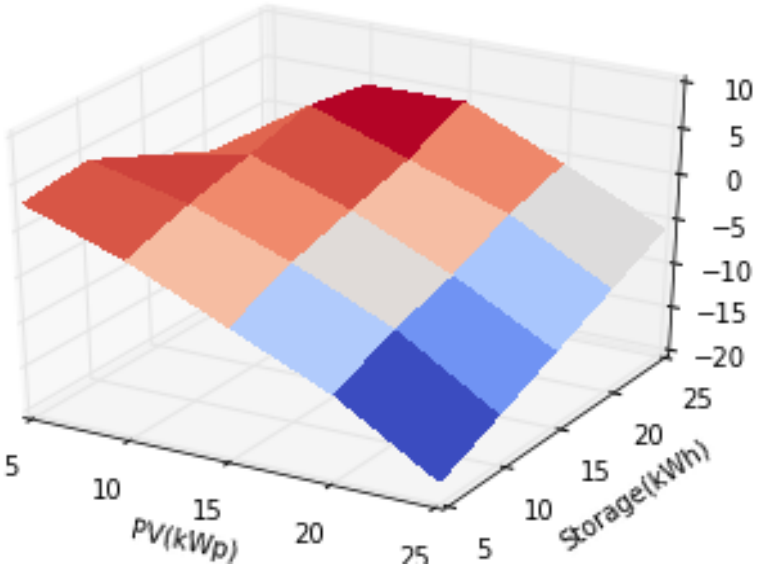
Cost of Storage

- ✓ **LCOS (c€/kWh)** must be reduced by means of:
  - ✓ **Learning curve** of different technologies and **economies of scale**
  - ✓ An **optimal selection and sizing** of storage system
  - ✓ An **optimal operation** of storage providing the same service





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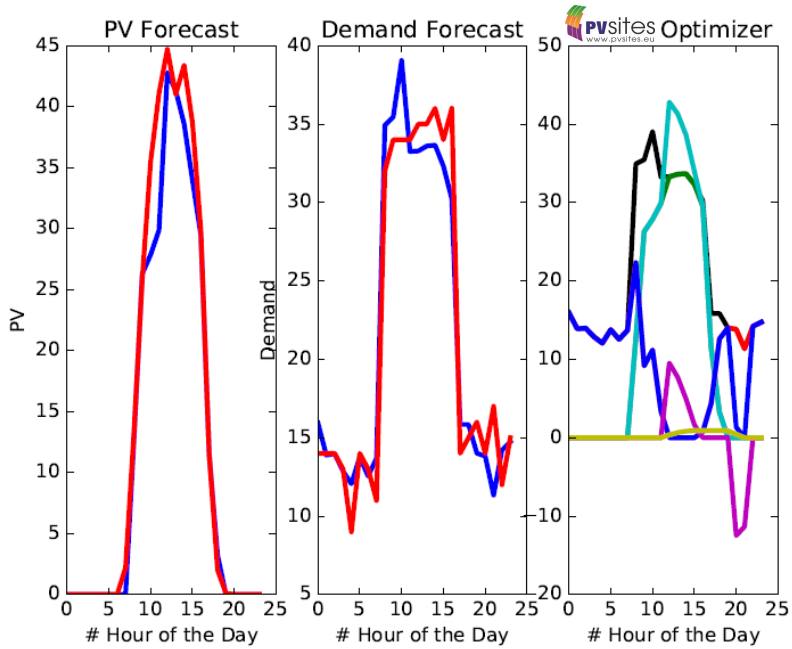
Benefit from Storage

- ✓ **Benefits from self-consumption of stored energy** must be increased by means of:
  - ✓ Self-consumption in hours with higher purchase electricity tariffs.
  - ✓ Offering simultaneously added value services, like peak-shaving.
- ✓ For this purpose, BIPV generation and electrical demand **forecasting tools are needed**.



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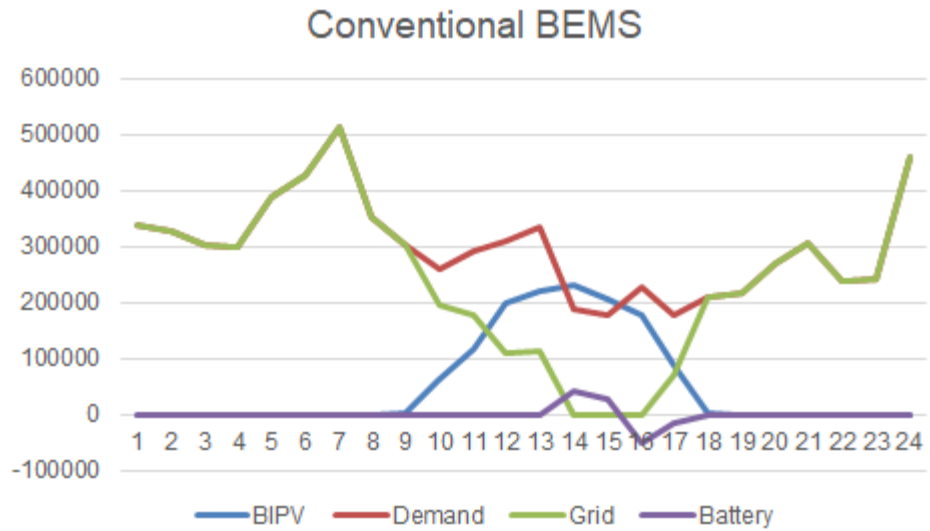
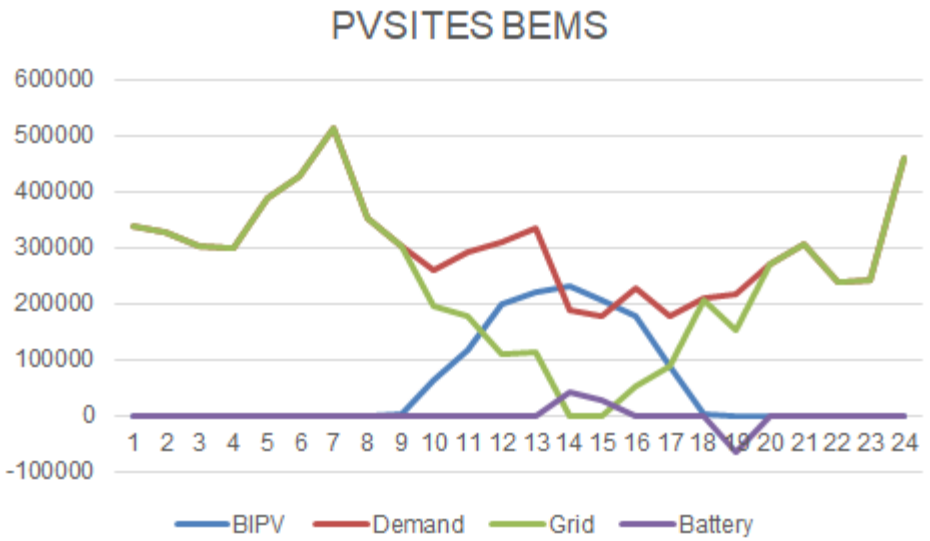
Self-consumption Optimization





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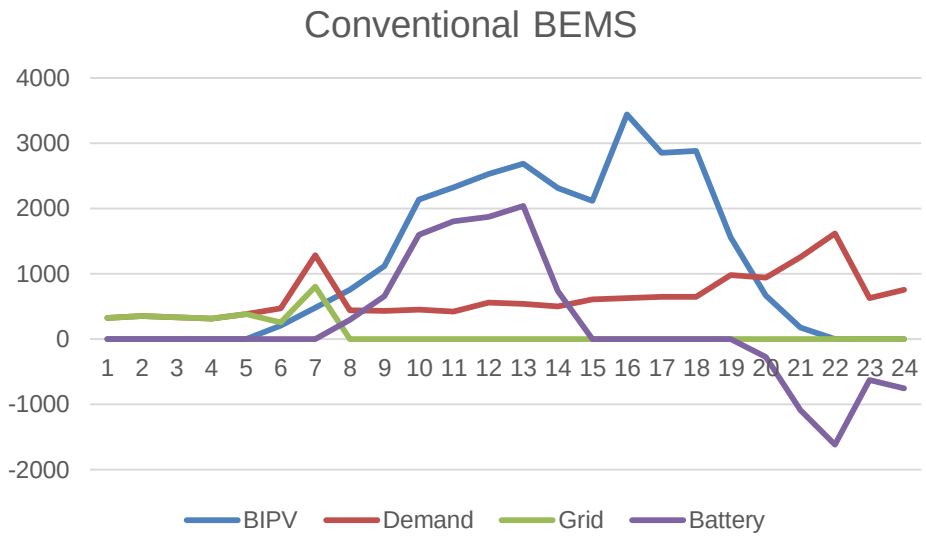
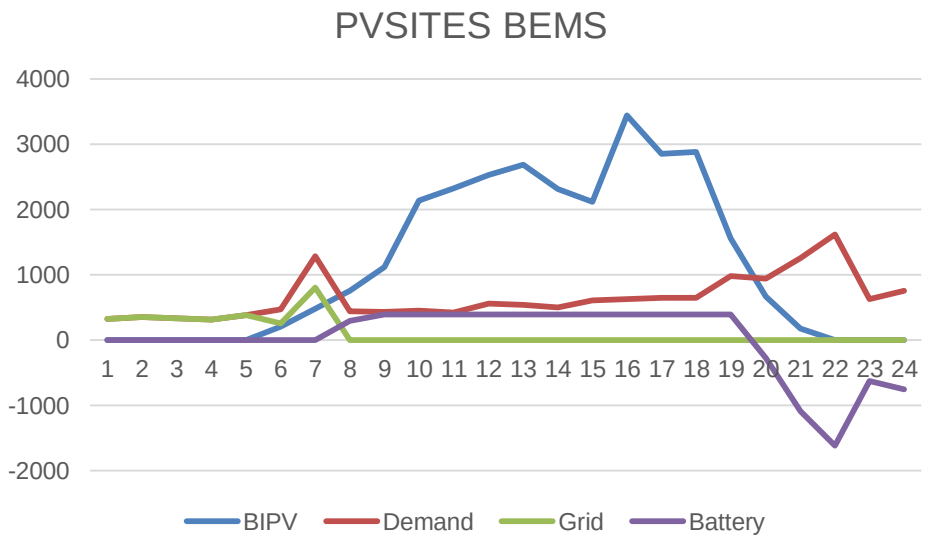
Battery Charge Optimization





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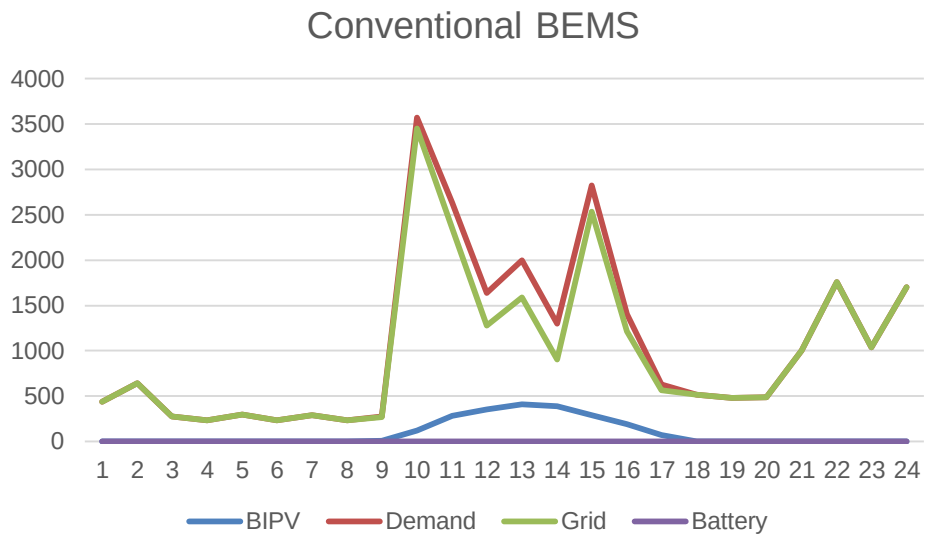
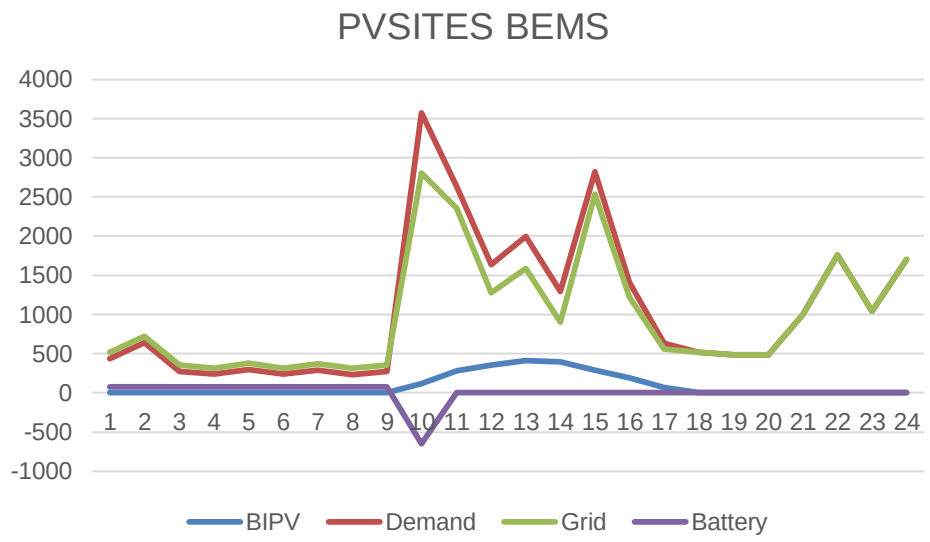
Peak-shaving





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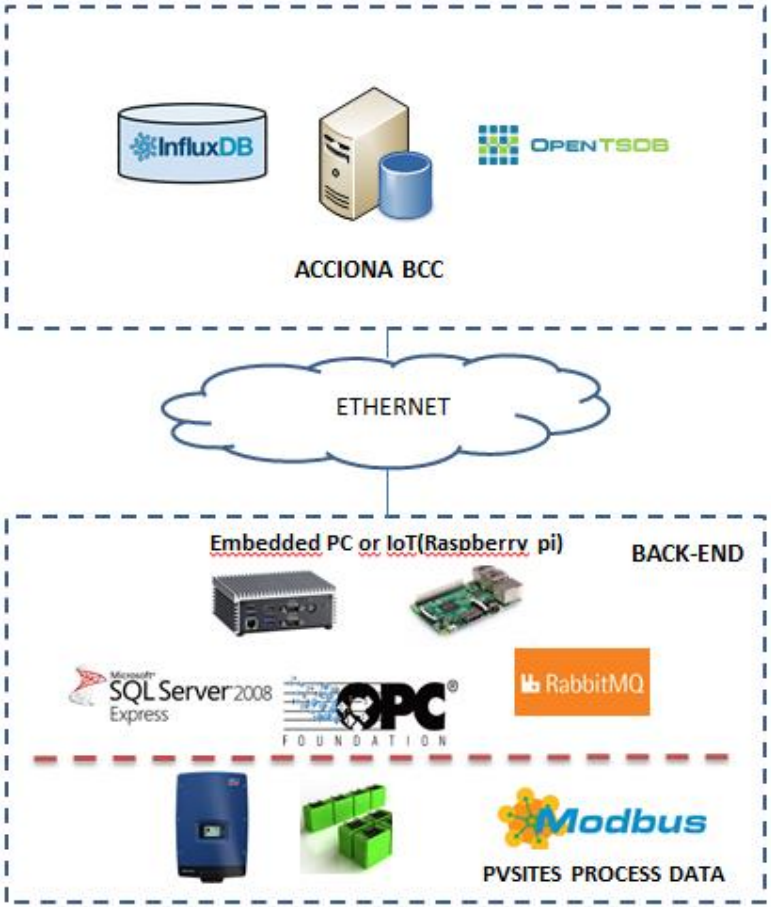
Local Real-time Energy Control

✓ **Responsible for the real-time monitoring and control** of generation, demand and storage, correcting potential deviations



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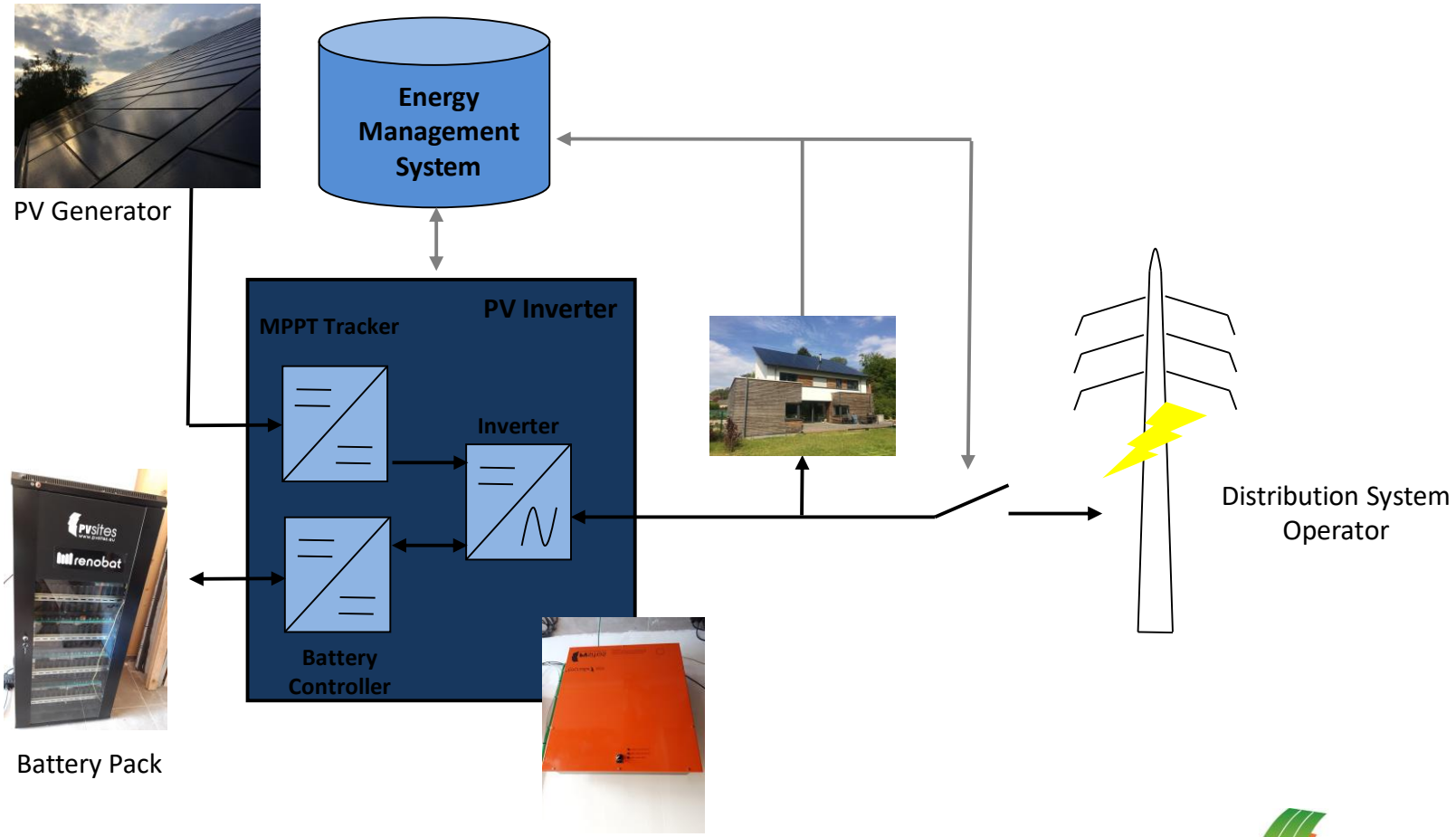
PV Storage Inverter

✓ **Responsible for the real-time monitoring and control** of generation, demand and storage, correcting potential deviations



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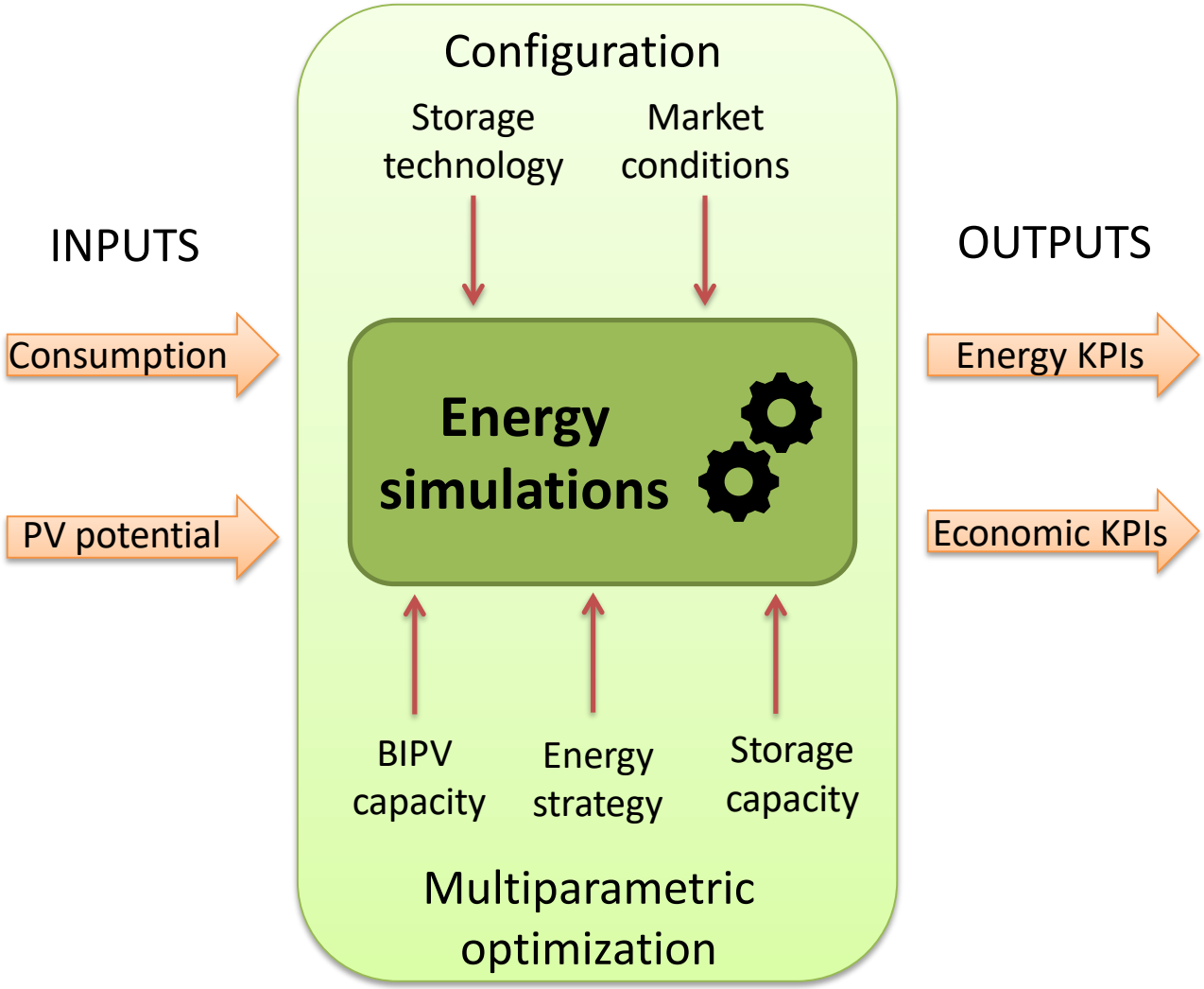
Planning Tool



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FORMATD2 Sizing

- ✓ EV charger supplied by BIPV with individual grid connection point.
  - ✓ BIPV capacity: 8.7kWp limited by roof surface (100m^2).
  - ✓ Storage capacity (10kW/10kWh).
- ✓ Main KPIs:
  - ✓ BIPV generation: 7.25MWh.
  - ✓ Direct self-consumption: 2.33MWh (32% of BIPV and 34% of total demand).
  - ✓ From batteries: 1.4MWh (19% of BIPV and 21% of total demand) and 50% peak-shaving (from 4.6kW to 2.8kW).

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