



A building energy simulation platform to scale up the zero-emission H&C market in Europe

**EHPA webinar:
Digitalisation in the H&C industry**

EU Industry Week 2021 – March 9th from 10:00 to 12:00 CET

POLYSUN DETAILED INSIGHT INCL. API AND TECHNOLOGY MODELS



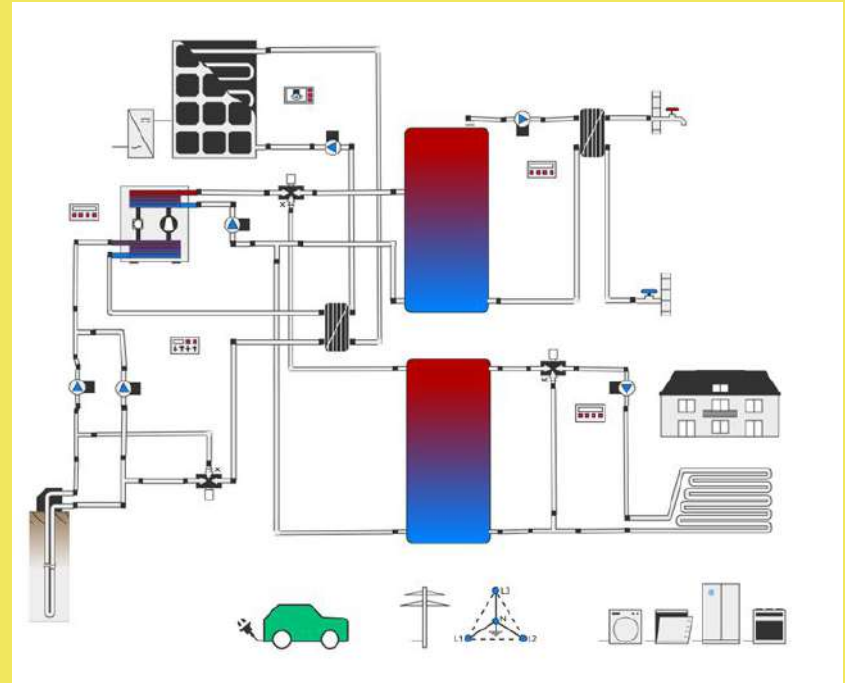


VELA SOLARIS IS THE MARKET LEADER IN THE FIELD OF ENERGY SYSTEMS SIMULATION

- Location Winterthur (Switzerland)
- Worldwide distribution of Polysun software range with customers in over 40 countries
- Offer of consulting services in the field of energy system simulation
- Over 1,000 corporate customers use Polysun: Renowned engineering companies, manufacturers and distributors of energy system components, energy service providers and universities.

ENERGY SYSTEMS ARE PLANNED HOLISTICALLY

- Simulation based planning
- Smart combination of thermal and electrical energy generation as well as e-mobility
- Review of various system dimensioning and control strategies
- Output of comprehensive key figures (e.g. own consumption or energy yield)



DIGITAL SALES OF ENERGY SYSTEMS IN THE CLOUD

- Polysun API supports your digital sales processes. Customers or partners inform themselves online about your energy systems.
- On the basis of just a few inputs, you receive simulated suitable proposals from Polysun. The high **informative** value increases the closing probability.
- If a contract is awarded for an energy system, Polysun provides data for seamless integration into **order processing and detailed planning**.

REFERENCE EXAMPLE: VAILLANT (POLYSUN API)

Online tool for detailed planning
of heating systems

Heat pump sizing tool (not
public, for partner platform, fully
linked to backend)

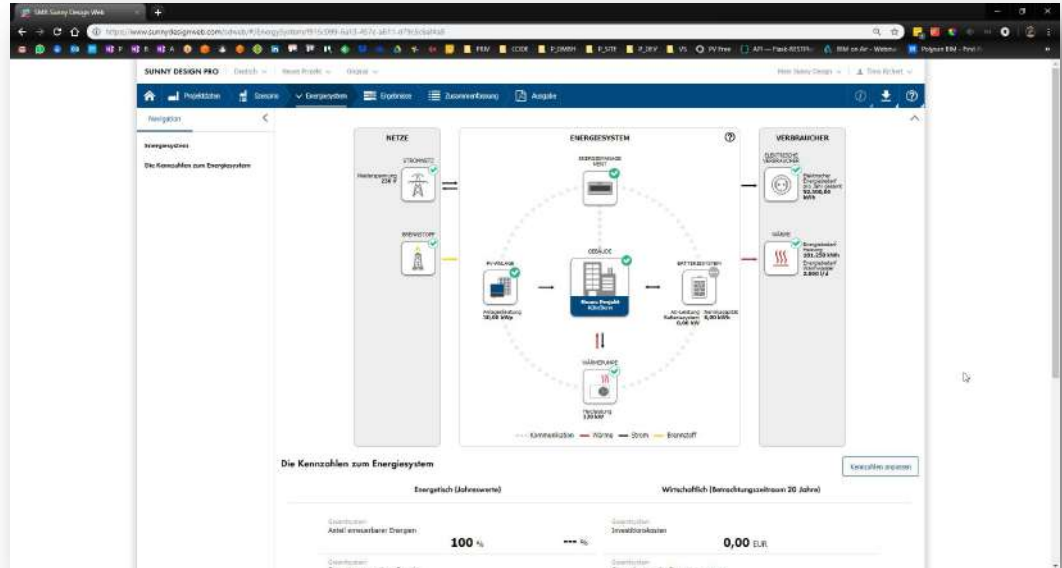


REFERENCE EXAMPLE: SMA (POLYSUN API)

Online tool for detailed
planning of building
energy systems as a tool
for SMA customers

Polysun API as design
and simulation backend

- PV + battery
- Heat pumps
- Building model



Beispielansicht: SMA SUNNY DESIGN PRO
<https://www.sunnydesignweb.com/sdweb/>

SIMULATION IN THE CLOUD: POLYSUN API

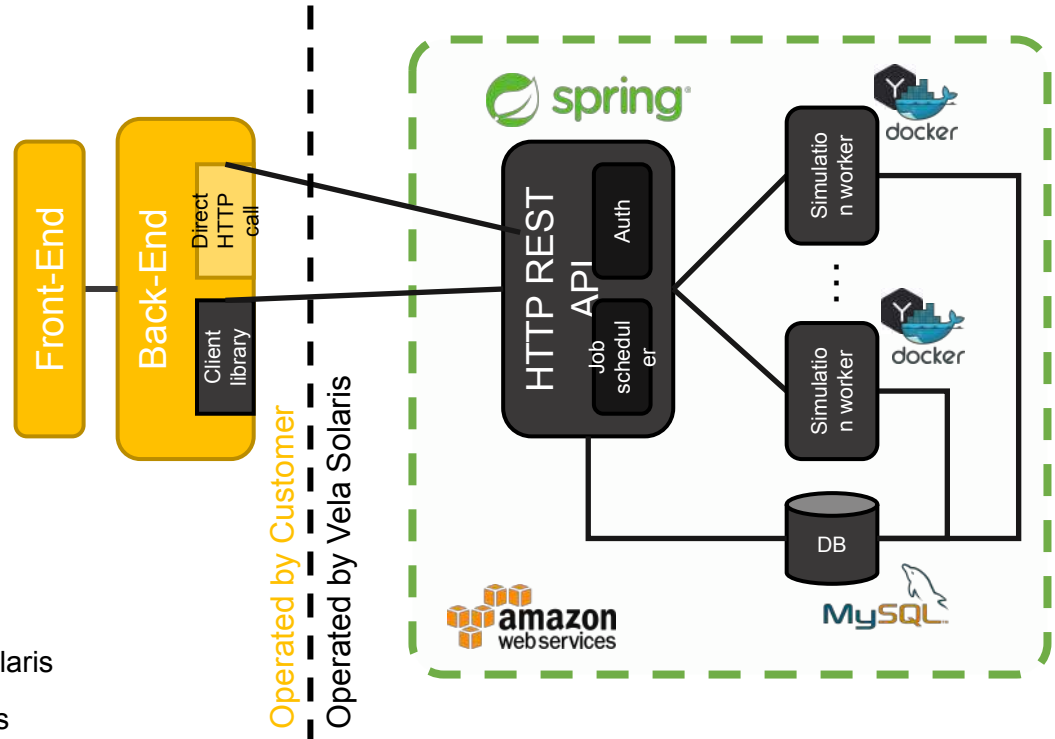
Polysun computational core can be accessed directly via HTTP calls or with a client-side library

Based on Java Spring Framework and MySQL database technology

Hosted on AWS and arbitrarily scalable

Client libraries available in Java, C#, ...

- Developed and maintained by Vela Solaris
- Developed and maintained by Partners



OUR CLIENTS

Planners and project developers:



Higher education:



Energy providers:



Manufacturers and resellers:



MANY THANKS FOR
YOUR TRUST

POLYSUN®
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The SunPeople Project



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Interreg FCE SunPeople project manager
ALOEN (local energy/climate agency Southern Brittany)
Lorient FR

EHPA webinar – March 9th 2021

Interreg 
EUROPEAN UNION
France (Channel) England
Manche)
Fonds européen de développement régional

Datasheet: Interreg FCE SunPeople

- **Partners**

- ALOEN (FR) – Lead partner :: energy agency
- Plymouth City Council (UK) :: local authority
- Plymouth Energy Community (UK) :: social business
- Aezeo (FR) :: SME (DIY training center)

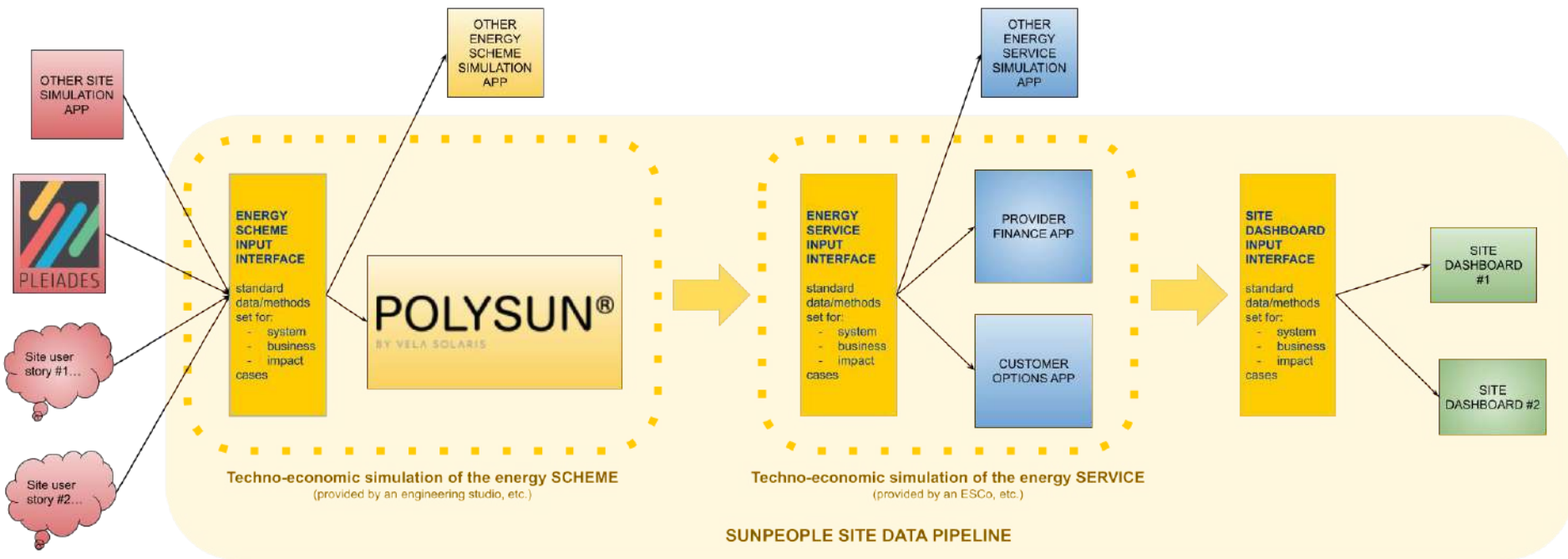
- **Funding**

- Budget 499,266€ (80% ERDF)
- Over 24 + 3 months since 1st August 2019

- **Goals**

- Design and implement next-generation heat energy services on existing sites in Lorient and Plymouth
- Demonstrate relevance of “new solar” system/business/impact cases
- Involve all stakeholders, in particular the supply chain, in order to help the demand/offer market grow/mature in Europe

SunPeople site data pipeline

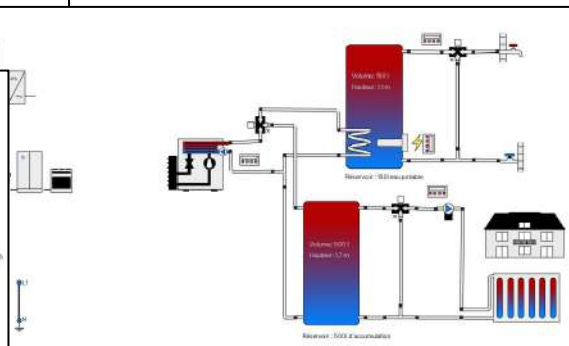
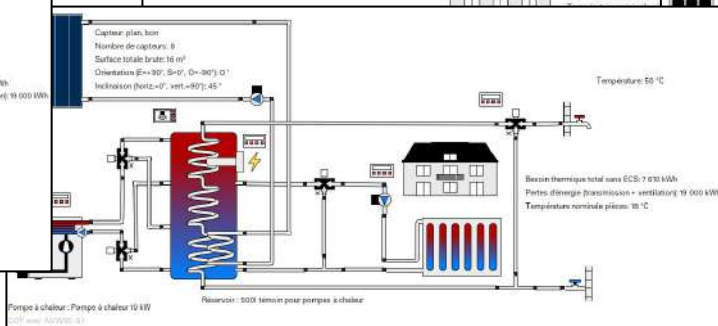
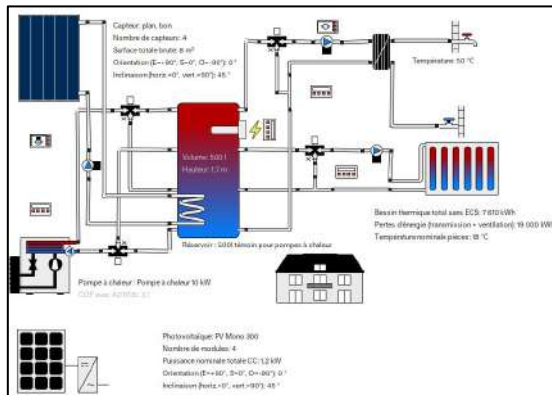
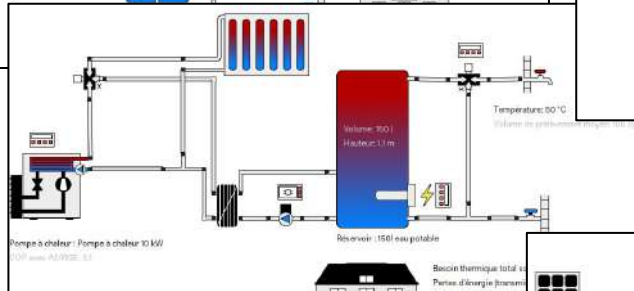
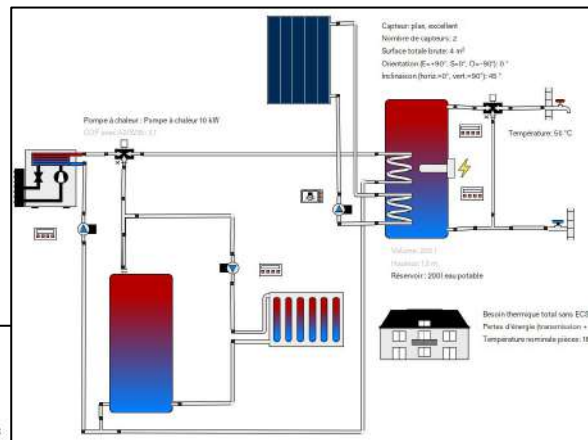
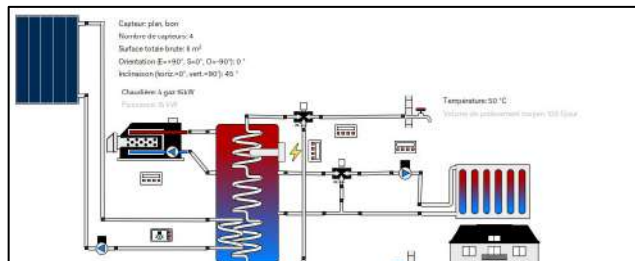
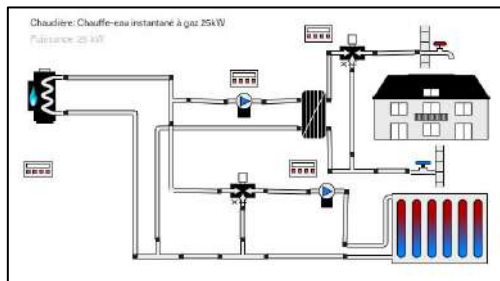


[Check it online](#)

Datasheet: Solar Kafe Lorient

- **Innovative event format: 3-step online engagement**
 - Large-scale procurement exercise/soft market testing
 - Target: building owners with individual homes relying on oil boilers
 - Event #1: system/impact case (energy, CO₂)
 - Event #2: business case
 - Event #3: energy service
- **Participants: individual building owners**
 - Between 2 and 4 occupants
 - Between 48 and 180 m² surface area
 - Total heat requirement of more than 50,000 kWh
 - 13 participating dwellings (first iteration, target: 17.5k)
 - A very well insulated new house (unders 2012 thermal regs)
 - A single-family house with an old gas system
 - A new flat (under 2012 thermal regs)
 - A single-family house with a recent oil boiler
 - An all-electric house (heaters, cylinder, car)

Comparing energy systems with Polysun Designer

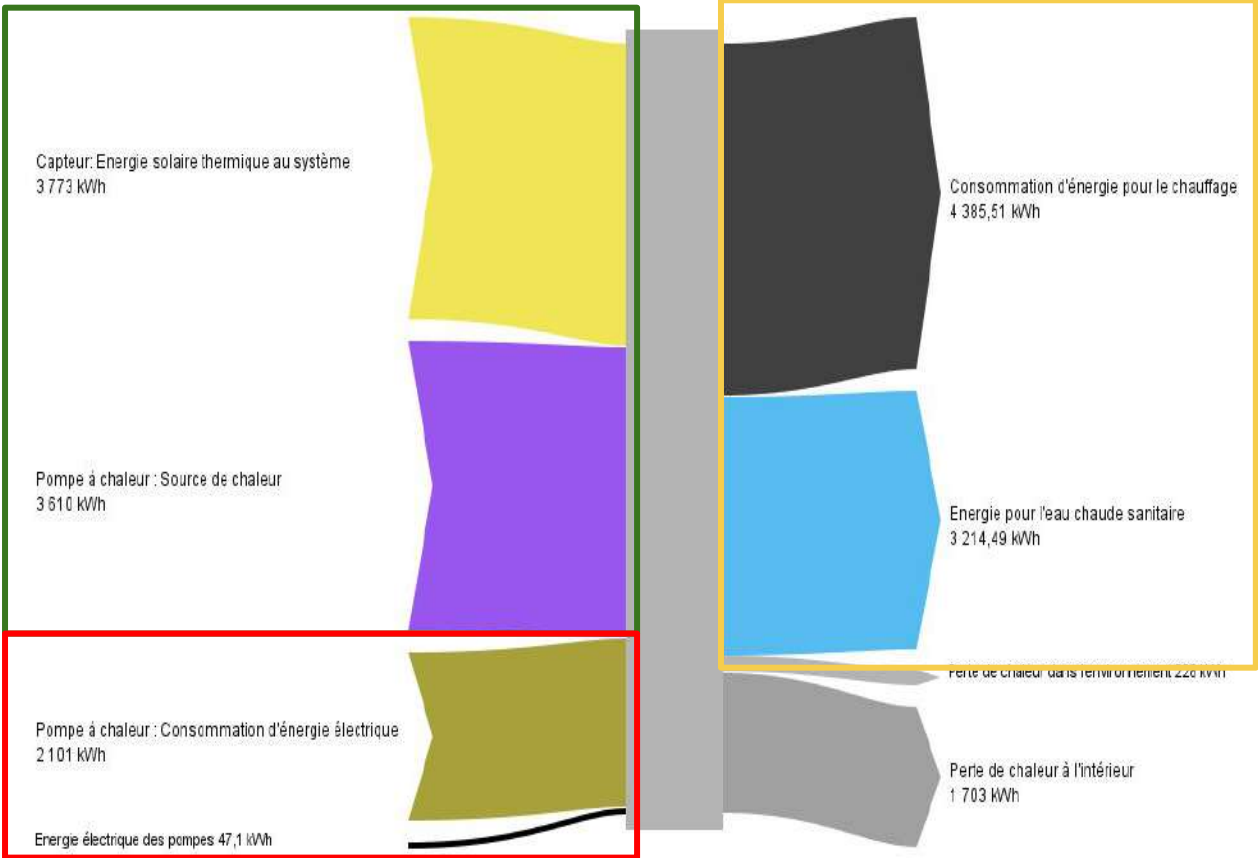


Energy system I/O

180-m² dwelling
well insulated

Energy
harvested
onsite

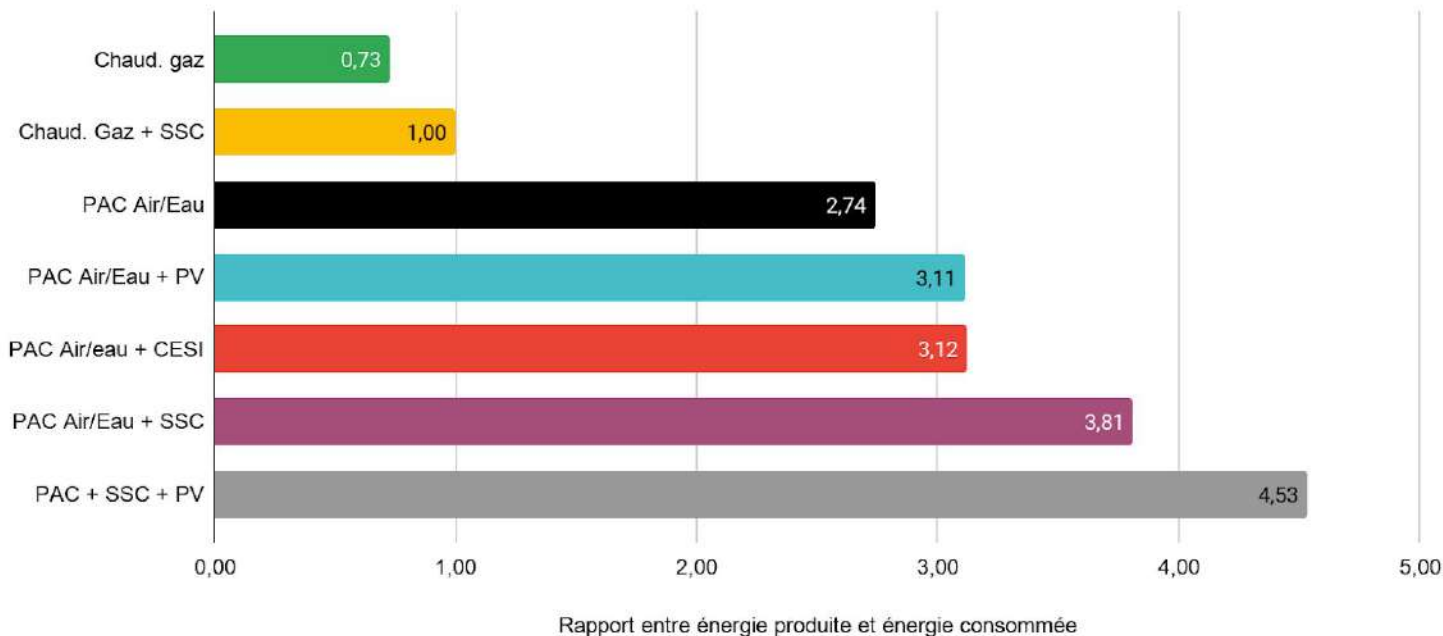
Energy
bought and
imported



Coefficient of overall performance



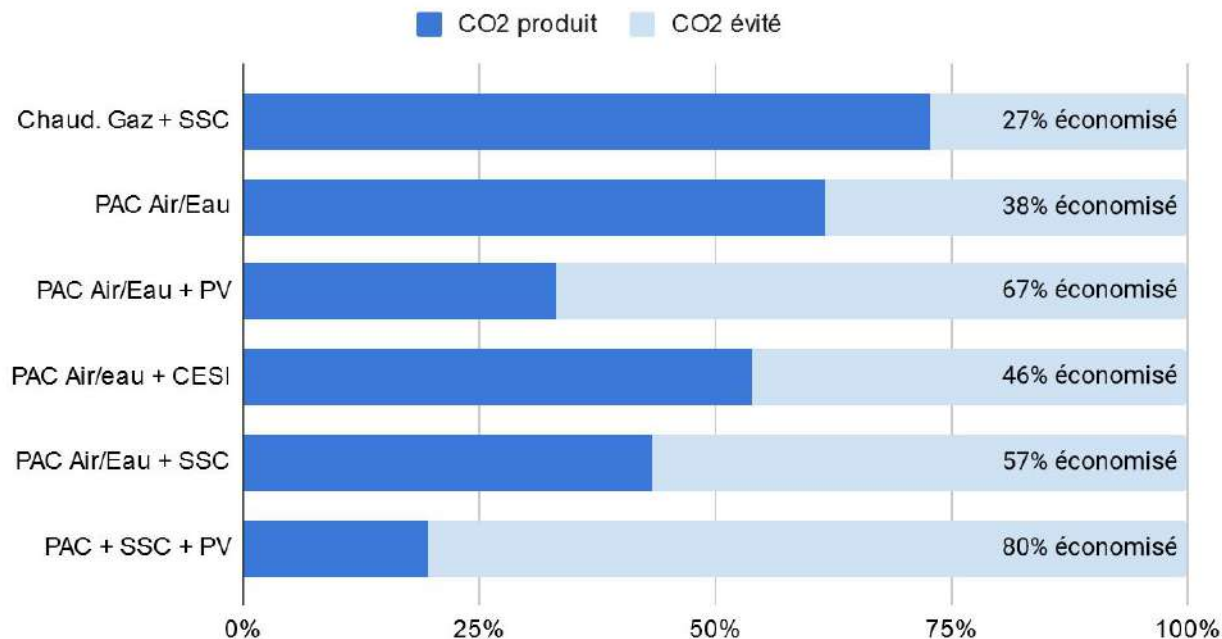
Coefficient de performance global



In this Solar Kafe #1, the winning energy system is *heat pump + solar th. combisystem + solar PV* with an overall COP > 4.5

GHG emissions avoided (scopes 1&2)

CO2 évité par système



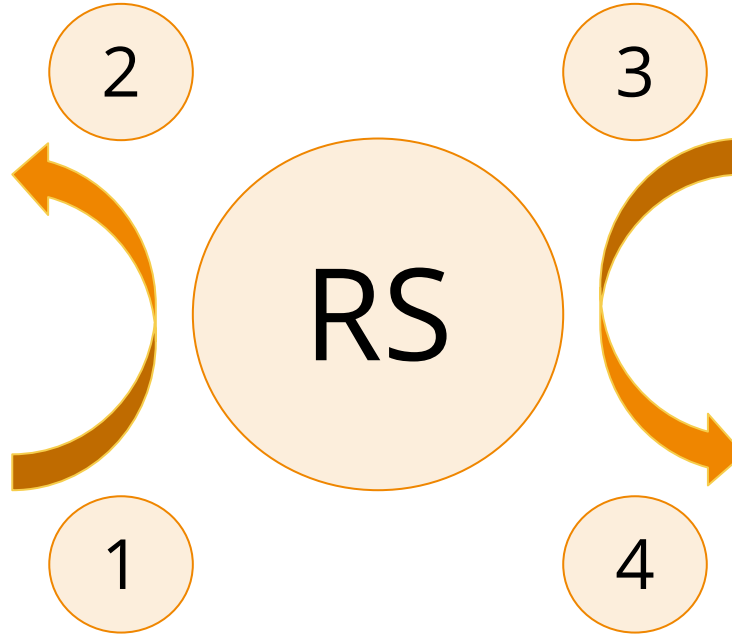
**In this Solar Kafe #1, only the energy system
heat pump + solar th. combisystem + solar PV
is compatible with the Paris Agreement**

(to stay under +1.5°C requires -74% GHGe in H&C energy systems before 2030 for France)

Benefits of reference simulation (I)

Comparison of
- system
- business
- impact
cases either intra or
inter sites

Data provided by the
supply chain +
scientific validation



Better informed
decisions through
forecasting during
design and O&M
phases

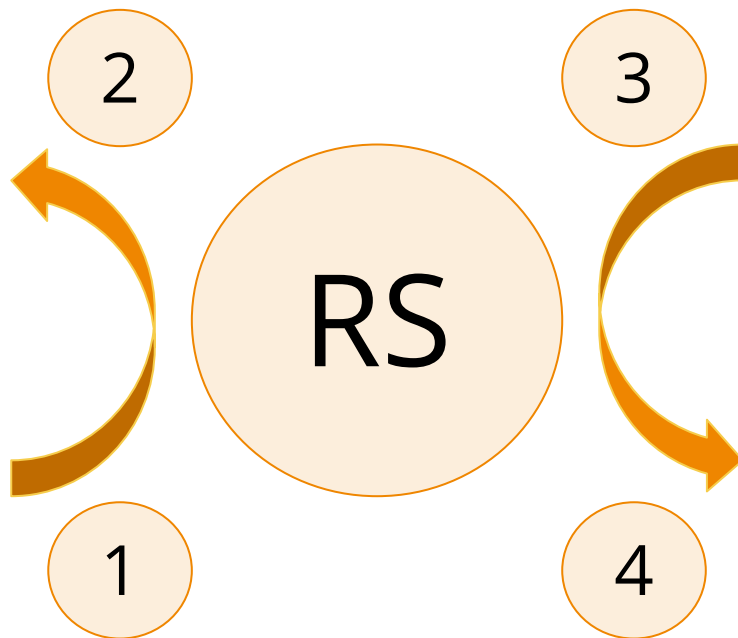
Optimised
CAPEX + OPEX

Support complex decision-making
for building owners, engineering studios, procurement

Benefits of reference simulation (II)

"Code is law": from a norm-based to a simulation-based approach to sustainability

Reference simulation platform (code + data)



Bring science into procurement + level the playing field for innovative solutions challenging the status quo

Fix dysfunctional market
Scale up healthy market

Scale up the sustainable H&C market
for truly efficient and innovative solutions



Datasheet: reference simulation within data-infrastructure.eu

- GAIA-X federated data infrastructure
 - New dataspaces through the interconnection of data
 - Cooperating autonomous components
 - Models for common concepts/behaviors + interfaces
 - Advanced smart services for an open/fair digital future
- Future of reference simulation platforms
 - Meet large-scale sustainability challenges at the EU-level
 - Help innovative solutions enter the market
(eg. harvest, store, distribute more efficiently the Sun's radiative energy)

SunPeople site data pipeline (and more) will be open sourced in July 2021

A background image showing a blurred crowd of people walking in a city square at sunset. The sun is low on the horizon, creating a warm, golden glow and lens flare effects. The people are out of focus, appearing as dark silhouettes against the bright sky. A tall street lamp is visible on the left side of the frame.

Thank you!

Projet management:

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Interested? Register on:

<http://bit.ly/sunpeople-interreg-participants-en>