



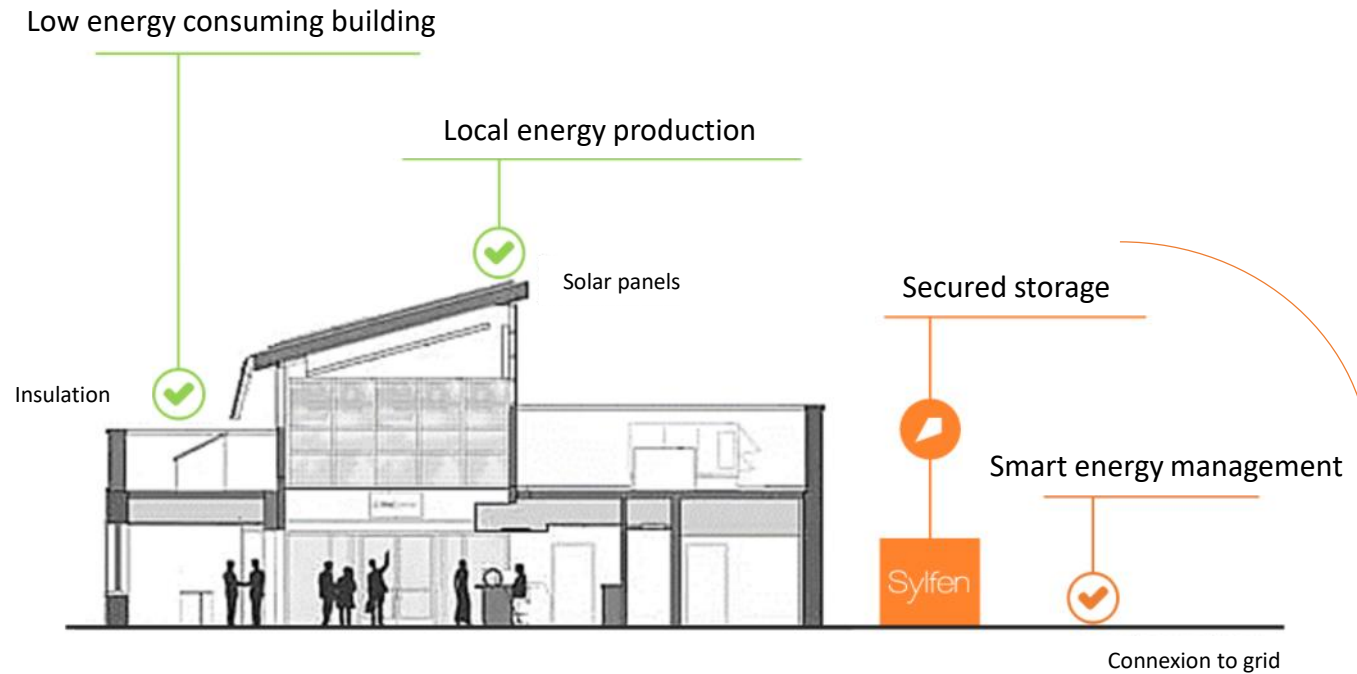
# Development of a rSOC modular product for a sustainable local Energy Supply A0603

EFCF 2022

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# Sylfen: A solution to make autonomous energy buildings



**Sylfen develops an innovative technology to produce and store in excess renewable energy and restore it by electricity and heat**



# Storage solution for buildings, districts and industry

The **Smart Energy Hub** : A hybrid system to store and supply power and heat



**70-90%**

Local Renewable Energy



**Energy Bills reduced by 50% or more**  
**CO2 Emissions reduced by 25% to 95%**

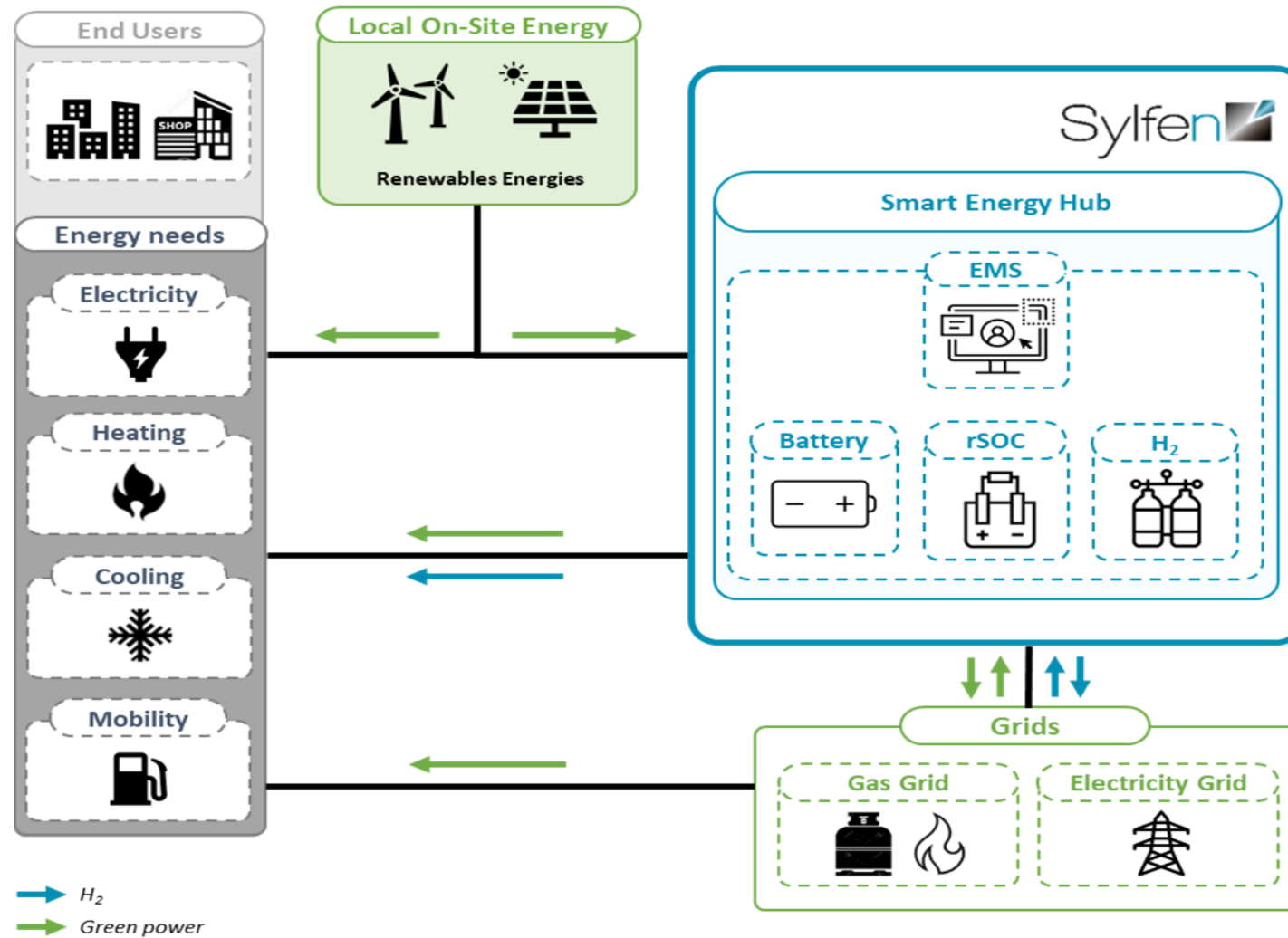


**DOUBLE RETURN ON INVESTMENT:**

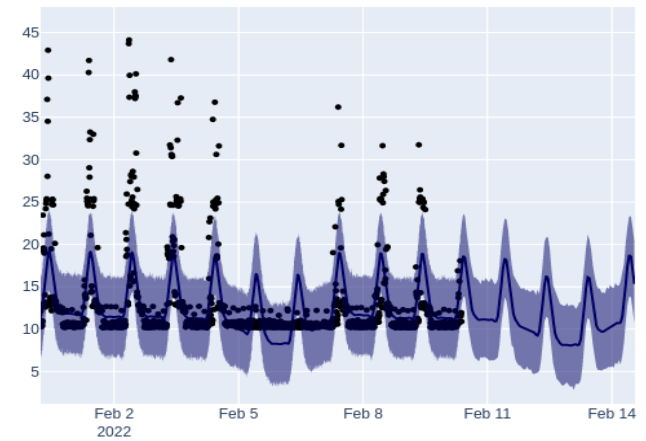
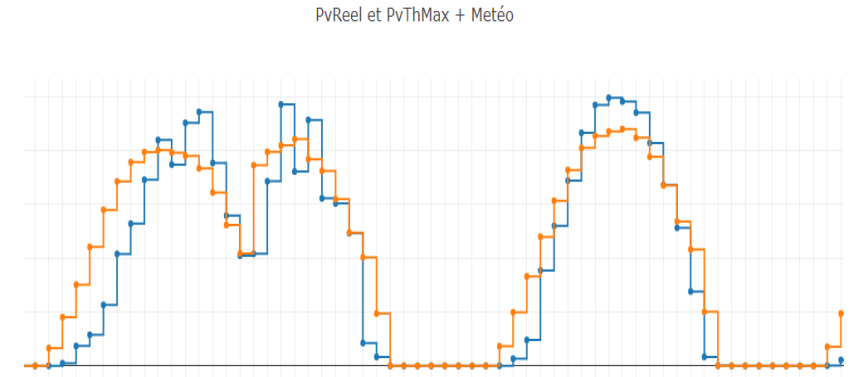
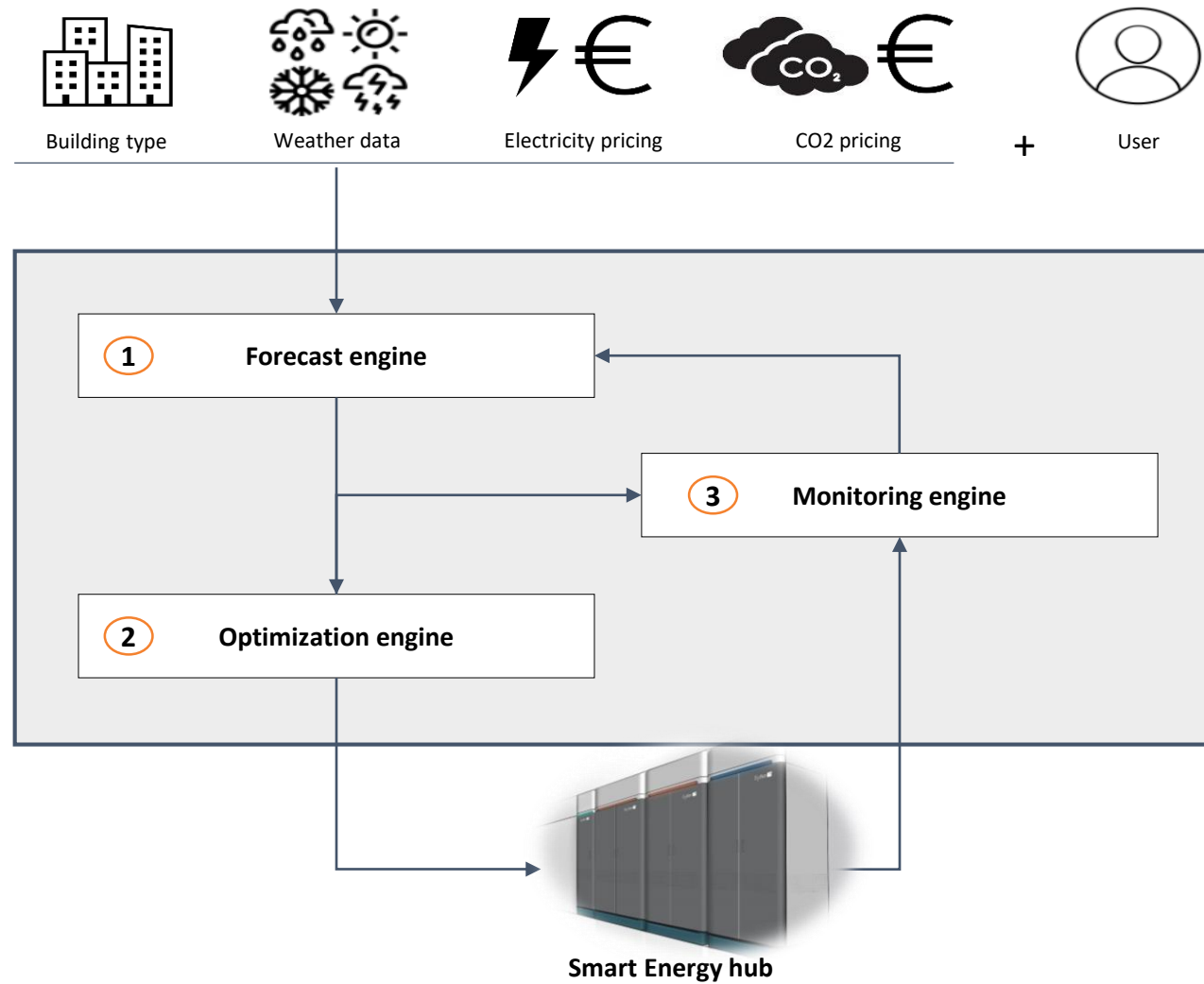
- **Real-Estate value:** image, attractiveness, ESR KPIs
- **Energy cost:** down to a 8 to 10 years R.O.I

Secure energy supply | reduction CO2 emissions | Property value | ESR commitments | Attractivity | Corporate image policy

# The Smart Energy Hub: a turnkey solution for buildings



# Energy Management System - Paseo



# Smart Energy Hub - Small Power roadmap

2018-2019  
SmartHyES  
1 stack  
10 kW SOEC

2021-2022  
Alpha  
4 stacks  
40 kW SOEC

2022-2023  
Beta  
4 stacks  
40 kW SOEC

2024  
Commercial  
1 stack  
40 kW SOEC



4 commercial orders



# Alpha state

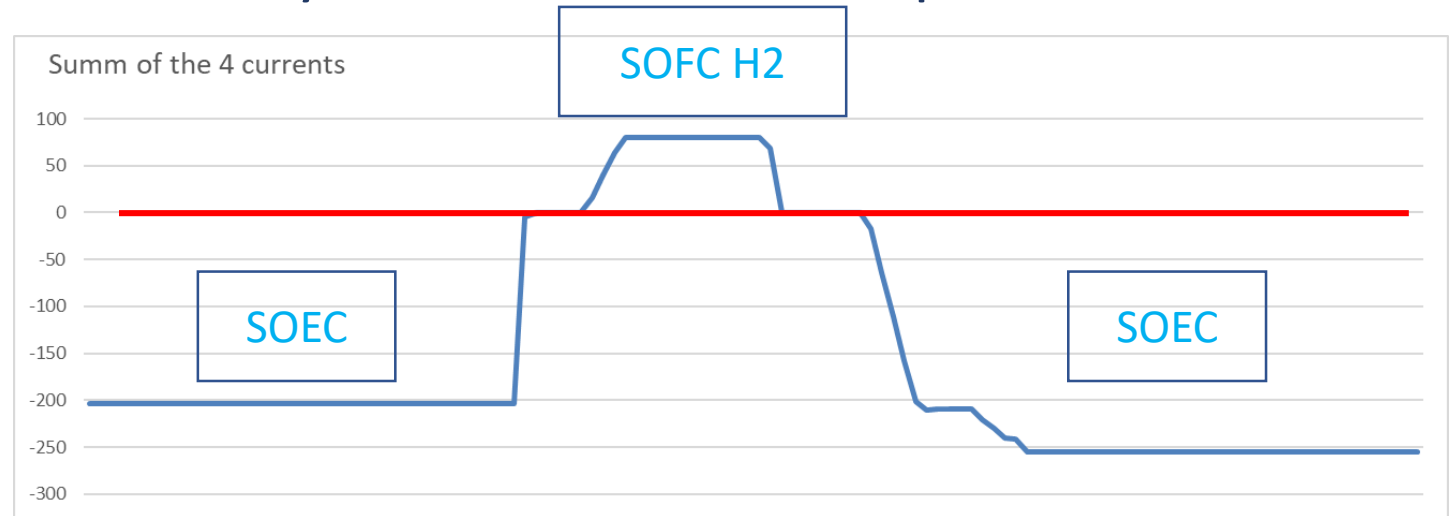
➤ Period : 01/11/2021 – 10/06/2022 - System validation and qualification

➤ Stacks

- CEA (ended)
- Genvia (in progress)

➤ Mode

- SOEC – 100%
- SOFC H2 – 100%
- SOFC Natural gaz – 20%

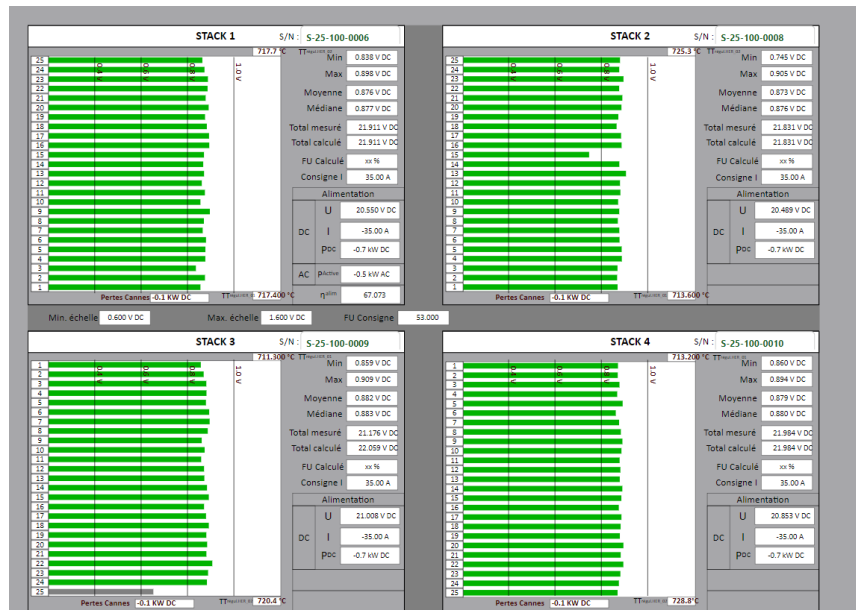


Operating hours	H2 produced	Full automatic switching between modes
(h)	(Nm3)	Count
>4000	1 500	80

# 4 stacks in operation

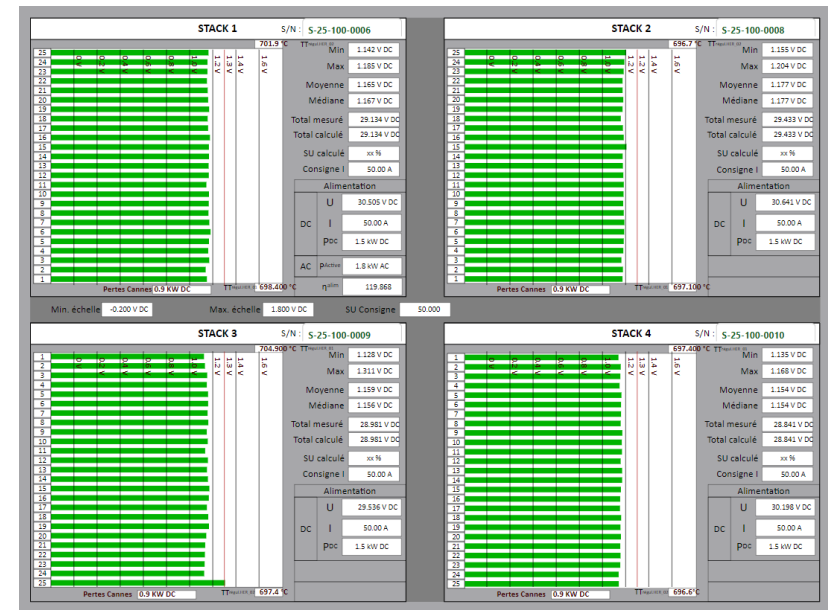
## ➤ SOFC H2

- 35 A per stack
- 53% stack fuel utilization



## ➤ SOEC

- 50 A per stack
- 50% steam utilization





# Conclusion

## ➤ ALPHA

- Validation in progress

## ➤ BETA

- REFLEX system integration : started
- GIFT installation : December 2022
- 4 Commercial installations : from March 2023 up to June 2023

## ➤ In 2024, thanks to larger stacks, we will come back to present the Smart Energy Hub Medium Power

- 400 kW SOEC