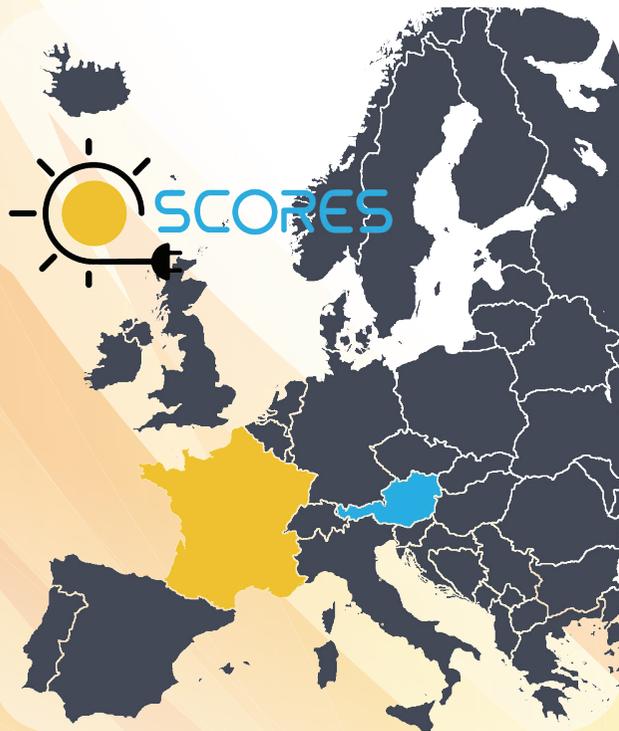


## DEMONSTRATION

Demonstration of the integrated hybrid energy system will take place in two real buildings representative of different climate and energy system configurations for three cases, in Northern Europe (Austria) with and without a heat grid, and in Middle/Southern Europe (France) without a heat grid. Through smart combination and optimization on the system level SCORES will evaluate technical, economic and environmental benefits being larger than the sum of their parts.



## IMPACT

Impact of the SCORES system will be a broad assessment covering various economical levels like individual home owners, housing companies, grid owners, energy companies and governments, ecological issues and also the security of supply /reduced European dependence on fossil fuels originating from instable countries from across the globe.

## PARTNERS



### PROJECT COORDINATOR

Ing. Peter van Os  
TNO  
+31 (0)65 129 99 74  
peter.vanos@tno.nl

[www.scores-project.eu](http://www.scores-project.eu)

This brochure presents the project status of April 2020.  
Produced and designed by FENIX TNT s.r.o.  
www.fenixtnt.cz 2020 ©All rights reserved.

This brochure reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.



[www.scores-project.eu](http://www.scores-project.eu)



Self Consumption Of Renewable Energy  
by hybrid Storage systems

SCORES combines and optimizes the multi-energy generation, storage and consumption of local renewable energy (electricity and heat) and grid supply, bringing new sources of flexibility to the grid, and enabling reliable operation with a positive business case in Europe's building stock. SCORES is a gamechanger in the European energy transition towards a zero-energy built environment.



The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 766464.

## OVERALL CONCEPT

The SCORES concept is based on a hybrid system combining effectively and efficiently solutions that harvest electricity and heat from the sun, store electricity, convert electricity into heat, store heat, and manage the energy flows in the building.

### BARRIERS

- Renewable energy is abundant, but variably available
- Renewable energy generation puts stringent demands on the energy grid to cope with fluctuations

- Locally produced electricity and heat from solar collectors
- District heating grid feeding from industrial waste (when available)
- Surplus renewable electricity from the grid

IN



SCORES HYBRID SYSTEM

Electricity storage

Power to heat conversion

Heat storage

OUT

- Space heating (in winter only)
- Domestic hot water (daily)
- Electricity use
- Re-feeding of electricity (and heat) into the grid

### SOLUTIONS

- Increase the self-consumption of local renewable generation
- Introduce new sources of flexibility for the grids

## PROJECT OBJECTIVES

*The main goal of SCORES is to demonstrate in the field the integration, optimization and operation of a building energy system including new compact hybrid storage technologies, that optimizes supply, storage and demand of electricity and heat in residential buildings and that increases self-consumption of local renewable energy in residential buildings at the lowest cost.*

**This hybrid energy system removes the technical barriers for better use of available energy sources in two ways:**

- **at the local level increase the self-consumption of local renewable generation:**

Increasing the local renewable energy generation in buildings with a high share of local consumption bridges the gap between supply and demand for both electricity and heat, considering that renewable energy is in principle abundant, but variably available, in order

- 1) not to inject useless electricity (or inject as little as possible) to the grid when the demand is low and
- 2) not to lose energy (electricity or heat) that cannot be consumed.

For this purpose SCORES will develop and demonstrate local storage technologies for electricity and heat at short (hours-days) and long (weeks-months) time scales.

- **at the global (energy grid) level introduce new sources of flexibility for the grids**

SCORES will also increase the storage capacity of the grid as it enables home-owners to offer storage of energy in their homes (behind the meter) to the grid operator in order to provide an additional source of grid-flexibility (e.g. the seamless exchange of energy in different forms). This will delay / decrease investments in the energy grids otherwise required for increasing power capacity reserves, by grid interconnection or reinforcement and by storage of electricity before the meter. The financial compensation received by the home

