



# Commercial-scale SOFC systems

The **ComSOS - Commercial-scale SOFC systems** - project involves the demonstration of fuel-cell based energy solutions in real client environments, in cooperation with leading European system experts.

The ComSOS project aims at **strengthening the European SOFC industry's world-leading position** for SOFC products in the **range of 10-60 kW**, totalling 450 kW<sub>e</sub>. Through this project, manufacturers prepare for developing capacity for serial manufacturing, sales and marketing of mid FC CHP products. All manufacturers will validate new product segments in collaboration with the respective customers and confirm product performance, the business case and size, and test in real life the distribution channel including maintenance and service. In function of the specific segments, the system will be suitable for volumes from few 10's to several 1000 systems per year.

ComSOS is an EU funded project aimed to validate and demonstrate fuel cell based combined heat and power solutions in the mid-sized power ranges of 10-12 kW, 20-25 kW, and 50-60 kW, referred to as **Mini Fuel Cell Combined Heat and Power - Mini FC-CHP systems**. The outcome gives proof of the superior advantages of such systems, underlying business models, and key benefits for the customer.

The ComSOS project will implement a total of **25 SOFC technology-based power generation solutions around the world** bringing the retail sector to an unprecedented **high efficiency** and **environmentally-friendly** approach to energy consumption.



Innovative, commercial and energy-efficient Solid Oxide Fuel Cell (SOFC) applications are thus emerging from the ComSos EU project.

The technology and product concepts, in the aforementioned power range, has been developed in Europe under supporting European frameworks such as the FCH-JU.

The project will provide clear evidence to the commercial and retail sector, the building sector and the generic public of the **key advantages of SOFC systems**: high electrical efficiency (up to 60%, the highest achievable among competitors), modularity and zero emissions to atmosphere (NO<sub>x</sub>, SO<sub>x</sub>, PM, VOC ...). Moreover, the core actors of the consortium are three SOFC system manufacturers aligned with individual strategies along the value chain.



## OBJECTIVE

VALIDATE AND DEMONSTRATE FUEL CELL BASED COMBINED HEAT AND POWER SOLUTIONS (MINI FC-CHP SYSTEMS) IN THE MID-SIZED POWER

RANGES OF  
**10-12KW**  
**20-25KW** AND  
**50-60KW**

## INNOVATION

### MINI FC-CHP SYSTEMS FOR COMMERCIAL APPLICATIONS

**23 UNITS** WITH A TOTAL POWER OUTPUT OF  
AT LEAST **450KW**

COMSOS **TARGET FOR  
ELECTRICAL EFFICIENCY IS  
MORE THAN 50%** AND  
OVERALL EFFICIENCY  
OVER 90%.

LIFETIME MORE THAN **10** YEARS,  
DURABILITY MORE THAN **90%**  
ACHIEVED DURING COMSOS PROJECT.

THE AVERAGE CONSUMPTION OF  
A 350 M2 FAST FOOD IS  
305 MWH/Y ELECTRICITY AND  
205 MWH/Y HEAT.

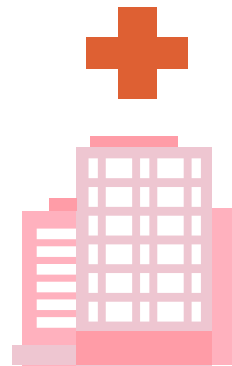
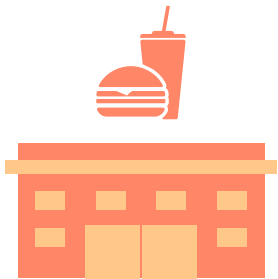
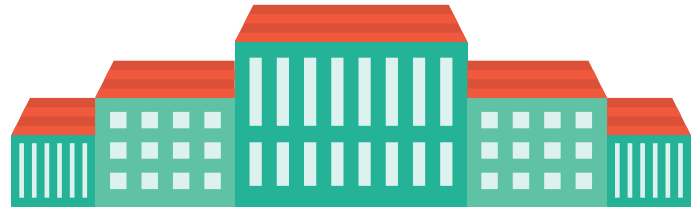
A 50 KWE SOFC SYSTEM CAN COVER  
**94%** OF THE ELECTRICAL LOAD  
AND **70%** OF THE THERMAL LOAD  
WITH A PRIMARY ENERGY SAVING OF  
**200 MWH/Y (-28%)**  
AND A CO<sub>2</sub> SAVING OF  
**11.6 TONS CO<sub>2</sub>** PER YEAR.





## END USERS

HOSPITALS  
OFFICE BUILDINGS  
SUPERMARKETS  
SMALL COMMERCIAL SITES  
SHOPPING CENTERS  
HOTELS  
SMALL DATA CENTERS  
NEAR ZERO ENERGY BUILDINGS (NZEB)



## PARTNERS

ComSos is a 42-months project (2018-2021) with a budget of EUR 10.2 million, granted EUR 7.4 million under the EU's Horizon 2020 programme managed by FCH-JU.

The project, coordinated by VTT includes the following partners:

- **Convion Oy (Finland),**
- **Sunfire GmbH (Germany),**
- **SOLIDpower SpA (Italy),**
- **Politecnico di Torino (Italy),**
- **Blueterra (The Netherlands),**
- **HTceramics SA (Switzerland).**



POLITECNICO  
DI TORINO





More info at:  
**<https://www.comsos.eu/>**

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