High efficiency cogeneration systems for the commercial & business sector

The EU-funded project aims to install 25 high efficiency and zero emissions Solid Oxide Fuel Cell systems in the commercial and business sector

The project

The ComSos project will implement **25 SOFC technology-based power generation solutions (mini CHP systems)** around the world bringing the commercial sector to an unprecedented high efficiency and environmentally friendly approach to energy consumption.
Innovative, commercial and energy-efficient SOFC applications are thus emerging from the project which will provide clear evidence to the commercial sector, the building sector and the general public of the **key advantages of SOFC systems**:

- **High electrical efficiency (up to 60%,** the highest achievable among competitors)
- Modularity
- **Zero emissions to atmosphere** (NOx, SOx, PM, VOC ...).

The first COMSOS installation has been completed!

A **25 kW SOFC module by Sunfire** is running in **Hsinchu (Taiwan)** in an industrial end-user site since **January 2020**.

Stay tuned on www.comsos.eu for news and updates on the DEMO site operation!

The technology

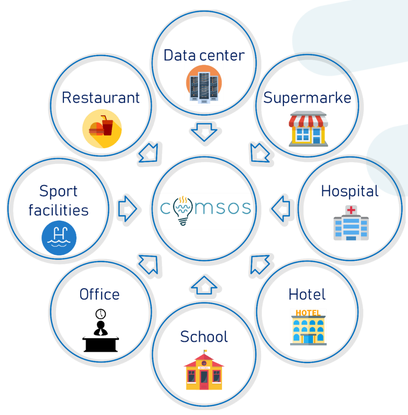
SOFC manufacturers involved in the COMSOS project are the 3 key SOFC producers in Europe and are:

- **Convion Oy (Finland)** with a 50 kWe SOFC module - convion.fi

- **SolidPower (Italy)** with a 12 kWe SOFC module - www.solidpower.com

- **Sunfire (Germany)** with a 25 kWe SOFC module - www.sunfire.de

The COMSOS installations and examples of costumers for the SOFC-CHP system are: **Restaurant, Sport centers, Hotels, Supermarkets, Shopping malls, Data centers, Hospitals, Universities and Research Centers, Office buildings, Small industrial areas**... And many others!



Market & business analysis

- Expected cost reductions will result in interesting business cases for mass applications
- Interesting business case for large number of customers at target costs.
- Already an interesting business case for Power Purchase Agreements (PPAs) offering constant energy costs.

Key value drivers for the SOFC installation in the building sector

(For a 30 kW system working in base load)

Value of electricity production per year **€20.000 - €40.000**	*Value of DC savings per year* **€800 - €1.400**
Value of heat fuel savings per year **€0 - €6.000**	*Value of avoided need back-up power per year* **€6.000 - €9.000**
Value of avoiding NOx emissions per year **€0 - €100**	*Value of a higher reliability per year* **€100 - €3.600**
Value of carbon reduction per year **€1.600 - €3.200**	*Value of avoiding grid cost per year* **€800 - €4.000**
Value of higher tie per year **€6.000 - €12.000**	

Several studies have shown the **large potential in cost reduction** that can be expected. This is due to standardisation, automation and bundled sourcing strategy.
Cost down depends on production volume. Production volume needs to go up to reach mass market.
From previous research it can be concluded that **cost reduction of 40% by production of 100-1000 units** and a cost reduction of 80% at a production volume of 10.000 to 100.000 units.

The graph shows the acceptable cost price when end users are offered a **PPA for 15 years with a 10% reduction compared to the expected market price for 15 years**. In this case, the **acceptable cost price becomes close to the current system costs**. The security and predictability of the price level of their energy can be a compelling reason to choose for SOFC technology.

*Have you become enthusiastic about this innovative green energy technology and want to learn more? Keep an eye on our website for the latest project news, contact us for more information or **join our Industrial Advisory Board** to contribute to this ambitious project!*

Contacts:
Dr. Jari Kiviaho
Email – jari.kiviaho@vtt.fi
Website – www.comsos.eu

This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No 779541. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme.