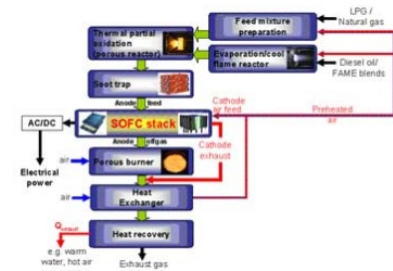


## FlameSOFC R&D project

# Flame SOFC



The objective of the FlameSOFC project is the development of an innovative SOFC-based micro-CHP system capable to operate with different fuels and fulfilling all technological and market requirements at a European level.

The main focus concerning the multi-fuel flexibility lies on different natural gas qualities and LPG, but also on liquid fuels (diesel like heating oil, industrial gas oil IGO and renewables like FAME). The target nominal net electrical output is 2 kW<sub>el</sub> (stack electrical output ca. 2,5 kW), which is expected to represent the future mainstream high volume mass market for micro-CHPs. An advanced planar, compact SOFC-stack will be developed and combined with an innovative, compact and robust fuel processor, which will be able to process many different fuels without catalytic components, thus enabling the potential for a long lifetime of >30.000h. A simple, highly integrated and reliable system design will result via the integration of advanced peripheral components like the advanced Thermal Partial Oxidation reformer (T-POX), the multi-purpose off-gas burner, the compact heat exchangers, the cool flame vaporizer and the particle filter. Advanced control strategies will assure an optimal integration in an electrical network environment. The overall efficiency targets are >35% net electrical efficiency and >90 % total CHP efficiency, which will result in 2 tons of annual CO<sub>2</sub> reduction per unit (compared to the combination of a condensing boiler and European electricity mix). The SOFC fuel cell technology will be applied because it is less sensitive to impurities and variations in the fuel composition than other fuel cell systems and has a better cost reduction potential than other fuel cell types. The high temperature level of the SOFC technology gives also a better integration potential in co- or tri-generation applications. The main target application is a micro CHP system for single or two-family residential homes with electrical grid connection.

The many partners being:

- EBZ Entwicklungs- und Vertriebsgesellschaft Brennstoffzelle mbH
- HTceramix SA
- Fagor Electrodomesticos S. Coop
- RFNC
- HTceramix SA
- promeos GmbH
- Polito, Politecnico di Torino
- **Stobbe Tech A/S**
- National Technical University of Athens
- Elcotherm
- Fagor Electrodomesticos, S. Coop.
- Öl-Wärme Institut
- Imperial College London
- Ecole Polytechnique Fédérale de Lausanne
- University of Erlangen
- Friedrich-Alexander-Universität Erlangen-Nürnberg
- TU Freiberg
- Ikerlan S. Coop.
- VDI/VDE-IT
- Budapest University of Technology and Economics
- Energy research center of the Netherlands
- Instituto Superior Tecnico
- ECBREC

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