

Annex 33: Stationary Fuel Cells

Annex 33 is an application type annex with the objective to better understand how stationary fuel cell systems may be deployed in energy systems. The work focuses on the requirement from the market on fuel cells for stationary applications; both opportunities and obstacles that must be overcome are investigated and discussed. The market development is followed closely with a special focus on fuels, environment and competitiveness.

In Annex 33, the work focuses on fuel cells requirements for all kinds of stationary applications, grid connections and in some cases stand-alone applications. The possibilities to enter the market in niche and broad applications are investigated. Important opportunities where fuel cells have advantages over existing, competing technologies and the obstacles that must be overcome are discussed, with recommendations for new regulations also discussed and made.

The market activities for small stationary fuel cells for residential use have increased significantly. The first major task in the current annex is to investigate market possibilities for residential stationary fuel cells if and where there is a competitive viable market for such fuel cells.

A second essential topic for Annex 33 is to study different fuels for stationary fuel cells and fuels where fuel cells can have a significant advantage over competing technologies:

- Renewable biofuels and hydrogen from intermittent power sources such as solar and wind;
- Fuels that do not compete with food production;
- Waste fuels;
- Anaerobic digester plants, sewage gas; and
- Waste from agriculture or from the food industry.

A special study is made on the availability and use of surplus and cheap hydrogen.

A third Task is to investigate the consequences, and especially the opportunities, for fuel cells caused by the new European Building Directive (EPBD). The conditions for the EPBD are different for different countries and regions in Europe. Also other directives will be looked into like the Energy Efficiency Directive (EED) and the Ecodesign and Labelling Directive.

A fourth task is to investigate the development of the technology and the market for large fuel cell plants especially high temperature fuel cells that are often used in parallel with the grid in sensitive applications, such as hospitals, banks, offices, warehouses and supermarkets. The state of the art will be studied by analysing different projects especially larger fuel cell plants.

All fuel cell technologies and sizes under development are considered for analysis in Annex 33.