

Portable Applications and Light Traction

J. Garche

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Abstract

It is reported about low-power FC systems (< 250 W) and high-power systems (< 5 kW) for portable applications and light tractions. Based on the application it is derived the demand on fuel cells. For portable applications and light traction PEMFCS; direct liquid fuel cells (mainly DMFC) and SOFCs are discussed. Furthermore about the fuel supply is reported. Mainly liquid fuels are applied, which are used directly (alcohols, on ethanol, formic acid, sodium borohydride, dimethylether) or via reforming to H₂-reach gases (alcohols, LPG). But also hydrogen is used stored in high-pressure cylinders or hydrides. The whole FC system (stack, gas processing, management system, and power conditioning) is described. Examples for portable power generators (500 W–5 kW) as backup power, grid-independent generators and auxiliary power units (APUs) are given. Also low-power portable applications are described in the ~25 W region (e.g. mobile and cordless phone, pagers, walkmans) and in the 25–250 W range (e.g., notebook, professional camcorder, toys). In the same way military applications are discussed, which have special requirements on the thermal and noise signature and the robustness of the systems. Because the power requirement of some special vehicles (e.g. scooters, motorbikes, forklifts, boats recreation vehicles) is in the range of the power of portable fuel cell, in this chapter are discussed also light traction applications.

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