

Fuel Cell Refrigerated Trailer

client: Fuel Cell Refrigerated Trailer Consortium (composed of representatives from a UK supermarket, industrial gases company and refrigerated trailer company).

client brief: To assess the technical feasibility of a fuel cell refrigerated trailer (FCRT).

our solution: Assess the techno-economic issues of PEM fuel cells and hydrogen storage for FCRT up to 2010. Propose a development strategy.

description: Refrigerated trailers are currently powered by diesel generators which are noisy and emit significant quantities of CO₂. The FCRT consortium was formed to investigate the opportunities for a hydrogen fuel cell powered chiller which would replace the incumbent technology, and employed Element Energy to assess the technical viability.

We undertook a detailed techno-economic study of fuel cell systems and hydrogen storage based around an 11 kW electrical power output. The economics were assessed at current prices and also estimated for modelled future reductions in the cost of hydrogen technologies. Hydrogen storage options were analysed to produce a schematic design for a system. Integration options into existing trailers were proposed with a view to the production of two trailer prototypes.

Funding initiatives were discussed and a business strategy developed for the deployment of fuel cell refrigerated trailers in the future.