

STATUS OF THE SOFC DEVELOPMENT AT HALDOR TOPSØE/RISØ

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The Consortium of Haldor Topsøe A/S and Risø National Laboratory is focussing on the development of cost-effective anode-supported cells and SOFC stacks for operation at intermediate temperatures. The cell production pilot plant with a capacity of more than 1 MW per year has now been in operation for more than one year. A fully up-scaled production process for the anode-supported cells has been established and uniform cells are now produced routinely for test and stack development. The cell manufacturing technology has three major processing steps: Tape casting, spray moulding and co-firing [1]. Optimisation of the composite cathodes has led to a significantly higher cell performance at low operation temperature and to a reduction of the stack cost. Mechanical robustness and operation durability of the cells and stacks are prioritised. The fracture strength of the cells is about 280 MPa in oxidised as well as in reduced stage. Stacks include ferritic steel interconnects, ceramic coatings and glass seals. Theoretical stack and system modelling is used to optimise the operation conditions and design. By year 2004, the development program aims at the demonstration of SOFC stacks and systems in the 5 kW size range operating below 850°C.

REFERENCES

[1] N. Christiansen, S. Kristensen, H. Holm-Larsen, P.H. Larsen, M. Mogensen, P. Vang Hendriksen, S. Linderøth, in 5th European SOFC Forum, Ed. By J. Huijsmans, Vol. 1, p.34, Lucerne, Switzerland (2002).

