

Field testing of SOFC at CMR Prototech

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CMR Prototech has recently performed field tested of two different SOFC systems, which will be presented here. The first one is a three kW-class CHP system operated on pre-reformed natural gas, named the BKK-pilot. To this day, it has been operated for approximately 1800 hours, and a new test period has just started. The test show steady and degradation free operations, where all changes in the performance could be explained by variation in temperature or fuel quality. A further discussion of the test results, including the data from the second test period will be presented in the poster. The project is supported by BKK and Innovasjon Norge.

The other pilot system is a 2 kW so-called *Zero Emission Gas* (ZEG) lab demo. Here, the high temperature fuel cell is combined with sorption enhanced steam reforming for pre-combustion CO₂ capture (CCS). The sorption material is regenerated by using the heat from the fuel cell and excess heat in the process is converted to extra hydrogen. The system contain no afterburner, instead the extra hydrogen is collected a high value process. The process has a potential for efficiencies from 80 – 90 %, depending on the level of integration. The firsts tests seems very promising, both in case of gas quality of the reformat, purity of the released CO₂ and fuel cell operation. More results from the second test period will be presented in the poster. The technology is developed together with Institute of Energy technique (IFE) and supported by Norwegian research counselor and StatoilHydro.



Figure 1. The 3kW class BKK-pilot

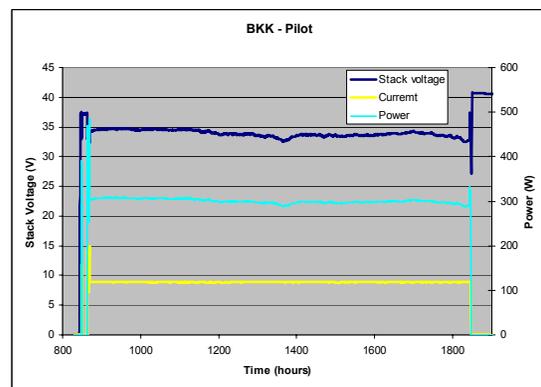


Figure 2. Operation data for the BKK-pilot.



Figure 3. The ZEG-power plant, combined electricity and hydrogen production with CCS.