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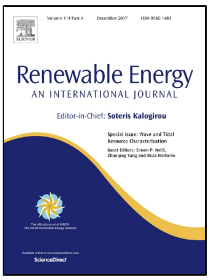

Development of a centrifugal fan with increased part-load efficiency for fuel cell applications

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Centrifugal fan with variable cross-sectional area of the diffuser and volute enables to increase both efficiency and pressure ratio for operating points at off-design to achieve high overall efficiencies in a fuel cell system at part load operation.

A demonstrator centrifugal fan is investigated by means of numerical simulations (CFD), performance measurements at the blower test rig, and Particle Image Velocimetry (PIV) measurements.

A combined analytical and numerical process chain for the preliminary design and the performance prediction of the diffuser and volute geometries is developed.