

1. Conclusion and Outlook

Starting with the optimization of the fuel cell, it is evident that a desired power density curve can be approximated very well by adjusting the parameters through the optimization. Interestingly, different parameter settings also lead to the same power-density graph. This means that the solution is not clear here, which in turn could be used for a specific desired parameter setting. For further investigations it would be important to include the temperature generated by the operation in the simulations, which was chosen as constant for this work. The effect of this temperature on performance is desirable.

Next was the achievement of a Statistically uniform and isotropic field studied in an electromagnetic reverbration cuboid chamber, with a Vivaldi antenna as source. The field turbulence was provided by a stirrer whose geometry plays a crucial role in field distribution. In this work, the shape of the stirrer wings were optimized to achieve the best possible field distribution. This enabled the desired values to be achieved except for the real part of the field in the y-direction. In order to further improve the field distribution values, the number of stirrers was increased to three pieces. The wing shapes have also been optimized here. The field in the y-direction could be improved, but the field values in the other spatial directions deteriorated. Despite this fact, in all spatial directions, the desired acceptance limits for the field distribution was observed. Next, a certain number of two different geometric objects (cone and sphere) were attached to the wall chamber and their influence on the field distribution was examined. Here the hemispheres provided a better field distribution than cones. Here the hemispheres provided a better field distribution than cones, so this would be a better choice for further investigation. For further investigations it would also be interesting to optimize the topology of the stirrer. To do this, one does not assume a rectangular sheet metal as the basic shape of a stirrer, but calculates the optimal shape completely mathematically. Studying other geometric objects and their shape and number that could be placed on the wall of the chamber would also be of scientific importance.