In this paper, weight optimization of radial magnetic bearing (RMB) for varying poles has been carried out using multi-objective genetic algorithms (MOGAs). The total weight of RMB and
copper loss has been selected as the minimization type objective function. The maximum space available, saturation flux density, the maximum current densities that can be supplied in the coil and the load to be lifted have been chosen as constraints. The coil space radius, pole tip radius, radial length of coil and number of poles has been proposed as design variables. Apart from the comparison of performance parameters in the form of figures and tables, designs are also compared through line diagrams. Post-processing has been done on the final optimized population by studying the variation of different parameters with respect to objective functions. A criterion for the choice of one of the best design based on the minimum weight of bearing showing optimum copper loss.

Reference


Index Terms

Computer Science  
Evolutionary Computation

Key words

Radial Magnetic Bearings  Genetic Algorithms
Optimum Design

Multi-Objective Optimization