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# Optimal Rotor Design of an 150kW-Class IPMSM through the 3D Voltage-Inductance Map Analysis Method

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**Abstract :** This presents a methodology to determine detail design directions of an 150kW-class IPMSM (interior permanent magnet synchronous motor) and its detail design. The basic design of the stator and rotor was conducted. After dividing the designed models into the best cases and the worst cases based on rotor shape parameters, Sensitivity analysis and 3D Voltage-Inductance Map (3D EL-Map) parameters were analyzed. Then, the design direction for the final model was predicted. Based on the prediction, the final model was extracted with Trend analysis. Lastly, the final model was validated with experiments.

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