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## Calculation of Optimal Geometric Parameters of Electrical Apparatus for Controlling the Irrigation System

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### Abstract

The reduction of size of electrical apparatus is a critical objective in the design and utilization of irrigation systems, especially for traction electric drives employed in sprinkler machines. In this study, mathematical models were developed using the target function method, integrating relative measures of technical level and relative geometric controlled variables, to quantify the mass and cost of an armored electromagnetic system. Through optimization of the target functions, extreme values corresponding to mass and cost criteria were derived. Additionally, the validity of the mathematical models was assessed by comparing the obtained data with a real sample of the electrical apparatus. © 2023 IEEE.

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1 of 1

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