

Optimizing the Design of an Asynchronous Motor Used in the Drive System of a Multiple Unit Train

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Abstract—Some aspects concerning the optimal design and sizing of an asynchronous traction motor are described. The motor must be integrated with a static converter in the traction system of a locomotive driving a multiple unit train. This drive system is aimed for light power applications, and the parameters necessary for the analysis of the regenerative braking system are also accounted for. An algorithm for the optimal design of the asynchronous motor is developed, considering the main variables as the electromagnetic stresses. The motor dimensions are computed starting from the desired parameter values. The optimization algorithm is implemented in Mathcad, any parameter modification leading to a new motor model.

Keywords—asynchronous motor; optimal design algorithm; Matchad parameters adjustment; motor sizing

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