بيانــات عــن البحــث الثاني المقــدم للترقيــة

2	رقم البحث فى القائمة المعتمدة
تحليل توصيلة مقترحه لمولد الحث الذاتي أحادي الطور ثنائي الملف والذي يعمل بجهد وتردد ثابتين	عنوان البحث باللغة العربية
Analysis of a proposed connection for the two-winding single-phase self-excited induction generator operating at constant voltage and frequency	عنوان البحث باللغة الانجليزية

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البحث مشتق من رسالة الدكتوراة للباحثه هبه محمود صوفي	هل البحث مشتق من رسالة علمية؟

ملخص البحث باللغة الإنجليزية:

This paper introduces the steady-state and dynamic behaviors of a proposed connection for the two-winding single-phase self-excited induction generator (TWSPSEIG) equipped with an excitation capacitor and a compensation capacitor for operation at constant load voltage and frequency irrespective of the no-load or different load conditions. The performance equations at steady-state conditions are attained by applying loop impedance method via the exact equivalent circuit models of the TWSPSEIG based on the double revolving field theory. Keeping the values of the excitation capacitor and the compensation capacitor as unknowns, two second-order equations, for given values of generator parameters, prime mover speed, frequency and load impedance, are derived. These equations are solved using simple iterative method to calculate the optimum values of the two capacitors under the constraints that the load voltage and frequency are constant. The range of capacitor variations for variable load at variable prime mover speed is also calculated. The steady-state results are verified by developing the dynamic model of the proposed connection incorporating its nonlinearity behavior and various no-load and load conditions. The dynamic behavior of the proposed connection proves the capabilities of the proposed configuration and calculation method to maintain both the load voltage and frequency constants. A comparative study between the performances of the proposed connection and the traditional connection of the TWSPSEIG is presented to illustrate the merits of the proposed connection.