



Reactive power compensation using a fuzzy logic controlled synchronous motor

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Abstract

This paper introduces the use of a fuzzy logic controlled synchronous motor for reactive power compensation. The fuzzy logic controlled synchronous motor can give a very fast response to the reactive power required by the load. Therefore, the over or under compensation and time delay are eliminated in this system. It is concluded that the reactive power compensation system with a fuzzy logic controlled synchronous motor is reliable, sensitive, economical, faster and more efficient than an other one with capacitor groups.

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1. Introduction

AC electrical machines and other inductive loads used in industry draw reactive power from the line. The reactive power causes overloading effects on the line, power breakers, transformers, relays and isolations, but this reactive power cannot be transformed into mechanical power. In addition, the reactive power also increases the dimension of cables used in the transmission line. So, the structure of all equipments used in the line has to be strong enough to carry the huge weight of the cables. Therefore, the cost of the system is increased, and the efficiency of the system is reduced. To reduce the cost and to improve the efficiency, the reactive power drawn from the line has to be decreased by supplying it from some other source.

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