

## Artificial Neural Networks Face to Sudden Load Change for Shunt Active Power Filter

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**Abstract :** The shunt active power filter (SAPF) is not destined only to improve the power factor, but also to compensate the unwanted harmonic currents produced by nonlinear loads. This paper presents a SAPF with identification and control method based on artificial neural network (ANN). To identify harmonics, many techniques are used, among them the conventional p-q theory and the relatively recent one the artificial neural network method. It is difficult to get satisfied identification and control characteristics by using a normal (ANN) due to the nonlinearity of the system (SAPF + fast nonlinear load variations). This work is an attempt to undertake a systematic study of the problem to equip the (SAPF) with the harmonics identification and DC link voltage control method based on (ANN). The latter has been applied to the (SAPF) with fast nonlinear load variations. The results of computer simulations and experiments are given, which can confirm the feasibility of the proposed active power filter.

**Keywords :** artificial neural networks (ANN), p-q theory, harmonics, total harmonic distortion

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