عنوان مقاله:

Long Range Forecasting of Hourly Power System Load Using Haar Wavelet Transform

محل انتشار:

چهارمین همایش ملی انرژی (سال: 1382)

تعداد صفحات اصل مقاله: 14

نویسندگان:

Awale - *Department of Electrical Engineering, V.J.T.I., Matunga, Mumbai, India*

Bhirud - *Department of Computer Technology, V.J.T.I., Matunga, Mumbai, India*

Basu - *Department of Electrical Engineering, Indian Institute of Technology, Kharagpur*

خلاصه مقاله:

Medium range forecasts of hourly load demand for a span of 24 hrs (a day) to 168 hrs (a week) are required for the preparation of short term maintenance schedules of unit auxiliaries and peaking stations apart from maintaining security constrains and minimizing operational costs. Long range forecast of hourly load of the span 52 weeks (a year) not only facilitates preparation of capital repair schedules of generating units for preventive maintenance in an integrated systems, but may also obviate the need for medium range forecasts in certain situations. The conventional multiplicative SARIMA models are inadequate for long penetration into the future, the divergent error levels and the complexity in the evaluation of the parameters of such models; render these tools ineffective in complex practical situations. The varying nature of power system data having multiple periodicity of 24 hrs (1day) / 168hrs (1 week) makes it suitable for the application of digital image processing techniques. An attempt has been made to represent the data in the form of image replacing the time variables by space variables. The inter pixel gap of the image represents the sampling time of 1 hr along the horizontal axis and 24 hrs along the vertical axis. Transforming the image by 2 - D Wavelet Transform (Harr) and modeling transform coefficients of successive years by AR (2) model, forecasts are made by taking inverse of forecasted Wavelet coefficients. The dynamics of the process is captured by Auto - Regressive model, the parameters of which can be obtained by considering large number of samples of .Wavelet transformed data for the period of 1984 to 1998

کلمات کلیدی:

Long range forecast; Wavelet transform