

PERFORMING ACCURATE POWER QUALITY MEASUREMENTS

B. Boulet, P. J. Hacksel, J. M. Wikston

Hatch Associates Ltd.

Tel: (905) 855-7600, Fax: (905) 855-8270

boulet@hatchcos.com, peterh@hatchcos.com, jwikston@hatchcos.com

2800 Speakman Drive

Sheridan Science and Technology Park

Mississauga, Ontario, Canada L5K 2R7

Abstract

The flicker and harmonics generated by electric arc furnaces present a problem that is well known to both the steel industry and electrical utilities. This paper presents a method to compensate for measurement errors introduced by current and voltage transformers and anti-aliasing filters in a power quality measurement system. Dynamic compensation may be performed in real time using digital filters. Measurement accuracy improvement was motivated by the development of a new real-time computer-based Power Quality Analyser (PQA). The PQA can be used for measuring electrical power quality parameters such as: voltage, current and power imbalances, flicker, harmonics, and active and reactive power fluctuations. Measurement results obtained from the PQA with and without the compensating digital filters are presented and compared, and it is shown that their use can improve power quality measurement accuracy significantly.