

## Harmonic Pollution Caused by Non-Linear Load: Analysis and Identification

**Authors :** K. Khlifi, A. Haddouk, M. Hlaili, H. Mechergui

**Abstract :** The present paper provides a detailed analysis of prior methods and approaches for non-linear load identification in residential buildings. The main goal of this analysis is to decipher the distorted signals and to estimate the harmonics influence on power systems. We have performed an analytical study of non-linear loads behavior in the residential environment. Simulations have been performed in order to evaluate the distorted rate of the current and follow his behavior. To complete this work, an instrumental platform has been realized to carry out practical tests on single-phase non-linear loads which illustrate the current consumption of some domestic appliances supplied with single-phase sinusoidal voltage. These non-linear loads have been processed and tracked in order to limit their influence on the power grid and to reduce the Joule effect losses. As a result, the study has allowed to identify responsible circuits of harmonic pollution.

**Keywords :** distortion rate, harmonic analysis, harmonic pollution, non-linear load, power factor

**Conference Title :** ICPERE 2018 : International Conference on Power Engineering and Renewable Energies

**Conference Location :** Rome, Italy

**Conference Dates :** July 23-24, 2018