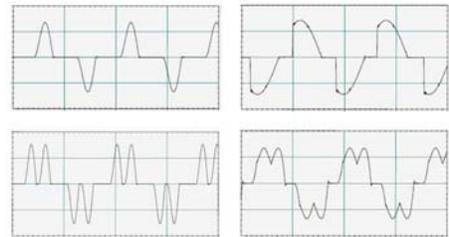


General Electric Non-Linear Test Laboratory for QL Guard III Harmonic Mitigating (HMT) and QL Ultra Efficient HMT Transformers

Introduction

The rapid development and growth of computers and other electronic devices in recent years has resulted in extraordinary benefits in productivity and quality of life but such advancements have also resulted in a substantial increase in harmonic currents in power systems.

Harmonics are high frequency currents mixed with the normal 60 Hz current. In general, most electronic devices generate high harmonic currents but some devices are more problematic such as fluorescent lamps, ferroresonant regulators, saturated core transformers & reactors, welders, and arc furnaces.



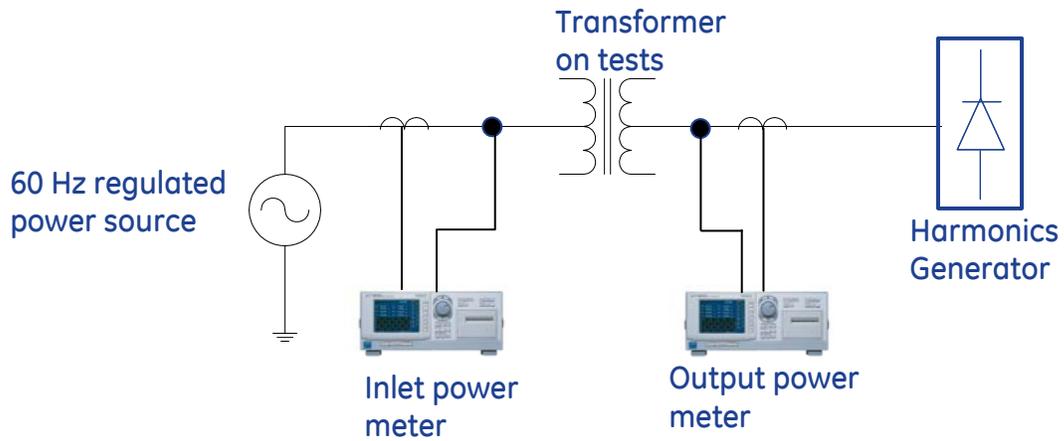
Harmonics can cause overheated wires, reduced energy efficiency of transformers, malfunction of sensitive electronic devices such as PCs and PLC's, and random circuit breaker tripping.

The Guard III harmonic mitigating transformer was developed by GE to help reduce harmonic content in electrical distribution systems and their negative effects.

GE Non-Linear test lab

To verify the performance, quality, and reliability of GE Guard III harmonic mitigating transformers, GE has developed a state-of-the-art non-linear test laboratory. The non-linear laboratory is located in GE's existing UL-Listed transformer test laboratory. The non-linear test laboratory has the capability to simulate large electronic loads such as computer centers or commercial office buildings where widespread use of electronic equipment and harmonics are common.

The main components of the test laboratory include a large power harmonics generator, high-precision current transducers, and two Model WT1600 Yokogawa power meters with built-in harmonic analysis capability. Shown below is a schematic diagram of the non-linear test laboratory.



Schematic Diagram of GE Non-Linear Test Lab



Photograph of Non-Linear Test Lab Showing Harmonic Generators

