

Harmonics Study

Inside This Case Study

Harmonics	1
Objectives	1
Process	1
Walk Through Assessment	2
Harmonic Assessment	2
Detailed Report	2
Equipment	2
Standards For Evaluation	3
Audit Solutions	3
Partial Client List	3
About Choice Solutions	4

Harmonics

Harmonics study revolves around the use of non-linear loads that are connected to electric power systems including static power converters, arc discharge devices, saturated magnetic devices and to a lesser degree, rotating machines.

Static power converters of electric power are the largest non-linear loads and are used in industry for a variety of purposes such as electro-chemical power supplies, adjustable speed drives, and uninterruptible power supplies. These devices are useful because they can convert AC to DC, DC to DC, DC to AC, and AC to AC.

Non-linear loads change the sinusoidal (a succession of waves or curves) nature of the AC power current (and consequently the AC voltage drop) thereby resulting in the flow of harmonic currents in the AC power system that can cause interference with communication circuits and other types of equipment.

When reactive power compensation in the form of power factor improvement capacitors is used with these non-linear loads, resonant conditions may occur that can result in spurt in harmonic voltage and current distortion when the resonant condition occurs at a harmonic associated with nonlinear loads.

Source: IEEE 519 (IEEE Recommended Practices & Requirements for Harmonic Control in Electrical Power System)

Objectives

1. Protect client from power dangers.
2. Protect client from business loss & interruption.
3. Protect client from certain power related problems.

Process

1. Walkthrough Assessment
2. Harmonic Assessment
3. Detailed Report

Walkthrough Assessment

1. Detailing of electrical distribution
2. Current running load capacity

Harmonic Assessment

1. Measuring voltage & current harmonics (VTHD & ITHD) at main source & emergency source.
2. Measuring voltage & current harmonics (VTHD & ITHD) at VFDs input, UPS system input – output & distribution.
3. Check for voltage & current waveforms.
4. Measure instantaneous values of power parameters.

Detailed Report

1. Recommendation for corrective actions based on international standard & guidelines.
2. Recommendations for improvement based on international standards & guidelines.
3. Detailed analysis of harmonics & power parameters.

Equipment

1. Fluke 434 Power Quality Analyzer
2. Fluke 43 B Power Quality Analyzer
3. Dranetz BMI Power Guide 4400 Power Quality Analyzer



Choice Solutions provides services like Power Audit, Air Audit, Data Center Audit, Energy Audit, Harmonics Study & Thermography Test.

Standards For Evaluation

1. IEEE 519 – 1992 IEEE Recommended Practices & Requirements for Harmonic Control in Electrical Power Systems
2. IEEE 1100 – 2005 IEEE Recommended Practice for Powering & Grounding Electronic Equipments

Audit Solutions

1. Reduce the magnitude or frequency of power variations
2. Improve the susceptibility of load equipments
3. Add power conditioning so as to mitigate power quality problems
4. Improved safety measures
5. Improved system efficiency

Partial Client List



About Choice Solutions

Established in 1991 Choice Solutions Ltd. is a leading IT and Facilities solutions provider. Choice Solutions Ltd. business comprises of Six different practices, namely

IMS

- Desktop, Server, Network, Storage, Support, OS, Assets, Apps, Non IT
- Hardware - A-Add, M-Modify, I-Install, C-Change, R-Repair
- Assets, Security, Software Distribution, Upgrades

Networking

- Packaged Services Monitoring & Management
- Products, Security, Design, Deploy, Maintain
- Auditing & Compliance, SOC

Datacenter

- DC Audit, Monitor & Manage, Training
- Assess, Design, Built, Deploy, Disaster Recovery

Consulting

- Business Consulting, CIO & Technology Services, Physical Security, Power Devices, IT Consulting
- DC Consulting, ERP, CRM & Custom Apps

Cloud Computing

- Cold Site – Backup, Disaster Recovery
- Hot Site – HaaS, Software, Manage
- Public Cloud, Private Cloud, Hybrid Cloud
- CaaS, License Software, IaaS
- Disaster Recovery

Power

- Power Audit, Equipment Management
- Physical Security, Power Devices
- Power Saving Devices
- Design & Audit
- Renewable Energy Products