VB Engineering

Detailed Engineering

Transmission | Distribution | Industrial

www.vbengg.com

VB Engineering

Defines, designs and delivers technology enabled business solutions for the companies. We provide a complete range of services by leveraging our domain, business expertise and strategic alliances with leading technology providers. VB Engineering is trusted for the quality of its services in power system engineering and planning attained through its in-house expertise and commitment to business objectives of its client. As a broad based technical professional consulting firm, we offer a wide range of services to help our clients to maintain a competitive edge in their respective markets.

Our Services

- Arc flash risk assessment
- Harmonic analysis
- Relay coordination studies
- Infrared thermography
- Lean manufacturing simulation
- Solar power plant design
- Cad-cam design
- Academy

Our Products

- Neplan
- Bluesol
- Flexsim
- Edgecam
- Eca 3g
- Win rar
- Elecworks

Arc Flash Risk Assessment

Objective

Arc Flash is the result of a rapid release of energy due to an arcing fault between a phase bus bar and another phase bus bar, neutral or a ground. The cause of the short normally burns away during the initial flash and the arc fault is then sustained by the establishment of a highly-conductive plasma. The plasma will conduct as much energy as is available and is only limited by the impedance of the arc. The challenge is to sense the arc fault current and shut off the voltage in a timely manner before it develops into a serious arc flash condition. We need to perform arc flash risk assessment to identify the risk of arc flash at every point to determine successful interruption time.

Methodology

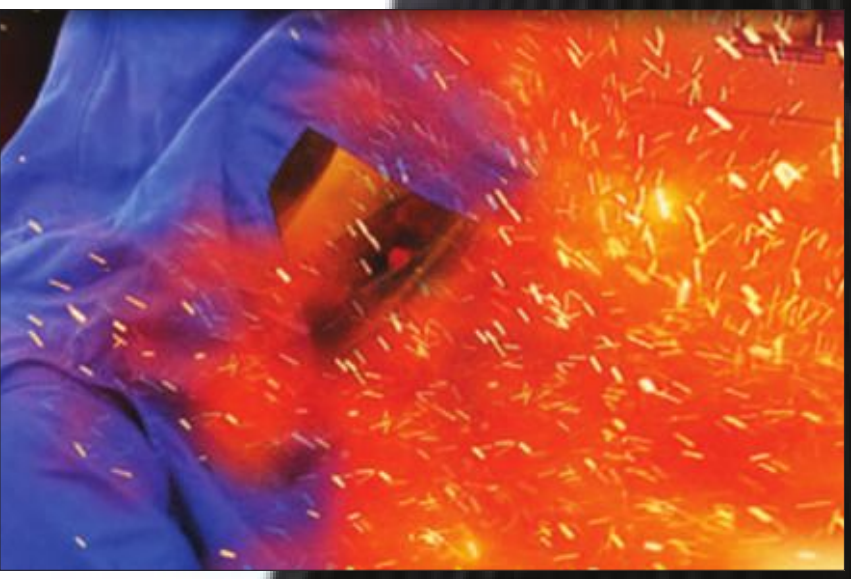
We at VB Engineering has extensive experience with Arc Flash Hazard Analysis and NFPA 70E compliance. VB Engineering packaged Arc Flash Hazard Analysis service offering, which typically includes:

- Onsite data collection
- Data analysis and documentation
- Label preparation and installation
- Training for impacted personnel

As an optional service, VB Engineering will also develop one-line diagrams for any portion of the facility that is not currently up-to-date.

Highlights

- Onsite data collection is performed by VB Engineering's qualified (as defined by NFPA 70E) technicians, who are fully equipped with the proper protective gear.
- Hazard analysis is performed and reviewed by Professional Engineers
- Collaborative process includes an additional verification visit to the client's site to ensure accuracy of the data collection process prior to analysis and a review meeting following analysis and before label printing
- VB Engineering's in-house label preparation equipment provides the ability to tailor the labels to match the client's arc flash labeling standards
- Deliverables include system documentation, a preliminary report, completed analysis results, labels, and a final report.
- Training of the personnel directly impacted by any label changes resulting from the analysis is included in the base pricing.



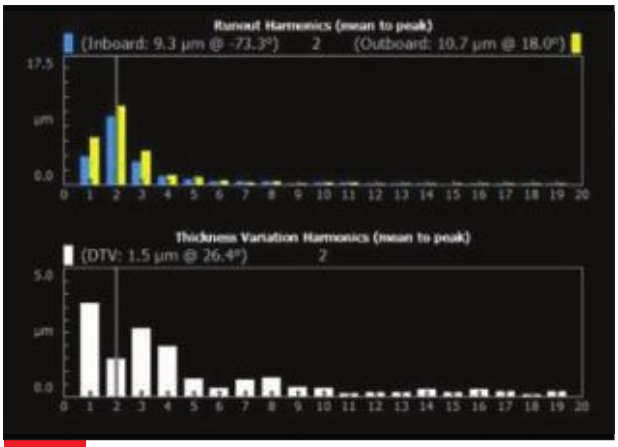
Harmonic Analysis

Objective
The objective of the study is to measure the Total Harmonic Distribution, Order of individual harmonics, Power Factor at the Distribution Transformer and Outgoing Feeders to give solution for Power Factor Improvement and Harmonic Mitigation.

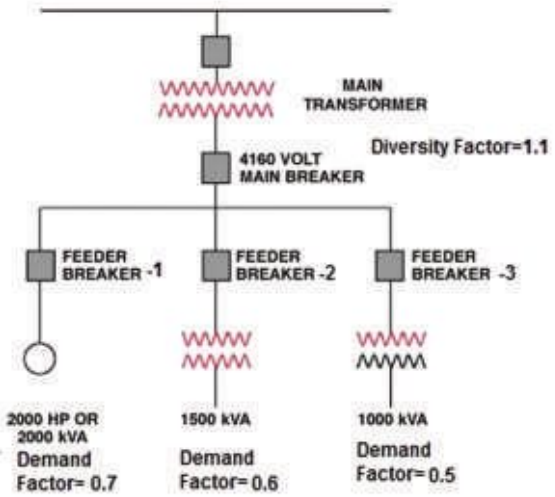
Methodology of the study
- Phase 1: Site study and Audit Plan
- Phase 2: Data collection and Field Monitoring Program
- Phase 3: Data Analysis & Report Preparation

Highlights
Based on the information obtained, a comprehensive work method would be developed for carrying out the power quality audit. Provision required for field measurement and depth of review at load centre would also be planned along with the client electrical / energy engineers prior to measurement.
The following information collected from the client resource personnel during the visit for Harmonic Audit.

- Details of transformers and its connected load
- List of non – linear loads across the Distribution Transformer
- Capacity of installed capacitor bank / APFC panel and its location
- Energy Management procedures
- Single line Diagram of the Distribution System
- Based on the audit findings and detailed analysis, the power quality audit report is prepared and verified to be in accordance with IEEE – 519:1992 standards. Also the power quality issues if observed are high-lightened and the audit findings is submitted. Based on the final observed data across the measured feeders, the recommendations / proposal for the harmonic filter implementations are derived and submitted.



Relay Coordination Studies



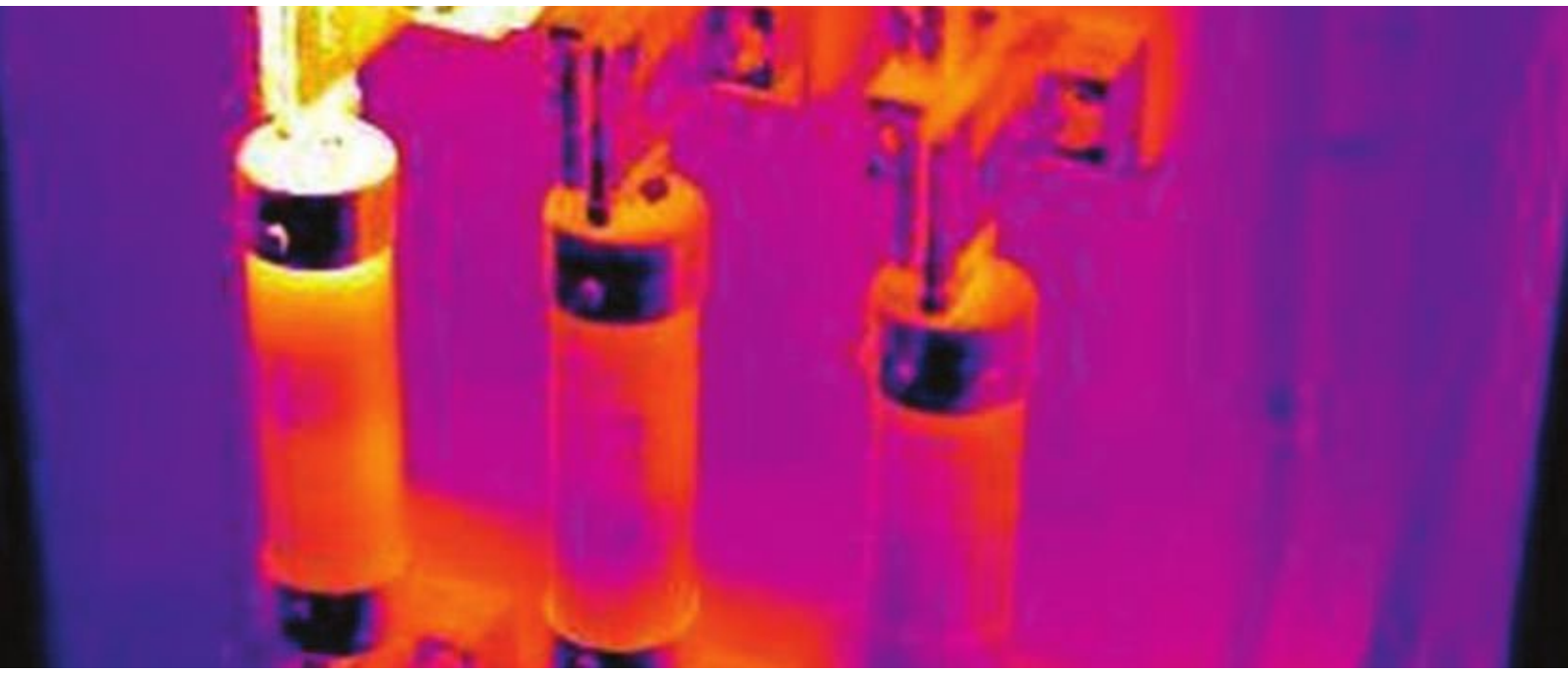
In any power system network protection should be designed such that protective relays isolate the faulted portion of the network at the earliest, to prevent equipment damage, injury to operators and to ensure minimum system disruption enabling continuity of service to healthy portion of the network.

Methodology
- Plant visit for data collection
- Preparation of SLD with TCC
- Performing short circuit calculations at each and every bus.
- Detailed study of the protection in hierarchal manner.
- Recommendation of new settings /device for better protection

Highlights
Proper application and coordination of over-current relays and other protective devices is vital in a system requiring reliable electrical service. VB Engineering expert engineers bring the critical experience needed for the proper application of ANSI and NEC requirements to equipment protection.

In addition to relays that respond to short circuits, low-voltage breakers, differential, directional, power, under-voltage, out-of-step, and other special protective relays often need to be set. This study will include detailed tables listing the recommended settings and discussion of any limitations.

Infrared Thermography



Identifying and rectifying equipment issues before they become problems is a critical part of averting loss and maintaining uninterrupted service. Routine inspections and preventive maintenance can reduce failures, but they cannot reliably identify trouble spots. An infrared survey can help keep small issues from becoming disasters. Repairing a loose connection– easily found with a thermographic scan – might cost less. If undetected, that same connection could result in a fire which mean injury, loss of life or damage that makes the whole building unfit for occupancy and shuts your business down.
Thermographic scans are a wise investment. Industry sources show that the monetary savings they produce can be 20 times as much as the initial cost of the survey. This does not include the potential losses due to damage associated with fire.

Methodology
All electrical and mechanical equipment radiates heat. Infrared video cameras that are sensitive to this thermal radiation, detect and measure the temperature differences between surfaces. The cameras then convert the information and display it as an image visible to the human eye, allowing us to "see" a heat signature.

Abnormal or unexpected thermal patterns typically indicate a problem with the equipment, including

Conditions such as
- Loose electrical connections
- Overloaded circuits or phases
- Deteriorated or damaged insulation
- Bearing failure
- Insufficient lubrication
- Steam leaks

These and other issues show up as hot spots that a trained professional can interpret to determine the likely cause and potential remedy.

Highlights
- Technical support to get answers about either imaging equipment and/or the equipment inspected
- Image analysis
- Review of reports and forms to assure that they are effective
- "Program CPR" if the program is in trouble
- Professional infrared thermographers who can travel anywhere in the world to meet emergency infrared thermography needs, fill in for an ill staff member, or consult on a difficult technical issue
- Assistance in integrating thermography into existing predictive maintenance programs
- Online computerized data collection and report generation, either as a stand-alone system or integrated into an existing system

Solar Power Plant Design

VB Engineering, having been advisors to many renewable energy projects across India enjoy the confidence of industries, banks and investors alike. From feasibility analysis and application facilitation up to carbon credits and renewable energy certificates, we provide all solutions under one roof, thus reducing client effort and ensuring quick and smooth delivery.

Methodology

- Solar resource assessment
- Outlining of plant designs
- Energy yield predictions
- Drafting of technical content relating to the projects' EPC and O&M contracts
- Appraisal of contractor proposals.

Highlights

- Off-take risk assessment
- Business model development(for bilateral Power Purchase Agreements)
- Technical design outlining
- Bankable detailed project report
- Stakeholder selection
- Contracts assessment and negotiation
- Bidding Management or customer acquisition
- Power Purchase Agreement facilitation
- Permits & approvals facilitation

Happy Clients

...and many,
many more

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