



Louisville PES Chapter Technical Meeting

Date: Friday, November 3, 2015

Time: 11:30 AM – Lunch
12:15 PM – Start
4:30 PM – Finish

Location: University Club, University of Louisville
200 E Brandeis Ave
Louisville, Kentucky

Parking information: University Club parking lot (free)

Lunch: U-Club buffet

Price: \$20 members and guests, \$15 students and life members

RSVP: Jason Finn, Louisville PES Chapter Vice Chair
Email: jason.finn@lge-ku.com

Transformer Design & Manufacturing

Speaker: Ronnie Minhaz, P.E.

Part 1:

Title: Fundamentals of Auto Transformer

Abstract:

The fact that Auto-Transformers have weight and overall dimension that is less than 2-winding transformers of the same outputs permits them to be produced with a considerably larger capacity per unit. Auto-Transformers, however, call for several unique design considerations which require special attention and careful study.

This presentation will assist end-users to procure reliable and economical autotransformers. This tutorial will also assist manufacturers, consultants and others to familiarize with various aspects of taps

in autotransformers. Different types of taps, their electrical connection and physical location, and their effects on cost and design are discussed in depth. Differences in designs of two winding and autotransformers with taps are illustrated. How to specify the taps in autotransformer procurement specifications is highlighted. Methods to procure autotransformers that meet system needs are suggested. Influence of taps on maintenance and operation are explained.

Part 2:

Title: Preparation of Transformer Specification

Abstract: The purpose of this presentation/tutorial is to assist attendees in preparation of Transformer Specifications to procure economical and reliable transformers which meet system needs. By knowing the implications of transformer parameters on operation and on cost, functional specifications can be prepared. Some of the topics covered in the presentation/tutorial are rating, voltages, transformer type, vector group, loss capitalization, over excitation, insulation levels, cooling type, sound levels, tap range, taps in HV or in LV, operation of taps for input voltage fluctuations or for compensation of regulation, impedance, overloads, short-circuit, accessories, parallel operation, alternatives etc. Often the bid with the lowest evaluated cost does not give the lowest operational cost transformer, but a good specification is most influential in achieving this. Specifications should not only reduce the capital cost, should also reduce the operational cost. Specifications should help the maintenance and reduce the maintenance cost. To repair a transformer quickly at a low cost should be an important aspect in finalizing an order and to be covered in the specifications. A clear specification with all system requirements is of at most important in procuring reliable and economical transformers. A specification with no ambiguities and with no missing information avoids manufacturing design engineers to assume the requirements which are not clear or missing. When the manufacturing design engineers have to assume, most likely they will assume to obtain the lowest cost transformer, often this does not meet the system needs.

Ronnie Minhaz's Biography



Ronnie holds B.Sc. degree in Electrical Engineering from University of Manitoba, Canada. Before founding his own company “Transformer Consulting Services Inc(www.tc-servicesinc.com)”, Ronnie worked as Transformer Designer at Pauwels Canada(Manufacturer), as Equipment Engineer at SNC Lava Lin(EPCM) and Enmax Power(Utility), as Substation Lead Engineer at McGregor Construction(Substation Construction). Ronnie is a registered professional engineer in the province of Alberta, Canada and an IEEE member. Ronnie held various leadership positions at IEEE Section level and a regular member of IEEE PES society.