Electrical/Computer Engineering Design Project Proposal

Title: *DC power distribution in a house and potential energy savings*
Client: *M. T. Iqbal (tariq@mun.ca, Room En3062)*

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Description

Power distribution in houses is 120/240V, 60 Hz. These days increasing number of loads are essentially DC loads. e.g. compact fluorescent lighting, computers, electronics etc. All these loads basically convert input AC into DC and use DC as needed. AC to DC conversion needs power converters that always have losses associated with them and they all inject harmonics into the power lines. Increasing harmonic injection, power losses, electromagnetic noise generation, low reliability and resulting end of life e-waste are the major issues with all AC to DC converters. If houses switch to DC power distribution then the number of converters in use could be significantly reduced while water and space heaters, ovens and dryers can directly run on appropriate DC level. Therefore, a DC distribution in a house may lead to less losses, and a more efficient system with reduced end of life e-waste. This project will investigate these issues.

Roles

1. *Student 1: Design DC power distribution for a typical house*
2. *Student 2: Determine standards and codes (existing /new) that need to be followed in case of DC distribution*
3. *Student 3: Calculate yearly potential energy savings and e-waste reduction for a typical house*