IPRO 338
Web Site to Support Electrical Contractors for LEED Projects

http://cresthill.rice.iit.edu/egtec
Mission Statement

To create a website that would provide ECA contractors with consolidated product descriptions of the most efficient and least expensive resources available to obtain the various levels of LEED certification.
LEED CERTIFICATION

Leadership in Energy and Environmental Design

United States Green Building Council

Non-profit organization working to make green buildings accessible to everyone

Leadership in Energy and Environmental Design

Encourage adoption of sustainable green building development practices

Different levels of certification based on points earned through various building practices

- Certified: 26-32 points
- Silver: 33-38 points
- Gold: 39-51 points
- Platinum: 52-69 points
HVAC LEED Points Example

Energy and Atmosphere
- Certified 26-32 points
- Silver 33-38 points

Indoor Environmental Quality
- IAQ 30% higher ventilation rates than those set by ASHRAE 62.1-2004 (1 point)
- IAQ management plan
  - during construction (1 point)
  - Before occupancy (1 point)
- High level of thermal and ventilation control (1 point)
- Thermal comfort
  - Meet ASHRAE standard 55-2004 (1 point)
  - Permanent monitoring system and process for corrective action (1 point)
Project Problems

The U.S. government wants more buildings certified as green technology.

Developers cannot find all the viable resources in one searchable location.

Developers unable to compare various resource pricing creating disincentive to pursue Green Certification.
Our Goals

- To create a user-friendly website
- Provide data on green electrical products with LEED certification facts.
- Complete an industry resource list with current contact information.
- Pass on a fully operational website to ECA for utilization of its members.
- Launch NECA student organization to have a communication link between IIT and the ECA
Methodology

- Establish timetable
- Establish goals
- Organize teams
- Survey ECA
- Compile information
- Update website
- Transfer control of website to ECA
Buildings are one of the heaviest consumers of natural resources and account for a significant portion of the greenhouse gas emissions that affect climate change.

LEED and USGBC work to greatly reduce the consumption percentage by each green certified building.

The overall green building market is likely to more than double from today’s $36-49 billion to $96-140 billion by 2013 (Source: McGraw Hill Construction (2009)).

The green building products market is projected to be worth $30-$40 billion annually by 2010 (Source: Green Building Alliance (2006)).

Every business day, $464 million worth of construction registers with LEED.
Benefits

- Improve the health and productivity of occupants
- Reduce life-cycle energy and operating costs
- Set example for world community of environmentally friendly construction.
- Reduce contribution to overall pollution
- Eligible for government grants
Lighting

- Adaptive Lighting Controls
- Task Lights
- Alternatives to Incandescent
- Daylight Dimming
- Reduction of Light Pollution
Power Distribution

Example Products and how they help

APOGEE unit conditioner controller: This improves building rating by having efficiency maximization

APOGEE insight report scheduling option, insight base software; Aids in the organization of materials which ultimately leads to more efficiency
Water Efficiency

- Solar-powered restroom products
- Motion sensor faucet
- Solar-powered water heater
- Solar-powered water pump
"Heating, Ventilating, and Air Conditioning”
The systems used in green technology must meet the standards as established by the ASHRAE/IESNA Standards 90.1-2004 or the local energy code, which ever is more stringent.
- Refrigerant must not be CFC based.
- Indoor air quality (IAQ) must meet standards set by ASHRAE Standard 62-2004
Obstacles

- Determining scope of work
- Pricing and ROI
- IPRO deliverables vs. project progress
- Communication with product suppliers
Ethics

To facilitate environmental stewardship by providing a resource to help the members of ECA (Electrical Contractors Association) meet LEED (Leadership in Energy and Environmental Design) and USGBC (United States Green Building Council) standards.
Methodology

- LEED research
- Product Research
- Vendor Contact
- Industry Contacts
- Working Website and Database
- NECA Student Chapter
Website Walkthrough

Green Link

Home Page

Products Page
Walkthrough Cont.

Green Link

Select Products

Lighting Example

Product Details

Name: T8 Rapid Start Fluorescent - PHILIPS LAMPS
Category: Lighting
LEED Credit: EA03

Manufacturer: PHILIPS LAMPS

You have no products saved.

USGBC
NAED
CCCF

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Walkthrough Cont. 2

Green Link

Manufacturers

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Filter by State:
- All
- GA
- IL
- MA
- KS
- NC
- NE
- OH
- PA
- TN
- TX
- WI
- WY

Manufacturer Details

Enter your address to calculate distance to manufacturer in Chicago, IL.

Name: LEVITON
Address: 59-25 Little Neck Pl
City: Little Neck, NY
Phone: 800.624.3005
Walkthrough Cont. 3

**LEED Categories**

- Sustainable Sites
  - SS1 - Light Pollution Reduction

- Energy and Atmosphere
  - EA1 - Fundamental Commissioning of Buildings Systems
  - EA2 - Minimum Energy Performance
  - EA3 - Fundamental Envelope Management
  - EA4 - Demising Envelope Performance
  - EA5 - Site Energy Productivity
  - EA6 - Enhanced Envelope Management
  - EA7 - Measurement and Verification

- Materials and Resources
  - MR1 - Water Use Reduction
  - MR2 - Recycled Content Materials and Regional Materials

**Research**

- Grants
- Green Link

- LEED Categories
- Green Link

**Green Link**

- Research
- Grants

[Links]

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Recommendations for Future Work

- Give administrative control of website to ECA and allow them to upload product information
- Expand list of vendors, manufacturers and products
- Update website to account for the upcoming regional specific change in LEED standards
- Add project plans as a resource for other contractors
Acknowledgements

The Electrical Contractors’ Association of the City of Chicago. Specifically Mr. Tim Taylor who was a tremendous help throughout the semester.

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Questions?