The Hunt for a Career in Sustainable Building

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The Ohio State University

• Electrical Team
  ▪ Photovoltaic Design (solar panels)
  ▪ Load Calculations
  ▪ LV Distribution (wiring)
  ▪ National Electric Code
  ▪ Competition Requirements
3-Line Diagram
Bi-facial Modules

Each cell of the panel is purposely separated to allow for light to filter through and reflect to backside of panel.

Direct sunlight collected from the front side

Reflected ambient sunlight collected from the back side

Highly reflective white roof membrane
2009 Solar Decathlon

- The Ohio State University – 10th Overall

<table>
<thead>
<tr>
<th>Contest</th>
<th>Rank</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Metering</td>
<td>7</td>
<td>101.323</td>
</tr>
<tr>
<td>Architecture</td>
<td>8</td>
<td>82.000</td>
</tr>
<tr>
<td>Market Viability</td>
<td>5</td>
<td>91.000</td>
</tr>
<tr>
<td>Engineering</td>
<td>10</td>
<td>84.000</td>
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<tr>
<td>Comfort Zone</td>
<td>4</td>
<td>82.360</td>
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<tr>
<td>Hot Water</td>
<td>16</td>
<td>62.250</td>
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<tr>
<td>Appliances</td>
<td>18</td>
<td>51.257</td>
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<tr>
<td>Home Entertainment</td>
<td>17</td>
<td>60.492</td>
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<tr>
<td>Lighting Design</td>
<td>19</td>
<td>57.750</td>
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<tr>
<td>Communications</td>
<td>5</td>
<td>64.500</td>
</tr>
</tbody>
</table>

Points possible:
- Net Metering: 150 points possible
- Architecture: 100 points possible
- Hot Water: 100 points possible
- Others: 75 points possible
Net Metering / Energy Contest

1. Team Germany 150.000
2. Illinois 137.236
3. Team Ontario/BC 109.911
4. Team Spain 109.216
5. Kentucky 104.774
6. Iowa State 101.365
7. Ohio State 101.323
8. Virginia Tech 100.938
9. Team Missouri 100.712
10. Minnesota 100.531
11. Rice 100.251
12. Team California 100.239
13. Cornell 100.188
14. Team Alberta 100.134
15. Team Boston 44.007
16. WI-Milwaukee 0.000
17. Univ. of Louisiana 0.000
18. Arizona 0.000
19. Puerto Rico 0.000
20. Penn State 0.000
Ohio State is back in 2011, **enCORE**
To the Job Market

• Picking an industry
  ▪ Product Design
  ▪ Manufacturing
  ▪ Computers
  ▪ Power Electronics
  ▪ Regulators/Gov’t (i.e. Federal Energy Regulatory Commission, DOE, NREL)
  ▪ Utilities
  ▪ Construction & Power
    • Renewables & Energy Efficiency

• Something Innovative
• Something GREEN
How did Solar Decathlon Influence/Help?

• Experience with…
  - Design documentation
  - Photovoltaics
  - Physical construction
  - Working on a team on a real project
  - Tight deadlines
  - Even tighter installation schedule

• You can’t fake that!
How do I like my choice?

- **M.C. Dean**
  - Design-Build – Construction
  - Large Projects
  - Power, Lighting, Security, Telecom, Controls
  - Renewable Technologies
  - Research is Encouraged
  - Worldwide

- Construction vs. Other industries
Our Role at the Solar Decathlon 2011

**Full Circle**

- Safety first, always
- Distribution (microgrid) Installation
- Design review
- Able to meet extreme installation schedule
- Prefabrication of equipment
- Installation plan
- Flexible on-site team
- Lightning protection study