



SMART Competition

www.smartcompetition.org

The SMART Competition is a high school team-based STEM and CTE education program that provides hands-on learning experience and practical investigation of intelligent building design, renewable technology and the smart grid.

Not IQ.

The Competition promotes sustainable design, use of renewable technology, improving energy efficiency and the smart grid.



The competition is designed to encourage an academic interest in science, technology, engineering and math (STEM), provide a hands-on, career technology based real-world engineering experience (CTE) and to increase student motivation to learn and stay in school while providing an opportunity for fun and creative student-team academic activities. Solutions will address Energy Conservation, Localized Power Generation, Intelligent Power Distribution, Architecture, Sustainable Technology, Transportation and Electric Vehicles. The ultimate goal of the program is to expand student interest in pursuing related university studies and STEM/CTE related careers.

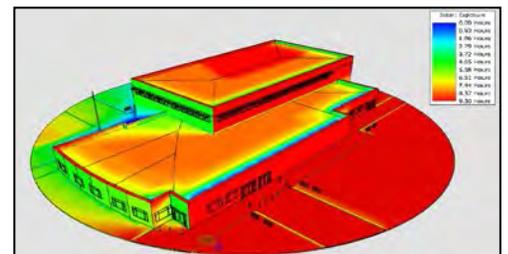
Key design features

- Make the campus more energy self-sufficient through the use of sustainable materials and renewable technology.
- Add renewable power generation capability to the campus
- Design for the future using cutting edge computer simulation

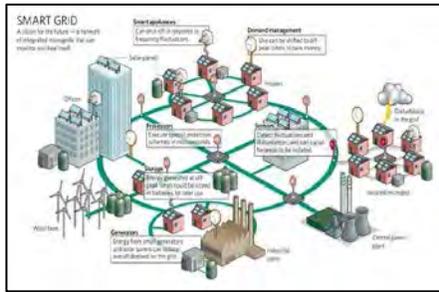
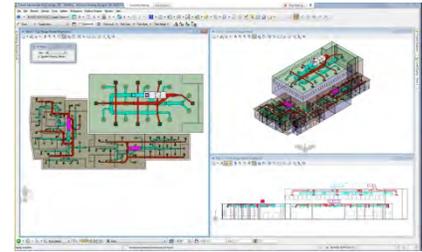


Team Design Requirements

1. Using Bentley software tools, conduct energy and loading analysis and identify improvement opportunities
2. Redesign the gymnasium to improve energy efficiency. Teams can implement changes to all roof, wall, door and window materials used, redesign lighting and air conditioning systems, landscaping and change the building orientation.
3. Add renewable energy based power generating systems to the campus.
4. Insert surplus energy into the surrounding neighborhood's smart grid.



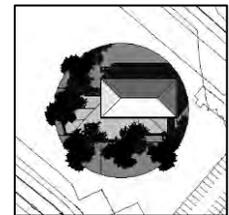
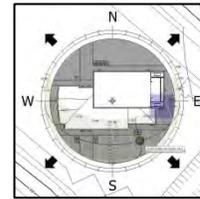
The competition is designed to provide a real-world application of technology by empowering students to address critical environmental and energy challenges. In addition to the academic elements of the competition, the program facilitates the development of workforce and life skills including computer analysis and software design, verbal and written communication, research, teamwork and problem solving. Students achieve an increased awareness of the smart grid, green building design, the environment, community, livability and



sustainability related issues.

Student Deliverables

- Computer generated animation of a fly-around of their campus and gymnasium
- Design, Innovation and Impact Report
- Team presentation
- Provide actionable recommendations to local leadership that will improve the energy use or decrease reliance on externally provided power by their school.



Who can compete

The competition is designed for high school students and is open to all public, private, parochial schools, home-based schools, clubs and sponsored educational entities.



As a professional...Get Involved!

You can make a difference.

- Introduce the SMART Competition program to high schools
- Mentor a student team
- Share your expertise with students in the Bentley software
- Promote employee involvement
- Engage your professional network
- Serve as a competition judge

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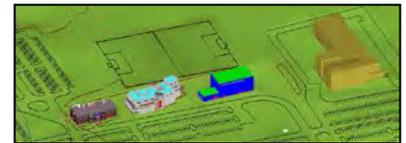
Real World Design Challenge

The Competition promotes sustainable and environmentally friendly building design, the use of renewable technology, improving energy efficiency and the smart grid.

The Challenge:

Given a virtual model of a high school campus with a poorly designed gymnasium,

- Redesign the gymnasium using sustainable materials and creative design concepts.
- Use the full spectrum of design changes available including material choices, changes to all roof, wall, door and windows, redesign lighting and air conditioning systems, landscaping, building uses and change the building or campus orientation.
- Add at least one renewable form of energy generation to the campus
- Provide the surplus power by the gymnasium consumption improvements and added power generation system to the communities smart grid.



The Solutions

Using Bentley design, building information management and energy analysis tools, the student teams make the campus more energy self-sufficient through the use of sustainable materials and renewable technology using cutting edge computer simulation. Solutions will address Energy Conservation, Localized Power Generation, Intelligent Power Distribution, Architecture, Sustainable Technology, Transportation and Electric Vehicles. The competition culminates with team presentations.



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