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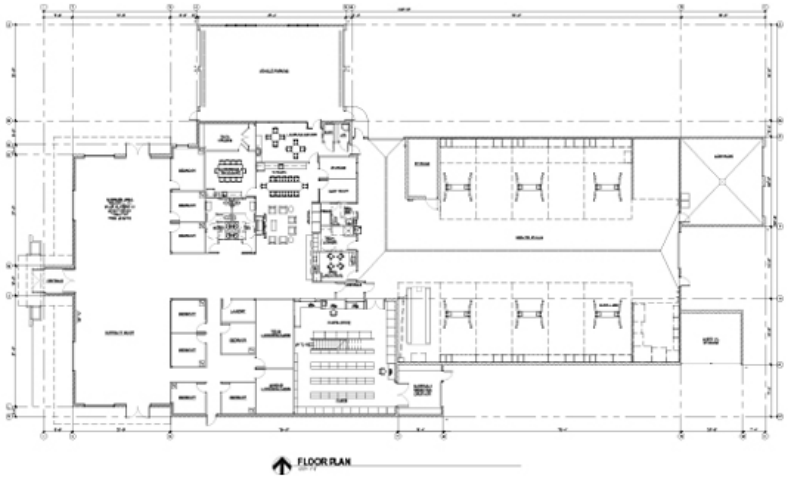
Membership & Conferences

2017 Student Design Project Competition



Register

View the 2016 Design Competition Winners >>

ASHRAE sponsors these competitions to encourage students to become involved in a profession that is crucial to insuring a sustainable future for our Earth – the design of energy-efficient HVAC systems. ASHRAE will recognize the outstanding student design projects at the 2018 ASHRAE Winter Meeting to be held in Chicago, IL, January 20-24, 2018.

The student design competition's guidelines provide enough background information to enable the teams to design or select the HVAC system for the given building, or to design a sustainable building implementing an integrated building design process (the architectural and building design for sustainability, and its supporting mechanical and electrical systems) for the given program.

The Integrated Sustainable Building Design (ISBD) competition's aim is to encourage students to extend their knowledge beyond the core mechanical systems. For the ISBD category, the final design level presented may be in a preliminary stage, as the competition's basic intention is to challenge students' imaginative thinking and creative engineering approach to the building and all of its systems.

The Applied Engineering Challenge's aim is to encourage student creativity and innovation on an applied engineering concept. This hands on competition is best suited for students that want to invent or optimize equipment technologies in order to solve market or societal problems. This design competition challenges the participants not only on the technical side, but also on conception and communication of details in order to share this technology with developing economies as well as the non-engineering community.

Teams may compete in one of the four categories:

- HVAC Design Calculations
- HVAC System Selection
- Integrated Sustainable Building Design (ISBD)
- The Applied Engineering Challenge

ASHRAE recommends that the project groups consist of at least two members from an undergraduate engineering or architecture curriculum for the HVAC Design Calculations or HVAC System Selection and at least three members (architecture or construction, mechanical & electrical) for the ISBD competition. Team members can be from multiple colleges. All team members must be enrolled during the semester/term in which they contribute to the design. The Applied Engineering Challenge is for a team of 1 to 6 engineering students with a keen interest in sustainable design of equipment.

Questions

Have a question?
Please submit your questions here.
Please allow up to 5 business days for a response.

Design Competition FAQs (PDF) (updated 11/16/3016)

Competition Descriptions:

The 2017 student competition focuses on a new single-story with mezzanine office and repair building in the Diego Ramirez Islands (Islas Diego Ramirez) in Chile, South America. Unlike past competitions the building must be located in the Diego Ramirez Islands, or the entry will be disqualified. The final HVAC System Selection and Design for the proposed building shall address the following major design goals:

- Low Life Cycle Cost
- Low Environmental Impact
- Comfort and Health
- Creative High Performance Green Design
- Synergy (with architecture)

Judging

Judging Criteria

Owners Requirements

Owners Project Requirements

Services Overview

Utility and Service Life Overview

Weather data

Isla Diego Ramirez Typical Year Weather File
ASHRAE Climate Data Center

Competition Drawings

Exterior Elevations (PDF)

Floor Plan (PDF)

Mezzanine Plan (PDF)

CAD Floor Plans, Elevations (.dwg file)

CAD Floor Plans, Floor Plan (.dwg file)

CAD Floor Plans, Mezzanine (.dwg file)

1. HVAC Design Calculations
For students who have attended 1-2 HVAC courses. Focuses on the design calculations required to provide an energy-efficient design for the facility. Students are required to determine heating and cooling loads, and design the selected HVAC systems for the building, while demonstrating compliance with ASHRAE Standards 55, 62.1, and 90.1.

AND/OR

2. HVAC Systems Selection
For students at schools completing a dedicated HVAC or building environmental systems curriculum. The project encourages students with a solid HVAC base to use life-cycle cost process to select the building HVAC system(s) as well as incorporate the sustainability process promoted by ASHRAE by integrating ASHRAE Standard 189.1-2011 - Standard for the Design of High-Performance Green Buildings, and the US Green Building Council's LEED™ Rating System (or equivalent in the home country of international students.)

3. Integrated Sustainable Building Design (ISBD)
This 2016-2017 student competition requires multidisciplinary teams to design an energy efficient sustainable project approaching a "Zero Energy" building with minimized energy demands for HVAC and all other technical systems that could be satisfied with locally available or building-installed renewable energy sources (RES). Students will be asked to satisfy a national or local sustainability standard (LEED or the equivalent in their country), and then implement RES to approach "Zero Energy" limit.

The fundamental goal of this design competition category is to encourage students to obtain experience in the ISBD process. Architects and engineers should work together from the very beginning to determine building orientation, layout, materials, mechanical systems, and electrical systems that meet the client's needs and work with the surrounding environment to minimize energy consumption.

4. Applied Engineering Challenge
The 2017 Applied Engineering Challenge (AEC) is intended to stimulate student lead groups to find engineering solutions to comfort cooling and water challenges in local or regional communities and develop ways to solve them.

Judging Criteria

Submission Instructions

ALL SUBMISSIONS ARE TO BE SUBMITTED ELECTRONICALLY via the ASHRAE FTP site. Only those teams that register will get the FTP site information and instructions for uploading entries.

All teams that are registered participants of the 2017 Design Competition will receive the FTP upload instructions via email. If your team is not registered, you will NOT receive this information.

The submission for the **HVAC Design Calculations** competition must be in PDF format only! No separate visual aids will be accepted (PowerPoint, YouTube, etc). Deliverable presentation should consist of a 35-page maximum technical report in PDF format only. Font size should be 11 pts, utilizing either Arial or Times New Roman.

The submission for **HVAC System Selection** competition is limited to 15 minutes visual aid (PowerPoint, YouTube, etc.) All PPTs have to be automated and not page by page click ALONG with a 30-page maximum technical report in PDF format. Font size should be 11 pts, utilizing either Arial or Times New Roman.

The submission for the **Integrated Sustainable Building Design** competition is limited to 15 minutes (PowerPoint, YouTube, etc.) ALONG with a 35-page maximum technical report in PDF format. Font size should be 11 pts, utilizing either Arial or Times New Roman.

Time Line

What is the Evaluation Time Schedule?

There will be three levels of evaluation except for the Applied Engineering Challenge. Evaluators at all levels will judge the design project reports, not only for content, but also for compliance with the contest rules.

***The Applied Engineering Challenge will only be judged at the society level by a special committee and students must adhere to the June 1 final deadline.**

May 4, 2017
Entries must be submitted electronically by this date by uploading the entry to the ASHRAE Society FTP site established for this purpose. Only teams who register will get the FTP site information emailed to them, so please register at least 30 days prior to this date to allow for processing.

Only ASHRAE chapters with registered teams will have the FTP site emailed to them as well.

Teams that do not have a local chapter are required to adhere to this same deadline. Your entry will be evaluated by the closest chapter to your school or your Regional Vice-Chair (RVC) for Student Activities.

May 18, 2017
Deadline for local ASHRAE Chapters to forward their selection of the best entry in each category to the Student Activities Regional Vice Chair (RVC). Chapters are to download the necessary entries from the ASHRAE FTP site for local judging. FTP site information is only distributed to those chapters that have teams registered to participate in the competition.

Once your selection is made simply email the names of the winning entries to your RVC with a copy to kthomson@ashrae.org by the deadline above.

If applicable, chapters should ALSO nominate a "rising star" as well. The Rising Star must be a school that does not qualify for the regional or national competition, but is a quality entry and the school has not had a winning entry in the previous three years.

June 1, 2017
Deadline for local ASHRAE Student Activities Regional Vice Chairs to forward their selection of the best entry in each category to ASHRAE Headquarters for national judging. Regional Vice Chairs are to download the necessary entries in your region from the ASHRAE FTP site for judging.

Once your selection is made simply email the names of the entries to kthomson@ashrae.org by the deadline above.

All entries that pass regional judging will be submitted to the national judging committee for final judging.

If applicable, Regional Vice Chairs can nominate a "rising star" as well. The Rising Star must be a school that does not qualify for the national competition, but is a quality entry and the school has not had a winning entry in the previous three years.

***The Applied Engineering Challenge will only be judged at the society level by a special committee and students must adhere to this final June 2 deadline.**

June 24, 2017
National level competition under the direction of the Student Activities Student Project Competition Subcommittee will complete evaluation of national level entries, and will select 1st, 2nd and 3rd place winners in each category. In order to encourage additional schools to participate in the competition, a "Rising Star" winner will be chosen within each category from among those schools that have not had a winning entry in the previous three years.

Please Note: The Society level of the competition is conducted during a closed subcommittee session and therefore, team members and/or faculty advisors, or other persons outside of the Student Activities Committee, may not attend. Any violation of this notice can result in a team's disqualification from the competition.

Monday August 3, 2017
Winners announced

Awards

Awards will be presented to the winners of each of the four competitions as follows:

- 1st place
- 2nd place
- 3rd place
- Rising Star

First Place: $2,000 plus a representative from the team will receive free transportation, two nights lodging and $100 expenses for attendance at the 2018 ASHRAE Winter Meeting to be held in Chicago where the award will be presented at the ASHRAE Plenary. A 24 x 36 poster is required for display at the ASHRAE Student Program.

Second Place: A representative from the team will receive free transportation, two nights' lodging at the 2018 ASHRAE Winter Meeting to be held in Chicago where the award will be presented at the ASHRAE Student Program. A 24 x 36 poster is required for display at the ASHRAE Student Program.

Third Place: A representative from the team will receive free transportation, two nights lodging at the 2018 ASHRAE Winter Meeting to be held in Chicago where the award will be presented at the ASHRAE Student Program. A 24 x 36 poster is required for display at the ASHRAE Student Program.

Rising Star: A representative from the team will receive free transportation and two nights lodging for attendance at the 2018 ASHRAE Winter Meeting to be held in Chicago where the award will be presented at the ASHRAE Student Program. A 24 x 36 poster is required for display at the ASHRAE Student Program.

Previous Winners

Previous ASHRAE Design Competition Winners