AIChE Chemical Engineering for Good Challenge - *2019*

The Global Societal Impact Committee, Student Chapters Committee, Sustainable Energy Forum and International Committee of AIChE are pleased to announce the 4th annual ACE4G Challenge. This is a competition to encourage chemical engineering students to consider how chemical engineering know-how can be applied in an appropriate way on a small scale to improve the quality of life of communities in the developing world. AIChE student chapters are strongly encouraged to partner with organizations, such as Engineers Without Borders, with experience applying appropriate technology on micro scale projects in small technically unsophisticated communities. Included this year is an additional incentive; a bonus prize for entries by international collaborations between student chapters.

Purpose: to encourage the involvement of chemical engineers and chemical engineering principles in international service projects (ISP) such as Engineers Without Borders (EWB[*]) and to identify appropriate technology and tools for these types of projects.

Prizes: unrestricted donation to the winning chapters. Three prizes will be awarded for top three entries in the amounts of $3000, $1500, and $1000. In the unlikely event that the judges determine there are not three entries of sufficient quality, then not all three prizes will be awarded. Prize money is per entry; collaborating teams may split the money any way they choose.

There is an additional bonus prize of $500 for the best submission by a collaboration of at least one US AIChE chapter and one international AIChE chapter.

Participants: Open to all AIChE student chapters around the world. A team may recruit any student, professor, or professional; and AIChE student chapters are strongly encouraged to partner with organizations such as EWB, with experience applying appropriate technology on micro scale projects in small technically unsophisticated communities. Only one entry per chapter allowed.

Collaboration: Two or more AIChE student chapters may collaborate to produce a joint ACE4G entry. Judging will not be affected by how many chapters worked on the submission. GSIC particularly encourages collaborations between US and international chapters to encourage sharing of multiple points of view and experiences.

Dissemination of Results: The contents of all contest submissions may be made public, with appropriate credits given to the original submitters

[*] throughout this Description, "ISP" represents small-scale quality of life international development service projects in the developing world , such as EWB projects

Contest Description

Contest entries address '***How chemical engineering can be applied to solve world problems on a micro scale[†]".*** Submissions provide a chemical engineering solution to problems often encountered in small scale quality of life improvement projects in the developing world. Examples of typical problems would be water treatment, alternate energy sources, energy efficiency, and preservation / production of crops and foods. Submissions must utilize chemical engineering technology and skills (beyond the hydraulics calculations commonly used in designing water systems). Entries will be ***one*** of two content types:

I. Recommend the application of a specific technology, available today, that is not currently utilized in ISP*.
   A. Define the specific community problem being addressed
   B. Describe the specific technology and how it is based on chemical engineering principles; provide electronic copies of or links to references (papers, descriptions of commercial applications & offerings, patents, other supporting material)
   C. Describe what kind of data would be required to design / customize this technology for ISP*.
   D. Describe why this technology would be appropriate for implementation in the developing world partner communities. Include consideration of technical, maintenance, financial, and cultural sustainability. Provide estimated typical costs for initial installation, maintenance, and operation.

II. Develop a toolkit for the application by an ISP* team of *a set* of existing chemical engineering-related technologies addressing a technical challenge often faced in these type of projects
   A. General technical issues include but not limited to topics such as water purification, alternate energy sources, energy conservation, and preservation / preparation of crops and foods
   B. The set should include at least three different technologies
   C. The toolkit should include
      1. Technology Basics Document intended for use by an ISP* team that includes description of the problem addressed, description of each technology and discussion of when each technology is most applicable
      2. checklists / tables to help an ISP* project team identify candidate applications and select between technical options
      3. important data required to select and design. Inclusion of general design procedures & considerations will be considered by the judges as additional added value to the toolkit.
      4. references to useful source materials

[†] just to be clear - micro scale refers to the size of the enterprise, not the size of molecules, surfaces, etc

D. Describe why the technologies included in the toolkit are chemical engineering related. Describe why these technologies would be appropriate for implementation in ISP* partner communities, including aspects of technical, maintenance, financial, and cultural sustainability.

Contest Timeline

- Sept 19 - registration opens
- Oct 21 - registration deadline
- Nov 22 - submissions due
- Jan 16 - announce winners

On registration, you will receive more-detailed information, including the competition submission form with judging criteria.

For more information, contact Alan Zagoria at ace4g@aiche.org

For supporting materials, including previous winning submissions, and the latest ACE4G information visit https://www.aiche.org/ace4g***. The ACE4G 2019 registration form is available at this address.***