

2015 ARTHUR L. WILLISTON AWARD CONTEST



THE WILLISTON AWARD IS PRESENTED ANNUALLY BY ASME TO THE STUDENT ENGINEER OR RECENT GRADUATE WHO AUTHORS THE BEST ACCEPTABLE PAPER

TOPIC AREA: The Role of Robotics in Future Manned Missions to Mars.

ASSIGNMENT: Travel by man to the planet Mars has been discussed and written about for many years. Such travel was once only in the realm of Science Fiction, but over the last several decades we have sent spacecraft to Mars to orbit and map it, to launch probes into it to send back data, and even land robotic vehicles on its surface to explore it. We are at the point where we have the technologies in place to plan and carry out a manned mission to Mars. Due to the distance to be travelled this will be a long and difficult mission, not only for the hardware, but for those manning the mission. And once there, there will be a long list of tasks to be accomplished. Fortunately, we have many tools available to us that would have hard to imagine a generation ago. One of those is the advanced state of robotics available today. Robotic aids and devices from the nano scale to the human scale are already in use to assist us in difficult and hazardous situations. Robotic aids and devices could be used to assist and supplement those persons travelling to Mars. And once on Mars they could be used to enhance the capabilities of those who will be exploring the surface of Mars. Robotics is a field that many Mechanical Engineers are involved in, from basic mechanisms and actuators to control logic and systems, so they would be heavily involved in the development and implementation of the robotics for such a mission.

Discuss the role that robotic devices could have both during travel to and from Mars and while exploring the surface of Mars on maintaining the health and safety of those on such a mission as well as how robotic devices could be used to extend the capabilities of those that will be exploring the surface.

AWARD: The first prize winner receives formal recognition by the Society that includes having an abstract of the paper published in *ASME News Online* or *Mechanical Advantage*. In addition, the first prize winner will receive a bronze medal, an honorarium of \$1000, a certificate, and travel allowance for two days at the 2015 International Mechanical Engineering Congress and Exposition.

- The second prize winner receives a \$500 honorarium and a certificate.
- The third prize winner receives a \$250 honorarium and a certificate.
- All authors of acceptable papers will receive a letter of participation.

DEADLINE: Papers must be submitted by February 15, 2015 or they will not be accepted.

CONTEST RULES

Papers that do not comply with the contest rules will not be accepted for consideration by the General Awards Committee.

1. Eligibility: ASME Student Members or Members who received baccalaureate degrees in mechanical engineering or mechanical engineering technology not more than two years before the contest deadline are eligible. The paper must be based on the work of an individual and not a team.
2. Format: Each entry must be formatted as follows: double-spaced, 8½" x 11" with 1-inch margins all around, or A4 size with equivalent margins. Maximum length of the document, including cover page, abstract (this not to exceed one page), references, footnotes and figures, is 12 pages. The cover page shall indicate the title of the paper, author's full name and signature, address, the name of the school from which he/she has graduated or expects to graduate, and the expected or actual date of graduation; and the full name, signature and address of a sponsor who is responsible for assuring that the paper addresses the topic and complies with the rules of the contest.
3. Sponsor: An ASME Corporate Member (Member, Fellow or Corporate Honorary Member) who has taken an active role in encouraging or guiding participation of a maximum of two authors in the contest shall be listed as sponsor.
4. Deadline: Papers that satisfy the contest rules must be submitted by February 15, 2015 to **mckivorf@asme.org**. Submission can be a Microsoft Word .doc document or an Adobe Acrobat .pdf file.
5. Results: All participants will be notified about the contest results by June 30, 2015.

PAPER JUDGING

Papers dealing with the specified topic and meeting the contest rules will be scored by the ASME General Awards Committee on the basis of 100 points, distributed as follows:

1. ORIGINALITY & RELEVANCE—(40 Points)

How original and of what significance is the author's main idea? Has the topic been addressed? How well does it compare and contrast with alternate approaches to the problem? What is the potential impact if the idea is implemented?

2. DEVELOPMENT—(30 Points)

How well does the author develop his/her argument? Is the paper persuasive in terms of its technical basis, logic, and depth of explanation? Does the author build on past knowledge in this area?

3. PRESENTATION—(30 Points)

How effectively does the author communicate his/her ideas? Is the content well organized and are the ideas presented clearly and concisely? Are grammar, punctuation, spelling, sentence structure and other aspects of the composition correct? Is effective use made of figures, tables and other illustrations?

The highest scoring acceptable paper will be declared the winner.