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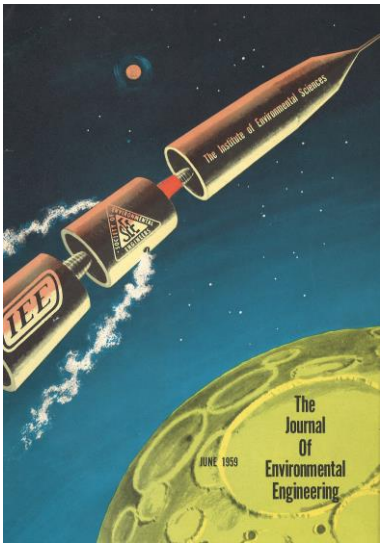
Journal of the IEST Marks 60th Anniversary



By Roberta Burrows, Technical Advisor, IEST

Archive provides insight into 60 years of scientific advancement

Keywords

Journal of Environmental Engineering, Journal of Environmental Sciences, Journal of the IEST, technical papers, peer review

During the past six decades, thousands of authors and reviewers have contributed to technical innovation through IEST's flagship scientific publication, known today as the *Journal of the IEST*. Established in 1958 as the *Journal of Environmental Engineering*, primarily to report on environmental testing research, today's *Journal of the IEST* covers a broad range of topics: contamination control, reliability assessment and evaluation, nanotechnology facility design, laboratory and field-testing and evaluation, and environmental instrumentation and effects. As the official publication of the IEST, the *Journal* serves as a permanent record of progress in the environmental sciences and is archived in the United States Library of Congress.

Overview

Beginnings of the written form known as a scientific "journal" date back to the mid-17th century, when they were created as a means to gather and share science over distances. True to historic intent, the *Journal of the IEST* has served as a forum for trailblazing research such as space simulation testing before the first steps on the moon, test methods in support of the beginnings of critical MIL-STD-810 guidance, and contamination control principles in advance of the creation of the cleanroom.

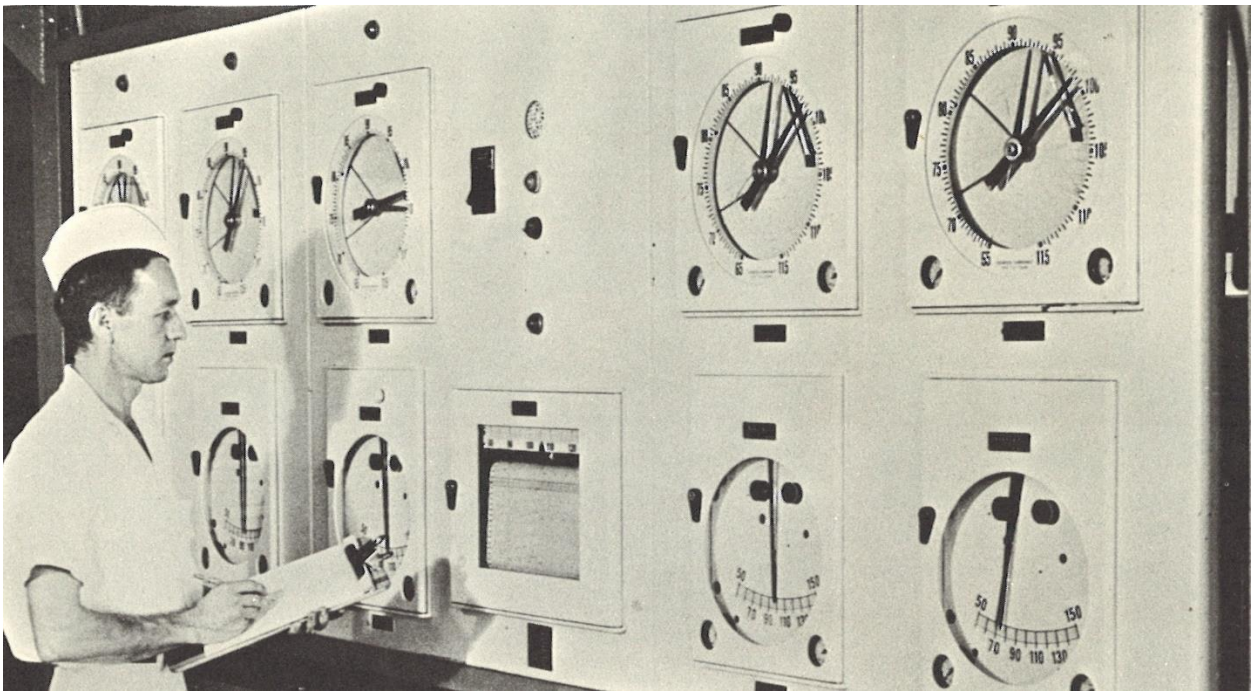
The technical research found in the archives of the *Journal* provides a snapshot of the history of global progress in the environmental sciences. As a brief look back to mark this noteworthy achievement, the IEST presents a sampling of topics from the six decades of the *Journal*.

1958

The inaugural 1958 issue is published as the *Journal of Environmental Engineering* by the Institute of Environmental Engineers (IEE). The title changes to the *Journal of the Environmental Sciences* in 1959 after a merger creates the Institute of Environmental Sciences (IES).

Technical papers from the early issues address acoustical environmental testing, shock and vibration conditions, and accelerometer calibration—topics which continue to take their place in author submissions today. Indeed, authors consistently cite past *Journal* papers where science and research have remained relevant or serve as important background.

The first *Journal* technical paper to bring the issue of airborne contamination into view, "Keep Them Breathing" researches the effect of contaminants in plant air-supply systems upon systems and instrumentation.

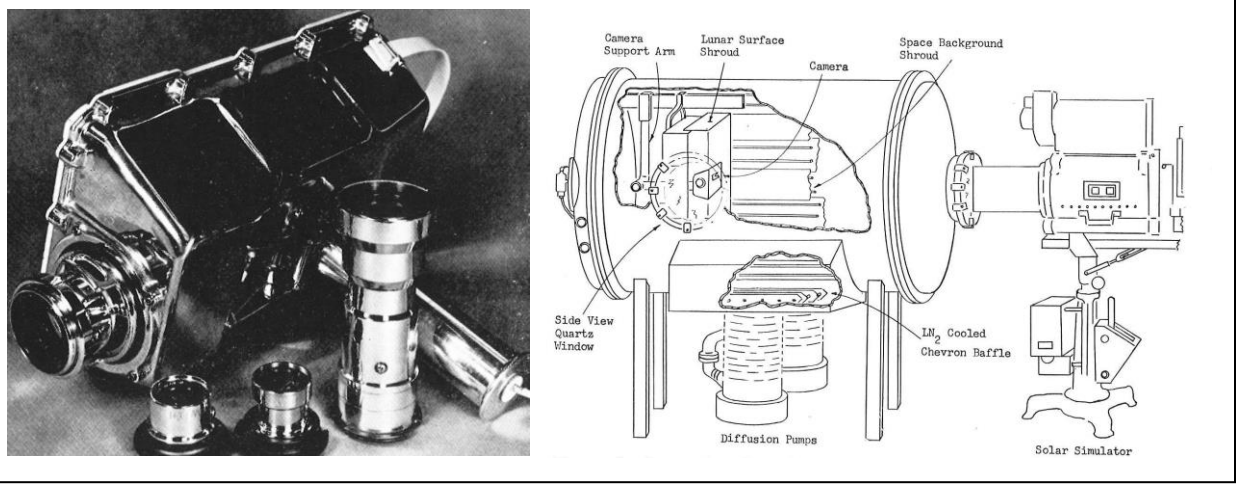


Caption from June 1959 issue, "Pneumatic instruments and systems can do their best work only when they can draw on an unrestricted supply of clean, dry air."

1968

Fast forward ten years to 1968 and *Journal* content revolves around the "race to space." The cover of the February issue features the Mariner Venus 67 spacecraft, which successfully flew past Venus in 1967. The accompanying technical paper details the vibration testing prior to launch of the craft, which becomes officially known as Mariner V.

The issue also includes the newsworthy "Lunar Day Test of an Apollo Mission Television Camera" published a few months in advance of the awe-inspiring images beamed by camera from the lunar environment. The camera was placed in a thermal vacuum chamber with cold walls held at -184°C (-300°F) to simulate the space background.



From February 1968 issue, lunar television camera and test setup.

1978

In the first issue of 1978, technical papers concentrate on subjects such as reliability growth, seismic qualifications, and modal test methods. The cover caption notes that reliability growth modeling has become essential to reliability development programs.

Noting that contamination control is now becoming a global need in industry, IES (as IEST was known at the time) takes a leadership role by hosting the International Symposium on Contamination Control in Washington DC, with sessions translated simultaneously into English, French, and German.

1988

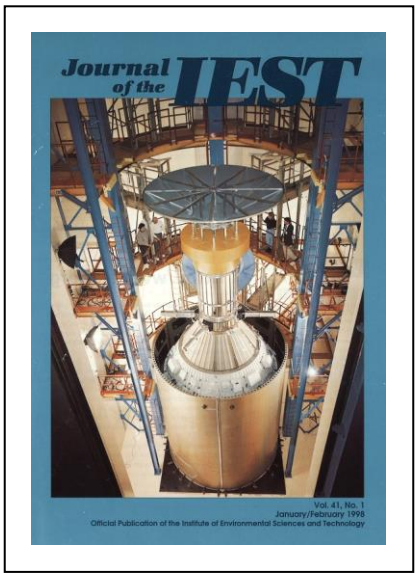
Moving forward to 1988, Environmental Stress Screening is the topic of half of the technical papers in the first issue and others throughout the decade. IES also becomes heavily involved in reviewing applicable US federal and military standards during this period. IES and the *Journal* take center stage as a forum to analyze the standards and provide consensus rationale for revision.

On the testing side, several papers explore the new Revision E for the US Defense Standard *MIL-STD-810: Environmental Engineering Considerations and Laboratory Tests*, offering guidance and comparisons regarding the revision. In future decades, IEST working groups continue to provide feedback during and after review periods for revisions and change notices.

On the contamination control side, the US General Services Administration assigns the IES the task of evaluating and recommending revisions to *FED-STD-209B: Clean Room and Work Station Requirements, Controlled Environment*, the primary contamination control standard at the time. In the next decade, IES will lead the charge to create a unified global standard to replace FED-STD-209E, by initiating the development of ISO Technical Committee 209 and the ISO 14644 series of global cleanroom standards.

1998

In 1998, the *Journal of the IES* changes to the *Journal of the IEST* to recognize the importance of accompanying technology in the environmental sciences, as mirrored in the overall organization's name change to the Institute of Environmental Science and Technology (IEST). The mission statement now reads, "To support the pursuit of knowledge, the advancement of technology, and the creation of pathways of communication in the environmental sciences."



The 1998 cover features acoustic testing of the Cassini simulator in the Titan IV payload faring, prior to beginning its seven-year journey to Saturn in 1997. The testing proves spot-on, as the Cassini spacecraft remains active for two decades, culminating with the first ring-plane crossing and subsequent dive through the gap between the planet and its rings.

As equipment technology advances, the *Journal* features several papers regarding measurement of nanometer-sized particles in gasses. Over the next decade, IEST continues exploration in the emergent field of nanotechnology, where science is conducted at the nanoscale (1–100 nanometers).

As Secretariat to ISO/TC 209, IEST announces the publication of the landmark cleanroom standard *ISO 14644-1, Cleanrooms and associated controlled environments—Classification of air cleanliness*.

2008

During this century's first decade, the *Journal* experiences an evolution faced by many other scientific journals. To keep pace with advancing technology, the *Journal* converts from print to an online publication. Subscribers and members gain incrementally from the move, as a searchable database archive of past technical papers becomes available online. (The archive now extends back 32 years.)

As the medium shifts online—freeing up the cost limitations of print publication--the *Journal* offers an expanded page count for technical papers along with full color graphs, figures, and images. "TechTalk" articles begin providing a means for industry professionals to share ideas about trends, new methods, and cost-saving techniques outside the criteria of a peer-reviewed technical paper. TechTalk articles also create a new outreach method for IEST to provide guidance and information on the latest recommended practices and standards.

Within this new century, the growth of nanotechnology continues. IEST is well established as the preeminent technical society in the areas of contamination control, design testing, and reliability; nanotechnology facility design intersects well with these fields. The first Micro/Nano Edition of the *Journal* includes case studies and planning for micro and nano fabrication facilities. Micro/nano fabrication cleanrooms are classified by the international building code as High-Hazard Group H5 Occupancies due to the elevated use of hazardous chemicals, requiring unique design considerations.

Nanofabrication cleanroom H5 Emergency Control Station, from 2013 Micro/Nano Edition.

2018

As the *Journal* enters its next decade, there is an increasing focus on knowledge sharing with other scientific societies to provide the best of the best in technical research. The *Journal of the IEST* remains as one of the few peer-reviewed journals in several industries we serve. Researchers continue to seek publication in the *Journal* as a forum for their discoveries. IEST currently has liaison roles with reliability, aerospace, space simulation, and contamination control organizations and provides an outlet for pioneering research.

The 2018 issue includes:

- Cutting-edge research on the definition of the Spectral Density Matrix
- Guidance on the use of the new ISO 14644 standard on the suitability of equipment for the cleanroom
- The Otto Hamberg Award winning paper from the Aerospace Testing Seminar
- TechTalk knowledge you can use today to prevent a ticking dust bomb in your cleanroom
- Technical Editors' overall selection from the Reliability and Maintainability Symposium (RAMS), reporting on assessing fatigue life of engine-mounted components
- An overview of all the latest ISO 14644 standards, including revisions of current standards and new projects in development

Access to the *Journal*

If you are interested in a deeper review of research in the environmental sciences, the online *Journal* archive offers access to 32 years of searchable papers. An index of earlier issues is available from the *Journal* web pages on the IEST website. Research papers prior to 1985 can be ordered by contacting IEST.

The *Journal* is available online as a benefit to all IEST members and through a digital subscription platform accessed by professionals, corporations, libraries, and leading organizations around the globe.

Publish in the *Journal*

Publishing with IEST under our peer-review process provides credibility and increases exposure for your research through our highly cited archive. Submitting authors find that feedback gained by peer review can provide new perspectives, improve language, prevent unintentional errors, and increase confidence in observations. Unlike commercial trade publications, your work earns the authoritative citation of an accredited international standards body and longstanding technical institution.

The *Journal* accepts technical papers as well as general interest TechTalk articles. TechTalk articles gain wide circulation due to their open availability as a resource on the IEST website. Authors can present lessons learned, current trends, industry updates, or other information of interest.

Benefits of joining IEST

Your IEST membership includes the current issue of the *Journal of the IEST* as well as the immense volume of papers available to you through the searchable online J*ournal* archive. As a member of IEST, your VIP Access allows you to view papers as they are approved for publication, in advance of their publication in the annual issue.

Please consider joining as an author, reviewer, or IEST member to preserve the 60-year mission of the *Journal of the IEST*—to support the pursuit of knowledge, the advancement of technology, and the creation of pathways of communication in the environmental sciences.

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