

## News bits

### Download Call for Papers

The 2003 Symposium Call for Papers is available for downloading from the ESD Association Web site. Go to [www.esda.org](http://www.esda.org) and click on the Call for Papers link on the home page.

### ESD Press catalog available

A new catalog of ESD Association publications, standards, and promotional items is now available. You can download it from the ESD Association Web site, [www.esda.org](http://www.esda.org).

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## Association recognizes contributors

### Contributor . . . pioneer . . . founder . . .

Three individuals who had significant impact on the ESD Association, the Symposium, or the ESD industry. Three individuals who were recognized, honored, and thanked by the ESD Association during the October EOS/ESD Symposium in Charlotte, North Carolina. Three individuals who were recipients of prestigious awards: Dave Swenson, Outstanding Contributions Award; Jerry Giuliano, Pioneer Award; and Chuck Ehrenfried, Founder's Award.

Three individuals whose efforts, activities, and contributions are summarized below in comments made during the award presentations at the Association's luncheon and annual meeting.

### David E. Swenson—Outstanding Contributions Award

*Comments and presentation by Ron Gibson*

The Outstanding Contributions Award is the highest award that a person can receive from the ESD Association. It is presented to an individual who has made

major long-term contributions to the development or operations of the ESD Association and who has had a significant impact in the field of EOS/ESD.

David E. Swenson from 3M Corporation has served the standards committee as a member of various working groups, chair of the worksurfaces working group and the packaging working group, and vice chair of technology. He made major contributions to the development of ANSI/ESD S20.20. He has also served as representative of the United States National Committee as a technical advisor to IEC TC 101—Electrostatics

Dave has contributed to the ESD Symposium as technical program committee chair, vice general chair, general chair, co-chair of the ESD Association charity golf event, exhibits liaison, and presenter of technical papers and workshops.

Dave has served in the operation and growth of the ESD Association as an elected member of the board of directors, vice president, senior vice president, president, and past president.

He has also played the unofficial role of ESDA ambassador during his frequent trips around the world. These trips played a major role in getting the ESD Association recognized in Europe and Asia.

It might be hard to believe but Dave also has a paying job. Dave has worked at 3M corporation since December of 1968. His first assignment was as a radiochemical technician where Dave played a major role in the development of 3M's radioactive ionization equipment. This work on ionization equipment became one of the cornerstones of 3M's entry into the static control industry. After nine years in the product development lab, Dave became the first technical service represen-



David E. Swenson

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Association news

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## Contributor . . . pioneer . . . founder

tative for the newly formed static control division. In this role, Dave began his traveling career as he assisted 3M facilities in North America in solving their static control problems.

In 1984, after moving to Austin Texas, Dave received 3M's Circle of Excellence Team Award. He was also appointed to the position of global tech service manager. In this role Dave started static awareness education through 3M globally as well as many of 3M's customers such as IBM, HP, AT&T, and Motorola. Today, Dave is one of the technical leaders in the 3M static business and he serves as a mentor to many of the new generation 3M scientists.

Dave continues to live in Round Rock, Texas with his wife Gerry. Dave is a devoted family man as can be seen in the way he speaks of his four children and five grandchildren.

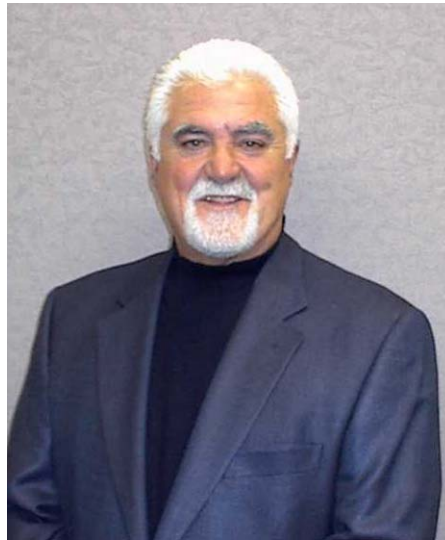
### Jerry Giuliano—Pioneer Award

*Comments and presentation by Stephen A. Halperin*

The ESDA Pioneer Award recognizes long-term contributions that caused the evolution and growth of our industry. The pioneer is a leader. A true pioneer creates new direction and sets innovative standards of performance. The pioneer motivates and influences others to do new things. We recognize Jerry Giuliano of Julie Industries as such a man.

When Jerry's mother was pregnant with him, she was actually struck by lightning. The man was destined for the world of static control.

Jerry started his career shortly after high school, working for the Simco Company as assembler, ambassador, instructor, world traveler, and static sleuth. He grew through experience and trial and error, capitalizing on what he learned. He applied his skills in virtually every industry and shared his knowledge with all who needed it. He personally developed innovative demonstrations to teach others the



*Jerry Giuliano*

mysteries of static and either created or helped others to create new products.

Jerry also worked with Testone Electrostatics Corporation, which merged with a company called Custom Materials. When Custom Materials was later purchased by 3M, Jerry started Julie Associates, which has grown into an international company, today known as Julie Industries.

Jerry is an international ambassador for our Association and our industry. During the past 35 years, Jerry developed a reputation for always helping his customers, his suppliers, his friends, and even his competitors, solve ESD problems. He provided the first ESD seminars delivered to local organizations.

Jerry was always there when you needed him. When there was a problem without a solution, Jerry created the necessary product or material to solve the customer's problem. Many of those products are still used in today's market place.

He not only supported the first EOS/ESD Symposium, but also took on any task assigned to him by the board of directors. For the past 10 years, Jerry provided the Northeast Chapter with a place to meet. And at his own expense he wrote, pub-

lished, and distributed *Threshold* for 3 years and never asked for a word of thanks.

Well, now we are thanking Jerry for his many contributions. We are thanking him, not only because he is a pioneer of technology and innovation, but also because he is truly a pioneer of fellowship, a pioneer of sharing, and a pioneer who helped develop the ESD industry. He accomplished all this by being the ultimate ambassador. He put people together who could solve problems and provide solutions for those who needed them. He made it possible for all of us to have a vocation in this industry.

### Chuck Ehrenfried—Founder's Award

*Comments and presentation by Burt Unger*

The Founders Award recognizes and honors those who have made significant contributions to the organization and establishment of the EOS/ESD Symposium. This year we are honoring Chuck Ehrenfried.

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*Chuck Ehrenfried*

Association news

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## Contributor . . . pioneer . . . founder

Chuck was born and raised in a little town near Toledo, Ohio, called Tiffin. He attended Bowling Green University in Ohio, where he met his wife Caroline, and was awarded a degree in engineering. Later, while in the Air Force, he was awarded a Ph.D. degree by the Air Force Institute of Technology at Wright Field in Dayton, Ohio. He served in the Air Force for 20 years at the Pentagon and at several of the research and development centers in the United States.

Major Ehrenfried's last post was with the reliability branch at Rome Air Development Center (RADC) in Rome, New York. He retired from the Air Force in the mid 70s and took a job as head of IITRI, the Illinois Institute of Technology Research Inc. reliability branch under contract to the Air Force at RADC.

Chuck and several others recognized the need for promoting and discussing the reliability concerns of electrical overstress and electrostatic discharge and Chuck provided the full technical and financial support of IITRI for setting up the EOS/ESD Symposium. Without Chuck's support, the Symposium would not have gotten off the ground. The first Symposium was held 24 years ago. Chuck was a member of the Symposium's board of directors and was the treasurer for many years. He was a tough taskmaster, questioning and requiring justification for every expenditure.

Chuck is now retired and living with his wife Caroline in New Bern, North Carolina. He's a busy man with many interests; wood turning, collecting all kinds of woods . . . all for future use, fishing, bridge, photography. He explains that many of his blank photos are attempts to capture bumblebees in flight. He's an accomplished whittler, particularly of woodpeckers. In order to display them he collects woodpecker holes. If he sees a tree limb with a hole, he takes the limb, cuts out the woodpecker hole, cleans and varnishes it, and displays it with the carved woodpecker. A somewhat unusual hobby.

## The life blood of the ESD Association

### Volunteers . . .

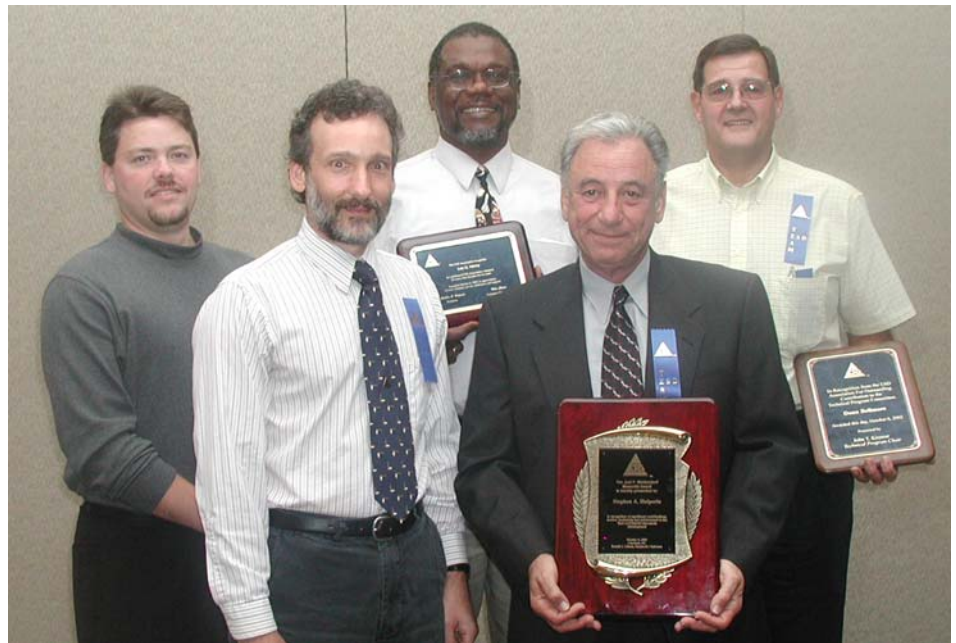
- They programmed and planned the 2002 Symposium and tutorials.
- They created a new S20.20 seminar for presentation during 2002.
- They create ESD standards that are recognized by the IEC, FDA, US military, and major corporations worldwide.
- They developed an S20.20 facility certification program that now has registrars in Europe, Asia, and North America.
- They help the ESD professional certification program grow.
- They strengthen the Association's abil-

ity to work together as a team.

- They developed a new ESD design seminar presented in March 2002.
- They work with other organizations, such as Cleanroom/Datastor, IEST, IPC, and SEMI to create, review, and carry out new programs.
- They spearhead the establishment of new local chapters in areas such as the Philippines.

There are nearly 150 of them who give their time and talents to the ESD Association (For the complete list of volunteers, see page 4). They were all honored on Sun-

*Continued on page 4*



*In addition to recognizing the volunteers who make the Association run, the ESDA presented special awards to several individuals at the annual volunteer recognition dinner in October. From left to right: Mark Kelly was cited for his assistance to the 2002 Symposium; Joe Bernier was cited for his work on the Association's ACE committee; Leo G. Henry received the "Unsung Hero" award for his efforts on standards, board of directors, Threshold, and various other activities; Steve Halperin received the Joel P. Weidendorf Award in recognition of significant contributions, service, leadership, and achievement in the field of EOS/ESD standards development; and Donn Bellmore was recognized for his work on the Symposium technical program and moderator of Symposium technical sessions.*

Association news

Continued from page 3

## The life blood of the ESD Association

day evening, October 6, at the annual volunteer recognition dinner held in conjunction with the EOS/ESD Symposium. The evening also provided the Association with the opportunity to extend extra recognition to several volunteers who made special contributions during the year (see photo on page 3).

ESDA Volunteer Recognition Chair Mike Chaine and ESDA President Steve Halperin summarized the event by saying, "Bottom line, none of this activity would be possible without our volunteers. They are the lifeblood of the organization. Without the outstanding effort of our volunteers, our Association would not be the 'class act' that it is today."

## White paper examines future challenges

A white paper addressing the serious nature of ESD for the next generation of electronics and the need for further research in the area has been published by the ESD Association.

Entitled *ESD Phenomena and the Reliability for Microelectronics*, the white paper presents insights into present-day ESD phenomena, an overview of ESD effects on electronic chips and systems, and a summary of future issues and challenges facing ESD reliability as further advances in semiconductor technologies are made.

Several leading electronics and ESD experts contributed chapters to the 53-page document, covering such areas as controlling ESD from the factory point of view, designing ESD protection into the chip itself, methods to measure and test ESD levels, the impact of advanced IC technologies, simulation of ESD effects, and the challenges of the next decade.

Copies of the white paper can be purchased from ESD Association headquarters.

### ESDA Roster of Volunteers

The following individuals were acknowledged for their contributions to the ESD Association during the volunteer recognition dinner.

Kay Adams	Horst Gieser	Carl Newberg
Tom Albano	Ferruh Goceman	Steve Nosek
Warren Anderson	Eric Granstrom	Chris O'Connor
Robert Ashton	Bill Greason	Dale Parkin
Marise Bafleur	Dale Gross	Louis Patterson
Kaustav Banerjee	Vaughn Gross	Charles Perry
Alan Barber	Vikas Gupta	Robert Perry
David Barber	Stephen Halperin	Donald Pierce
Jon Barth	Jay Hamlin	David Pommerenke
Brent Beamer	Arleigh Hartkopf	Donald Pritchard
Kim Becker	Colin Hatchard	MK Radhakrishnan
Donn Bellmore	Leo G. Henry	Corinne Richier
Bob Benson	Jenny Himle	Bill Ricker
Joseph Bernier	Masamitsu Honda	Dennis Rivers
Patrice Besse	Mike Hopkins	Richard Rodrigo
Joe Blanchard	Brent Howard	Martin Rudat
Don Boehm	Timothy Hughbanks	Christian Russ
Randy Bordeos	Tom Hume	Jeff Salisbury
Gianluca Boselli	Hugh Hyatt	Pascal Salome
Mike Brandt	Richard Ida	Craig Salling
Rick Brin	Satoshi Isofuku	Jakes Sketoe
Julius Brodbeck	Tim Jarret	Theo Smedes
Tilo Brodbeck	Joe Jesse	Doug Smith
Jon Brodsky	Harry Jolliff	Jeremy Smith
Larry Burich	Melissa Joliff	Arnold Steinman
Sergey Bychikhin	Niels Jonassen	David Swenson
William Casselman	Mark Kelly	Howard Tang
Mike Chaine	Ming-Dou Ker	Fred Tenzer
Eugene Chase	John Kinnear	Dale Tucker
Cheryl Checketts	Rick Knight	Art Tully
Tim Cheung	Stephen Koehn	Julius Turangan
Soomia Choo	Harry Lamberth	Burt Unger
Gregg Croft	Dave Leeson	Julie Vaughn
Arnie Crumb	Raivo Leeto	Koen Verhaege
Ted Dangelmayer	John Maas	Bob Vermillion
Jeff Daughton	Timothy Maloney	Jim Vincent
Edward Davis	Mike Manders	Steven Voldman
Jaquana Diep	Jim Mann	Rod Wallace
Tom Diep	Brenda McCaffrey	Albert Wallash
Jerry Dull	Markus Mergens	Ed Weggeland
Charvaka Duvvury	Carl Metz	Merle Weight
Raffy Espiritu	Thomas Meuse	Gary Weiss
Tim Fahey	Jim Miller	Stan Weitz
Marty Farris	Ian Morgan	Dave Wolf
Stephen Fowler	Ton Mouthaan	Heinrich Wolf
Reinhold Gartner	Andreas Mueller	Eugene Worley
Walt Gately	Andy Murello	Craig Zander
Steven Gerken	Doris Murello	Roger Zimmerman
Ron Gibson	M. Iyer Natarajan	

## Symposium presents paper awards

The EOS/ESD Symposium presented its Best Paper, Best Student Paper, and Best Presentation awards from the 2001 Symposium during the annual awards breakfast at the 2002 Symposium in Charlotte, NC.

**Above Right:** The Best Paper Award was presented to Cynthia Torres, James Miller, Michael Stockinger, Matthew Akers, Michael Khazhinsky, and James Weldon, Motorola, Inc., for their paper *Modular, Portable, and Easily Simulated ESD Protection Networks for Advanced CMOS Technologies*. Symposium Vice Chair Joe Bernier (right) made the presentation to Michael Stockinger and Cynthia Torres.

**Middle Right:** The Best Presentation Award was presented to Markus Mergens, Christian Russ, John Armer, Phillip Jozwiak, Girija Kolluri, Les Avery, Sarnoff Corporation; and Koen Verhaege, Sarnoff Europe, for their paper *Multi-Finger Turn-on Circuits and Design Techniques for Enhanced ESD Performance and Width-Scaling*. Symposium Vice Chair Joe Bernier (right) made the presentation to (left to right) Philip Jozwiak, Christian Russ, and Koen Verhaege.

The Best Student Paper was presented to Agnes Guillaume, EADS CCR, CEGELY, for her paper on *Human Body Model Test of a Low Voltage Threshold SCR Device: Simulation and Comparison with the Transmission Line Pulse Test*. The paper was co-authored by Bruno Foucher, EADS CCR; Jean Pierre Chante, CEGELY; Philippe Galy, Pole Universitaire Leonard De Vinci; S. Bardy, and Fabrice Blanc, Philips Semiconducteur.

The Best Paper and the Best Student Paper are based on the technical content of the paper and are chosen by the Symposium's technical program committee. The Best Presentation is based on presentation quality and style at the Symposium and is determined by the attendees.

**Below Right:** In addition, the Symposium presented its annual Friendship Award to Takehiko Hamaguchi, Takayuki Ichihara, and Takayoshi Ohtsu, of Hitachi, Ltd. for their paper *Analysis of Barkhausen Noise Failure Caused by ESD in a GMR Head*. The Friendship Award is presented annually to the paper judged the best paper at the RCJ EOS/ESD Symposium, Japan. The presentation was made to Takayoshi Ohtsu (left) and Takehiko Hamaguchi (center) by Symposium Vice Chair Joe Bernier (right).



## Update on standards activity

by  
Michael T. Brandt, Editor

### New documents

Two new documents have been published by the Association. One is a draft standard, *ESD DSS41-2002: Packaging Materials for ESD Sensitive Items*, which covers packaging material properties and test methods. As a draft document, DS541 is released for industry review and is subject to change before being released as a full standard. The other document is a technical report, *ESD TR14-02: Measurement and ESD Control Issues for Automated Equipment Handling of ESD Sensitive Devices below 100 Volts*. Both documents may be purchased from ESDA headquarters. Association members may download the technical report from the ESDA Web site.

### Working group activities

The ESD Association standards committee and standards working groups held their October meetings in Charlotte, NC. A summary of various working group activity appears below.

**Ionization WG-3** reviewed a study of a new proposed test fixture as an alternative to the charged plate monitor (CPM) for determining discharge time and offset voltage. The proposed fixture incorporates a driven shield around the plate mount-

ing conductor. The study indicated that the driver shield appears to reduce stray capacitance on the test fixture, but that the self-discharge time was excessive for smaller plate sizes and that this phenomenon was perhaps the result of "leaky" insulation. The group will evaluate an improved shield design. Additional discussion focused on advisory *ESD ADV3.2-1995* covering selection and acceptance of air ionizers to determine if new material should be added.

**Worksurfaces WG-4** discussed low voltage measurements of worksurfaces, but concluded that additional investigative lab work was required before proceeding further in the area. In addition, the group began looking at *ANSI/ESD STM4.2 ESD Protective Worksurfaces Charge Dissipation Characteristics*, which is due for a five-year review in 2003.

**Human Body Model Device Testing WG-5.1** reviewed including upper and lower boundary limits on the short circuit discharge waveform shown in Figures 1 and 2 of HBM standard *ESD STM5.1-2001*. A new spreadsheet program has been developed and is being tested that could be modified to automatically add the limits. In addition, the group discussed the HBM stressing of multiple power supply pins that are shorted together in the package and is looking at reducing the test time by stressing only one pin instead

of entire groups of shorted pins. The working group has also started to investigate using small pin testers to stress large pin count devices.

**Machine Model Device Testing WG-5.2** is continuing to distribute and evaluate an industry survey assessing usage of machine model testing, the ability of users to replicate product factory and field failures, and tester correlation issues. A final summary is to be presented at the February meeting series. The working group also discussed preparation of a technical paper for the 2003 Symposium that covers the future of machine model ESD.

**Charged Device Model Device Testing WG-5.3.1** reviewed data from several CDM test heads and testers for potential development of an arc-free calibration procedure for the next version of the standard. Some research funding is available to continue work in this area. A next step in improving the existing document is testing at a +1 amp level to ensure that linearity exists from the milliamp range to the amp range.

**Socketed Discharge Model Device Testing WG-5.3.2** has nearly completed work on the draft of its standard practice document. The primary remaining issue is to collect additional data on the effects of reducing the number of stress pulses from three to one.

**Transient Latch-Up Device Testing WG-5.4** reviewed comments to its WIP standard practice document evaluating data and procedures for determining the waveform shape and period. Additional information on the use of TLU to identify sensitivities for field failures was presented, indicating that the TLU procedure successfully identified weaknesses.

**Transmission Line Pulsing Device Testing WG-5.5** reviewed comments on draft L of its standard practice document, addressing areas for improvement. The document will be resubmitted to TAS for additional review.

#### Tentative Schedule

#### February 2003 ESD Association Standards Meeting Series Riviera Hotel, Las Vegas, NV, February 7-9, 2003

##### Friday, February 7, 2003

8:00 AM Ionization WG-3  
Device Testing Working  
Groups WG-5  
1:00 PM Worksurfaces WG-4  
Handlers WG-10

##### Saturday, February 8, 2003

8:00 AM Device Testing Working  
Groups WG-5  
Footwear WG-9

Work Stations WG-53  
Cleanroom Consider-  
ations WG-55  
1:00 PM Packaging WG-11  
Flooring WG-7

##### Sunday, February 9, 2003

8:00 AM Handtools WG-13  
Simulators WG-14  
Gloves WG-15  
1:00 PM Standards Committee

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From the president

# Report to the membership

*Presented at the ESD Association Luncheon, October 9, 2002  
by Stephen A. Halperin, President*



Over the years, we have shared many common bonds: the development and growth of our industry, its technical evolutions, and the ups and downs of

our economic conditions. Last year, we shared another bond—the terrible experience of September 11. We mourn those who were lost and will never forget that tragic event.

## Financial challenges

It is important to recall that for several months leading up to September 11, the international economic condition was already quite challenging. Subsequently, 2001 was the first financial loss in ESDA history. The early economic downturn resulted in low Symposium registration. This was not a major concern on opening night because on the following morning we expected over 80 “walk-ins”. Due to the tragedy and airport closures, we had only 8 additional registrations. The result of a very difficult year was an approximate loss of \$175,000.

In December under the direction of treasurer Ron Gibson, your BOD recast a dramatically reduced 2002 budget. We reviewed it in detail quarterly and continued to adjust as the year progressed. We will continue our management efforts to safeguard our association and its contributions to industry.

To this end, our headquarters staff was lowered from four to two full-time program managers and HQ operational expenses were further reduced to the essen-

tials. To compensate for the 2001 loss and reduced 2002 income, we launched new professional seminars that had originally been scheduled later in the year. John Kinnear and Ron Gibson accelerated their S20.20 registrar auditor training and facility certification program and created a new seminar that was conducted in China and the US. Tom Diep’s education committee launched a new professional device seminar. Under the direction of Charvaka Duvvury and his team, the first device seminar was held in northern California. All of these efforts contributed to industry development as well as provided additional income for our operations.

Our current financial status is breakeven. If all goes as planned, we may make a modest profit, and do so without sacrificing implementation of our most important programs.

We are striving to avoid further losses. However, I hasten to add that it is difficult to predict the future – we still have 3 months to go in this year. But, we are well into planning for the next five years and

expect substantial growth in all areas. Rest assured that your board of directors and executive committee will continue to protect our association and our professional interests. A financial summary appears below and a detailed report can be obtained from Association headquarters.

## Looking ahead

Despite the challenges we face, we continue to be exceptionally productive in planning and implementing new programs. Our focus is the *future support of our industry and the people who make it productive*. To that end, we have created several new teams and programs to expand our activities and industry impact and to enhance the value of being a professional participant in our industry’s future.

## The road map

A new addition is the *technology road map* team aimed at providing guidance in the years to come. This high-end discus-

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### Annual Report of Directors

#### Electrostatic Discharge Association, Inc.

The following is a summary of the financial position and operating results for the periods indicated:

	Jan-Sept. 2002 (Unaudited)	2001 (Audited)	2000 (Audited)
<b>Total Assets</b>	\$589,705	\$460,979	\$672,210
<b>Total Liabilities</b>	(\$10,074)	(\$102,779)	(\$139,115)
<b>Net Assets Unrestricted</b>	\$579,631	\$358,200	\$533,095

	Jan-Sept. 2002 (Unaudited)	2001 (Audited)
<b>Operating Income</b>	\$671,401	\$897,288
<b>Functional Expenses</b>	\$449,970	\$1,072,183
<b>Increase (Decrease) Net Assets</b>	\$221,431	(\$174,895)

\*Note: The unaudited Jan-Sept. does not include 2002 Symposium/Tutorial program expenses.

The following is the Association membership numbers for the periods Indicated. All membership lists are database stored at the Headquarters office that includes all address information.

	Jan-Sept. 2002	2001	2000
<b>Total Membership</b>	1559	2038	1896

## From the president

*Continued from page 7***Report to the membership**

sion group includes many very accomplished ESD technologists, such as Steve Voldman, Charvaka Duvvury, Tim Maloney, and several other distinguished members. Their goals include anticipating new industry developments and trends that we might respond to in our support of industry. The results of their work will be communicated to membership in the form of white papers, panel discussion groups, input to standards, as well as new tutorials, seminars, workshops, and symposium papers. Incidentally, a new white paper was released at the Symposium and is available from ESDA headquarters.

**Certification programs**

We know that new technology and meeting industry's competitive challenges require highly qualified ESD design engineers and technicians to conjure up, and to proof the work of the future. Our focus is to provide education and information to those innovative technologists. In 2003, we will introduce initial phases of a new ESDA certification program for advanced ESD design engineers and technicians who create our industry's devices and systems. Presently, we plan to upgrade and enhance our current NARTE certification program to support these objectives. The NARTE engineer and technician certifications may become prerequisites to the advanced ESDA professional certification programs.

To state that a program is a "fact" is not enough. We must support them by offering educational materials, seminars, and workshops to provide the means to help educate individuals and meet these demanding goals. Ultimately, through providing advanced engineering technology and communication, we hope to enjoy advanced technology and information with the manufacturing environment. After all, manufacturers cannot provide ESD protection unless they know the ESD sensitivities of devices and assemblies that they handle.

**S20.20 programs**

In concert with enhancing quality, productivity, and profitability of manufacturers, we continue our focus on S20.20 facility certification and the professional programs that support it. We intend to protect existing and new technologies by providing qualified professionals to design and implement effective ESD control programs. We have begun the initial development phase for ESDA certification of professional S20.20 program managers and auditors who will design, implement, and maintain our industry's new ESD programs.

A new "plant operators program" is in the works. We anticipate introducing this computer based low cost, customizable plant operators training program in late 2003. This program is designed to be adaptable to any certifiable S20.20 ESD control program.

In the near future, we will be providing specialized ESD control guidelines for unique static sensitive environments to assist many manufacturing industries in meeting the demands of static control, as well as specialized information for the operating environments where complex systems are used and maintained.

**Symposium changes**

These are not easy tasks. It's one thing to conceive of solutions, and create the supporting material. It's an entirely different task to deliver the information to those who need it. To this end, we will redesign and expand future Symposium Week activities. We have already begun with program modifications this year. Next year, you will see more professional seminars to support **both** engineering and manufacturing certification programs. You will see an expanded basic ESD training program, more tutorials, and new seminars designed for our exhibitors and product suppliers.

We will be recruiting and training additional instructors to provide fundamen-

tal information to those who require it. We plan to deliver more educational programs domestically and internationally through regional tutorial programs and freestanding international seminars. At the same time, we will continue to support our S20.20 registrars with qualified training and witness audits.

**Association goals**

How are we going to do this? We will capitalize on our web site, new CD programs, and new printed materials to support the needs of these programs. All of this will come together to meet our organization's ultimate objective to "become the international resource for electronics industry ESD technology, facility certification, and personnel education and certification."

We have been busy. This year we designed a flexible guideline to support this industry objective over the next five years. The BOD approved it at the summer meeting, and implementation has already begun. Our Association goals for the next 5 years are:

- Increase symposium week attendance to 1,500 at symposium, seminars, workshops, national tutorials and certification programs
- Certify 1,000 facilities to the S20.20 standard
- Educate and certify 275 S20.20 program managers and 330 S20.20 program plant auditors
- Train a minimum of 50,000 plant operators using our new computer based training program
- Certify 75 advanced ESDA engineers, 350 new ESD device and system engineers, and 500 new ESD device and system technicians
- Increase ESDA membership to 3,500
- Acquire and support a minimum of 100 corporate sponsors

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## Standards

*Continued from page 6*

### Update on standards activity

**Footwear WG-9** reviewed comments to its WIP on foot grounders and plans to add test procedures at moderate humidity.

**Handlers WG-10** discussed future work focusing on static generated from detaping on automated handlers and a method to measure CDM discharge currents that may occur from device to handler. The group will gather information in both areas so that a decision can be made whether either project should be pursued.

**Packaging WG-11** is awaiting input from the draft ESD DS541 document that was recently released for industry review.

**Two Point Resistance (Packaging) WG-11.13** completed its review of data from its round robin testing of the proposed procedure for measuring surface resistance, allowing the group to finalize its draft WIP for further review.

**Simulators WG-14** reviewed initial data on measurements of radiated ESD fields from the simulator discharge event and made revisions to its draft WIP document.

**Gloves WG-15** reviewed its draft WIP document and round robin test data. One main issue was the need to make measurements at 12% relative humidity. The work group agreed to do additional testing at 12% and 50% RH by the February meeting series.

**Workstations WG-53** has completed the writing of several sections of its initial draft of a compliance verification document. The sections cover test equipment, test procedures, test requirements, test frequency, and troubleshooting.

**Cleanrooms WG-55** completed work on its addenda to its cleanroom technical report and has forwarded the addenda to TAS for review. The group discussed possible preparation of a technical report, on clean room garments. The first step in determining whether such a document is needed is to invite several cleanroom garment manufacturers to discuss various issues at the next working group meeting.

## From the president

*Continued from page 8*

### Report to the membership

#### We need your help

Obviously, we have a lot on our plate and much to do. We have already begun. We are focused on superior performance, creating excellence in our programs, exceeding the expectations of industry, and meeting the needs of current and new ESD professionals. We need more member participation. If you have something to offer – your time, your skill, and your knowledge – contact Mike Chaine. He is chairing our new human resources team along

with several members of our BOD and EXCOM.

This is your association. As volunteers, we, the board, the business unit managers, and committee members, maintain its direction, standards of performance, and its productivity on behalf of you and your companies. The ESDA's future is only limited by your input, your participation, and, most important, you and your companies' continued support. I ask all of you to consider how you too can contribute to the ESDA's future.

## Association news

### Association elects directors, officers



The ESD Association selected new board members and officers for 2003. Elected to the board of directors for three-year terms were (back row, left to right) Tim Jarrett, Guidant Corporation, St. Paul, MN; Leo G. Henry, ESD/EMI Consultants, Fremont, CA; Dale Parkin, IBM, Rochester, MN; and Tim Maloney, Intel, Santa Clara, CA. The board of directors also elected its officers. They are (front row, left to right) President Stephen Halperin, Stephen Halperin & Associates/Prostat Corporation, Bensenville, IL; Senior Vice President Ed Weggeland, Static Control Components, Idyllwild, CA; and Vice President Mark Kelly, Delphi Delco Electronics Systems, Kokomo, IN.

Additional board appointments are Kay Adams, Tech Wear, Carlsbad, CA, as business unit manager for human resources; Ron Gibson, Celestica, Inc., Toronto, ONT, Canada, as treasurer; and Don Pierce, Sandia Technologies, Albuquerque, NM, as business unit manager for international council on education.

From the Threshold chair

# The dilemma of different definitions for the same term



Leo G. Henry

Over the last several standards meeting series, I have had the privilege and opportunity to visit (as a guest) some of the other working group sessions like ionization, clean rooms, gloves, and automated handlers.

Being a "participating" member of the Device Testing WG-5.0, which comprises six subcommittees, my visits to these other groups are actually quite few and far between. However, one can learn quite a lot from such visits.

One such learning experience is the realization that terms like *calibration, qualification, evaluation, and verification* are used in the different working groups in such a way that small, but subtle meaningful differences do exist. This is compounded by the fact that some of the terms are not in the Glossary document, which is presently being updated. The objective of this column is to raise the level of awareness of the need to ensure that the same definition or description exists for common terms used in all the standards documents.

For now, I will only address the term *verification*. According to Webster, to

Verify is to *list or to check the accuracy or correctness of some measurement, etc. by comparing it with a standard or reference*. Verification can be described as the confirmation of truth or accuracy of a fact or theory.

In all of the ESDA's published device testing standard test method documents, the measurement of waveforms plays a very important role. These documents describe or define the term *waveform verification equipment (WVE)* as *equipment capable of verifying the waveforms required by this standard shall include but not limited to an oscilloscope, two evaluation loads, and a current transducer*. The document further provides the minimum and maximum parameter limits for the waveforms, so the measurements have an implied repeatability and accuracy provision. In at least one other document, we find the term *compliance verification equipment (CVE)* being described or defined as *an instrument or collection of instruments that provide an indication of measurement. It may or may not be repeatable or accurate. This equipment is typically used for indications of pass or fail*.

Here we see obvious differences. In the first instance (WVE), the measurements must be repeatable and accurate, but in the second instance (CVE), the measurements may or may not be repeatable or accurate. The question becomes, *is it the instrument or equipment that is providing the non-repeatable and inaccurate measurement or is it the measured object?* Verification is meant to confirm that the measurements taken after the equipment has been in use for some time are still within the same specifications as was determined when the equipment first arrived or was first used. The object or receiver of the verification measurement must provide repeatable and accurate data.

Here is a simple example. A CDM ESD simulator is used to test IC products for pass or fail after applying incremental voltage or current through the product. For a specific applied voltage, the ESD

simulator must repeatedly deliver to the IC product the same specified current. It must be repeatable. An oscilloscope is used to verify or measure the peak current of a displayed waveform through a one-ohm resistor-inductor-capacitor (RLC) circuit of the ESD simulator. Periodically, the simulator is set up to verify that the current through the RLC circuitry has not changed within the specified limits. After equipment verification, the simulator is used to test the IC product. Since all devices are not created equal, it is expected that not all the test data will be repeatable, but the equipment will provide an accurate measurement. It follows that it is the IC product that may or may not produce repeatable or accurate data. It should also follow that to use a piece of equipment to make verification measurements, it must be accurate and capable of repeatability. If the equipment cannot be accurate, then it should NOT be used for such measurements.

Here is another way to look at it. The verification equipment used to make measurements from product must first be verified as to its accuracy and repeatability. If it cannot be verified, then it should not be used to measure product. Even though a piece of equipment may only be used for pass or fail, the data must at least be accurate because the equipment is accurate. Any non-repeatability must come from the measured product.

This tidbit focuses on the general need to share definitions among the working groups so that we present a more uniform set of standards to the public. If you have a contributing or dissenting view, please send your input via-letters to the editor.

Until next time.....

Thanx and BHappy

*Leo G*

## Calendar of events

### November 2002

#### Midwest Chapter meeting:

November 14, 2002, special facility tour, Fermi National Accelerator Laboratory, Batavia, IL, [www.midwestesd.org](http://www.midwestesd.org)

#### ESD Northwest Chapter meeting:

November 14, 2002, seating, Tom Judkins, [www.esdnw.org](http://www.esdnw.org)

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*More institutional listings, next page*

## Threshold

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