



# Technical Standards Program

## ESTA Standards Watch

December 2019

Volume 23, Number 23

### Table of Contents

Fifteen ESTA standards available for public review.....	1
WTO Technical Barrier to Trade notifications.....	3
Korea, Republic of Notification KOR/867 ( Add.1 ).....	3
Israel Notification ISR/1092.....	4
Israel Notification ISR/1093.....	4
Ukraine Notification UKR/157.....	5
Proposed revision to ANSI Essential Requirements available for comment.....	5
ANSI public review announcements.....	5
Due 13 January 2020.....	6
Due 20 January 2020.....	6
Due 28 January 2020.....	7
Due 4 February 2020.....	7
CSA public review announcements.....	7
Due 20 January 2020.....	7
Due 3 February 2020.....	7
New ANS projects.....	8
Final actions on American National Standards.....	9
Draft IEC & ISO documents.....	10
Recently published IEC & ISO documents.....	11
TSP January 2020 meeting schedule.....	13
TSP donors who have made long-term, multi-year pledges.....	14
Investors in Innovation, supporters of ESTA's Technical Standards Program.....	15

### Fifteen ESTA standards available for public review

Fifteen ESTA standards and draft standards are available for public review on the ESTA TSP website at <http://estalink.us/pr>. Anyone materially affected by any document is invited to review it and to offer comments before the deadline. The review documents are available for free; downloading it costs you nothing but your time. The listing below is an alphanumeric sort. The comment due dates for the different documents are not all the same; please take note.

**ANSI E1.17 - 2015, Entertainment Technology -- Architecture for Control Networks (ACN)**, is being considered for reaffirmation—no substantive changes. It is a suite of documents that specifies an architecture, including protocols and language, which may be configured and combined with other standard protocols to form flexible, networked audio, lighting, or other control systems. The suite of documents is offered in a ZIP file for download. Comments are due no later than 30 December 2019.

**ANSI E1.19 - 2015, Recommended Practice for the Use of Class A Ground-Fault Circuit Interrupters (GFCIs) Intended for Personnel Protection in the Entertainment Industry**, is being considered for reaffirmation with no substantive changes. It offers guidance, in accordance with existing applicable standards,

on how to select, install, use and maintain ground fault protection devices with nominal 5 mA trip settings in the entertainment industry. The purpose of their use would be to protect persons from shock and persons and property from fire. Comments are due no later than 30 December 2019.

**BSR E1.2, Entertainment Technology -- Design, Manufacture and Use of Aluminum Trusses and Towers**, describes the design, manufacture and use of aluminum trusses, towers and associated aluminum structural components such as head blocks, sleeve blocks, bases, and corner blocks in the entertainment industry. It is being revised to bring its requirements up-to-date with current technologies. Comments are due no later than 23 December 2019.

**BSR E1.4-3, Entertainment Technology -- Manually Operated Hoist Rigging Systems**, applies to permanently installed, manually operated hoists used as part of rigging systems for raising, lowering, and suspension of scenery, properties, lighting, and similar loads. This standard establishes requirements for the design, manufacture, installation, inspection, and maintenance of manually operated hoist systems for lifting and suspension of loads for performance, presentation, and theatrical production. Comments are due no later than 30 December 2019. Comments are due no later than 30 December 2019.

**BSR E1.6-2, Entertainment Technology - Design, Inspection, and Maintenance of Electric Chain Hoists for the Entertainment Industry**, covers the design, inspection, and maintenance of serially manufactured electric link chain hoists used in the entertainment industry. The standard is being revised to provide more clarity or requirements. Comments are due no later than 23 December 2019.

**BSR E1.20, Entertainment Technology -- Remote Device Management over USITT DMX512 Networks**, is a revision of ANSI E1.20 – 2010. The standard is being revised to clarify ambiguities, fix bugs, and incorporate some additional features. E1.20 is an extension to USITT DMX512 and ANSI E1.11 that allows for bi-directional communication on the primary data link. This allows a controller to discover RDM-enabled devices on the link, to set starting addresses and other configuration settings, and to request status messages. Comments are due no later than 30 December 2019.

**BSR E1.21, Entertainment Technology -- Temporary Structures Used for Technical Production of Outdoor Entertainment Events**, establishes a minimum level of design and performance parameters for the design, manufacturing, use and maintenance of temporary ground-supported structures used in the production of outdoor entertainment events. The purpose of this guidance is to ensure the structural reliability and safety of these structures and does not address fire safety and safe egress issues. This standard also establishes a reasonable standard for care by providing the minimum acceptable requirements at which temporary structures shall be designed and used. Comments are due no later than 30 December 2019.

**BSR E1.23, Entertainment Technology -- Design, Execution, and Maintenance of Atmospheric Effects**, offers advice on the planning, execution, and maintenance of theatrical effects using glycol, glycerin, or white mineral oil fogs or mists, in theatres, arenas, motion picture studios, and other places of public assembly or motion picture production. The guidance is offered to help effects designers and technicians create effects that can be executed repeatedly and reliably, and so that they can avoid excessive exposure to the fog materials and other foreseeable hazards. The revision includes guidance on developing strategies to maintain an effect over the months or years of a long-running show or an extended motion picture shoot. Comments are due no later than 23 December 2019.

**BSR E1.37-5, General Purpose Messages for ANSI E1.20, RDM**, provides additional Get/Set parameter messages (PIDs) for use with the ANSI E1.20 Remote Device Management protocol. Comments are due no later than 30 December 2019.

**BSR E1.47, Entertainment Technology -- Recommended Guidelines for Entertainment Rigging System Inspections**, covers the inspection of entertainment rigging systems. Rigging systems may be statically suspended (stationary) (dead hung) equipment, manually operated counterweight sets, manually operated hoist sets, rope and sandbag (hemp) sets, and electric hoist sets (including winding drum hoists, packaged hoists, powered counterweight sets). The document includes inspection of fire safety curtain systems, rigging only.

Rigging systems frequently include combinations and variations of rigging types. Comments are due no later than 30 December 2019.

**BSR E1.62, Minimum specifications for mass-produced portable platforms, ramps, stairs, and choral risers for live performance events**, is a product specification covering serially manufactured portable platforms, stair units and ramps used with those platforms, and choral risers. It also would cover railings provided as fall protection accessories for these units. It would give minimum payload and sideways force handling specifications. It would not cover custom platforms or complete stage systems. Comments are due no later than 23 December 2019.

**BSR E1.66, Safety Standard for Followspot Positions Erected for Short-term Use in Entertainment Venues**, covers safety requirements for followspot positions in, or on, structures erected for short-term use, and positions not covered by ANSI E1.28. It is applicable to positions located indoors or outdoors. It addresses structural, electrical, and personnel safety requirements associated with them. Comments are due no later than 23 December 2019.

**BSR ES1.9, Event Safety -- Crowd Management**, defines "crowd management," as distinguished from "crowd control," provides an overview of crowd management theory and vocabulary, and applies these terms to certain reasonably foreseeable risks that arise during live events. The standard is intended both to identify minimum requirements and to provide questions and suggestions that help event organizers make reasonable choices under the circumstances of their event. Comments are due no later than 30 December 2019.

**BSR ES1.7, Event Safety Requirements -- Weather Preparedness**, addresses the consideration, development and use of weather planning strategies to mitigate weather-related risks associated with live events and their associated temporary special event structures. Its scope includes both indoor and outdoor events, because both have considerations for attendees. Its scope includes sites not specifically designed for public events, as these too represent unusual or unique circumstances relating to risk assessment and mitigation. Comments are due no later than 23 December 2019.

**BSR ES1.19, Safety Requirements for Special Event Structures**, addresses structural safety for any temporary structure used for special events ("temporary special event structures"), where such structures are used for presentation, performance, structural support of entertainment technology equipment, audience seating or viewing in conjunction with the event, and regardless if the event is indoor or outdoor. It is being revised to correct errata, and to add further clarity to its scope and requirements. Comments are due no later than 23 December 2019.

---

## WTO Technical Barrier to Trade notifications

Notify US, the U.S. Department of Commerce's service to announce Technical Barrier to Trade filings, has announced TBTs that may be of interest to Standards Watch readers. If you have a problem with any TBT, you can protest through your representative to the World Trade Organization. See the guidance documents at <http://tsapps.nist.gov/notifyus/data/guidance/guidance.cfm> or <http://ec.europa.eu/growth/tools-databases/tbt/en/tbt-and-you/being-heard/> for advice on filing objections.

### Korea, Republic of Notification KOR/867 ( Add.1 )

**Date issued:** 2 December 2019

**Agency responsible:** Ministry of Environment

**National inquiry point:** Korean Agency for Technology and Standards (KATS), Ministry of Commerce, Industry and Energy (MOCIE) (KATS/MOCIE)

**Products covered:** Consumer Chemical Products subject to Safety Check. These products are designated and announced by the Minister of Environment since it is recognized that they have risks based on the result of risk assessment conducted in accordance with the Act on Consumer Chemical Products and Biocides Safety.

**Title:** - "Designation of Consumer Chemical Products subject to Safety Check, and Relevant Safety and Labeling Standards" (142 pages in Korean) - Comparative tables of old and new provisions (28 pages, available in Korean)

**Description of content:** - Newly designate and establish safety standards for three products (red seal ink pads, correction fluids and tapes, fog fluid for performance) - Designate microplastic (microbeads) as a prohibited substance for detergent and laundry product group - Prohibit manufacturing/importing chemical products used in humidifier as a stock solution or added in humidifier water - Designate five damage-causing substances found in humidifier disinfectants as prohibited substances for a preservative-treated filter product. (TSM note: The regulation limits the portion of ethylene and diethylene glycol in fog fluid to 10% or less by weight.)

**Objective and rationale:** Protection of human health or safety

**Relevant documents:** ME NOTIFICATION No. 2019-893 (27 November 2019)

**Proposed date of adoption:** Not given by country

**Proposed date of entry into force:** Not given by country

**Final date for comments:** 11 January 2020

**Full text:** [https://members.wto.org/crnattachments/2019/TBT/KOR/19\\_6887\\_00\\_x.pdf](https://members.wto.org/crnattachments/2019/TBT/KOR/19_6887_00_x.pdf) and [https://members.wto.org/crnattachments/2019/TBT/KOR/19\\_6887\\_01\\_x.pdf](https://members.wto.org/crnattachments/2019/TBT/KOR/19_6887_01_x.pdf)

#### Israel Notification ISR/1092

**Date issued:** 28 November 2019

**Agency responsible:** Israel WTO-TBT Enquiry Point, Ministry of Industry, Trade and Labor (MOITAL)

**National inquiry point:** Israel WTO-TBT Enquiry Point, Ministry of Industry, Trade and Labor (MOITAL)

**Products covered:** Nickel systems of secondary cells and batteries containing alkaline

**Title:** SI 62133 part 1 - Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications: Nickel systems (25 pages in English; 3 pages in English)

**Description of content:** The requirements of the existing standard, SI 62133 part 1, dealing with nickel systems of secondary cells and batteries containing alkaline, shall be declared mandatory. This declaration is inline with the mandatory standardization objective to protect human safety.

This standard adopts the International Standard IEC 62133-1 - Edition 1.0: 2017-02 without any national deviations and will enter into force 6 months after publication in Israel Official Gazette.

**Objective and rationale:** Protection of human health or safety

**Relevant documents:**

- Israel Standard SI 62133 part 1 (February 2019);
- International Standard IEC 62133-1 - Edition 1.0: 2017-02.

**Proposed date of adoption:** Not given by country

**Proposed date of entry into force:** Not given by country

**Final date for comments:** 27 January 2020

**Full text:** [https://tsapps.nist.gov/notifyus/docs/wto\\_country/ISR/full\\_text/pdf/ISR1092\(hebrew\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/ISR/full_text/pdf/ISR1092(hebrew).pdf)

#### Israel Notification ISR/1093

**Date issued:** 28 November 2019

**Agency responsible:** Israel WTO-TBT Enquiry Point, Ministry of Industry, Trade and Labor (MOITAL)

**National inquiry point:** Israel WTO-TBT Enquiry Point, Ministry of Industry, Trade and Labor (MOITAL)

**Products covered:** Lithium systems of secondary cells and batteries containing alkaline

**Title:** SI 62133 part 2 - Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications: Lithium systems (50 pages in English; 3 pages in English)

**Description of content:** The requirements of the existing standard, SI 62133 part 2, dealing with lithium systems of secondary cells and batteries containing alkaline, shall be declared mandatory. This declaration is inline with the mandatory standardization objective to protect human safety. This standard adopts the International Standard IEC 62133-2 - Edition 1.0: 2017-02 without any national deviations and will enter into force 6 months after publication in Israel Official Gazette.

**Objective and rationale:** Protection of human health or safety

**Relevant documents:**

- Israel Standard SI 62133 part 2 (February 2019);
- International Standard IEC 62133-2 - Edition 1.0: 2017-02.

**Proposed date of adoption:** Not given by country

**Proposed date of entry into force:** Not given by country

**Final date for comments:** 27 January 2020

**Full text:** [https://tsapps.nist.gov/notifyus/docs/wto\\_country/ISR/full\\_text/pdf/ISR1093\(hebrew\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/ISR/full_text/pdf/ISR1093(hebrew).pdf)

### **Ukraine Notification UKR/157**

**Date issued:** 4 December 2019

**Agency responsible:** Ministry for Development of Economy, Trade and Agriculture

**National inquiry point:** WTO National Enquiry Point & Information Processing Centre

**Products covered:** Textile products [TSM note: the textile fibers include those used in stage curtains and upholstery.]

**Title:** The Draft Order of the Ministry for Development of Economy, Trade and Agriculture of Ukraine "On approval of the Technical Regulation on textile fibers names and appropriate labeling and marking of the content of raw materials components of textile products" (112 pages in Ukrainian)

**Description of content:** This regulation lays down rules concerning the use of textile fibre names and related labelling and marking of fibre composition of textile products, rules concerning the labeling or marking of textile products containing non-textile parts of animal origin and rules concerning the determination of the fibre composition of textile products by quantitative analysis of binary and ternary textile fibre mixtures.

**Objective and rationale:** The Draft Order is aimed to provide accurate information to consumers and bring the provisions of the Technical Regulation into compliance with the Regulation (EU) 1007/2011 of the European Parliament and of the Council of 27 September 2011 on textile fibre names and related labeling and marking of the fibre composition of textile products and repealing Council Directive 73/44/EEC and Directives 96/73/EC and 2008/121/EC of the European Parliament and of the Council.; Consumer information, labeling

**Relevant documents:** Law of Ukraine "On Technical Regulations and Conformity Assessment" (available in Ukrainian)

**Proposed date of adoption:** Not given by country

**Proposed date of entry into force:** Not given by country

**Final date for comments:** 2 February 2020

**Full text in ten documents in Ukrainian:**

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[1\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[1](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[2\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[2](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[3\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[3](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[4\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[4](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[5\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[5](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[6\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[6](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[7\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[7](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[8\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[8](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[9\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[9](ukrainian).pdf)

[https://tsapps.nist.gov/notifyus/docs/wto\\_country/UKR/full\\_text/pdf/UKR157\[10\]\(ukrainian\).pdf](https://tsapps.nist.gov/notifyus/docs/wto_country/UKR/full_text/pdf/UKR157[10](ukrainian).pdf)

---

### **Proposed revision to ANSI Essential Requirements available for comment**

ANSI has announced a proposed procedural revisions to the *ANSI Essential Requirements*. The revision is the result of the ExSC's consideration over several years of multiple proposed revisions and comments submitted by consumer representatives, ANSI March 2018 ANS Workshop participants and other stakeholders. The proposed revision reflects modified text as shown in sections 1.5 Notification of standards development, 2.1 Openness, 2.3 Balance, 2.5 Notification of standards development and coordination and 2.8 Appeals. The proposed revision is intended to clarify existing requirements and process implementation expectations, and establish new procedural requirements.

Access at [https://tsp.esta.org/tsp/StandardsWatch/ExSC\\_017\\_2019\\_.pdf](https://tsp.esta.org/tsp/StandardsWatch/ExSC_017_2019_.pdf).

Submit comments to [psa@ansi.org](mailto:psa@ansi.org) before 17 January 2020.

---

### **ANSI public review announcements**

The following documents have been announced for public review by ANSI. Please send your comments before the deadline to the person indicated and to ANSI's Board of Standards Review at [psa@ansi.org](mailto:psa@ansi.org).

### **Due 13 January 2020**

#### **BSR/AWS C3.9M/C3.9-202x, Specification for Resistance Brazing** (revision of ANSI/AWS C3.9M/C3.9-2008)

This specification provides the minimum fabrication, equipment, material, and process procedure requirements, as well as discontinuity limits for the resistance brazing of steels, copper, copper alloys, heat- and corrosion-resistant alloys, and other materials that can be adequately resistance brazed (the resistance brazing of aluminum alloys is addressed in AWS C3.7M/C3.7, Specification for Aluminum Brazing). This specification provides criteria for classifying resistance brazed joints based on loading and the consequences of failure and quality assurance criteria defining the limits of acceptability in each class. This specification defines acceptable resistance brazing equipment, materials, and procedures, and the required inspection for each class of joint.

Single copy price: \$34.00 (non-members); \$26.00 (AWS members)

Order from and send comments to: Kevin Bulger, [kbulger@aws.org](mailto:kbulger@aws.org)

### **Due 20 January 2020**

#### **BSR/AWS C3.14M/C3.14-202x, Standard Method For Evaluation of Brazed Joints using Visual and Metallographic Techniques** (new standard)

This standard describes and illustrates the test methods used to obtain information related to brazed joint quality and structural integrity. Verification methods include visual observation, as well as metallography of such parameters as braze wetting; braze joint erosion; brazing filler metal penetration; differences between excess wetting; lack of wetting and dewetting; and formation of voids, cracks, and features which may be detrimental to end use. Additionally, methods to determine diffusion of braze alloying elements and procedures to qualify such methods are described. Photographs illustrating visual inspection, schematic illustrations, and photomicrographs illustrating various aspects of brazed joint integrity are presented.

Single copy price: \$36.00 (non-members)/\$27.00 (AWS members)

Order from and send comments to: Kevin Bulger, [kbulger@aws.org](mailto:kbulger@aws.org)

#### **BSR/BICSI 007-202x, Information Communication Technology Design and Implementation Practices for Intelligent Buildings and Premises** (revision of ANSI/BICSI 007-2017)

This standard covers the design and implementation of the information communication technology systems required to support an intelligent building/premise integrated design. Systems covered, include, but are not limited to: building automation/management, utility utilization, lighting, signage and wayfinding, sound and acoustical services, vertical transportation, location, and asset tracking.

Single copy price: Free

Obtain an electronic copy from and send comments to: [jsilveira@bicsi.org](mailto:jsilveira@bicsi.org)

#### **BSR/NECA 702-202X, Recommended Practice for Maintaining Power Quality of Electrical Power Distribution Systems** (new standard)

This publication describes recommended practices for identifying possible causes of electrical equipment mis-operation due to poor power quality, and methods of improving system power quality and equipment operation.

Single copy price: \$25.00 (NECA members), \$55.00 (non-members)

Order from and send comments to: Aga Golriz, [Aga.golriz@necanet.org](mailto:Aga.golriz@necanet.org)

#### **BSR/NECA/EGSA 404-202X, Standard for Installing Generator Sets** (revision and redesignation of ANSI/NECA 404-2014)

This standard describes installation procedures for generators, rated 1,000 volts and less, and related accessories and systems that are permanently installed for on-site standby or emergency power generation that are typically fueled by natural gas, liquefied petroleum gas, propane, or diesel. Such generators may be defined as "emergency systems" or "legally required standby systems" intended to supply power for emergency or life-safety applications in accordance with the NEC, or as "optional standby systems" in accordance with the NEC where life safety does not depend on the performance of the system.

Single copy price: \$25.00 (NECA members), \$55.00 (non-members)

Order from and send comments to: Aga Golriz, [Aga.golriz@necanet.org](mailto:Aga.golriz@necanet.org)

## Due 28 January 2020

### **BSR/ASME Y14.24-202x, Types and Applications of Engineering Drawings** (revision of ANSI/ASME Y14.24-2012)

This standard defines the types of engineering drawings most frequently used to establish engineering requirements. It describes typical applications and minimum content requirements.

Single copy price: Free!

Obtain an electronic copy from: <http://cstools.asme.org/publicreview>

Send comments to: Fredric Constantino, [constantinof@asme.org](mailto:constantinof@asme.org)

### **BSR/IEEE 260.4-202x, IEEE Standard for Letter Symbols and Abbreviations for Quantities Used in Acoustics** (new standard)

This standard contains tables of letter symbols and abbreviations for quantities in the science and technology of acoustics. Recommendations for their use are also provided. Specialties within acoustics that make use of the letter symbols and abbreviations within this standard include, but are not limited to: speech, hearing, music, noise control, vibration, shock, sonar, and transducers.

Single copy price: \$98.00 (PDF); \$122.00 (print)

Obtain an electronic copy from: <https://www.techstreet.com/ieee/searches/25657819>

Send comments to: [k.evangelista@ieee.org](mailto:k.evangelista@ieee.org)

## Due 4 February 2020

### **BSR/ASME Y14.2-2014 (R202x), Line Conventions and Lettering** (reaffirmation of ANSI/ASME Y14.2-2014)

This standard establishes the line and lettering practices for use in the preparation of drawings, including the recognition of the requirements for computer-aided design (CAD) and manually prepared drawings.

Single copy price: Free

Obtain a copy at: <https://www.asme.org/shop/standards>

Send comments to: Fredric Constantino, [constantinof@asme.org](mailto:constantinof@asme.org)

---

## CSA public review announcements

The CSA Group has announced draft documents for public review that might be of interest to *Standards Watch* readers. To participate in CSA public reviews, please visit: <http://publicreview.csa.ca/>.

## Due 20 January 2020

### **CSA ISO 10002 - Quality management -- Customer satisfaction -- Guidelines for complaints handling in organizations** (new edition)

This document gives guidelines for the process of complaints handling related to products and services within an organization, including planning, design, development, operation, maintenance and improvement. The complaints-handling process described is suitable for use as one of the processes of an overall quality management system.

## Due 3 February 2020

### **IEC 62443-4-1, Security for industrial automation and control systems - Part 4-1: Secure product development life cycle requirements** (new standard)

The proposal is to adopt IEC 62443-4-1 without modification. That part of IEC 62443 specifies process requirements for the secure development of products used in industrial automation and control systems. It defines a secure development life-cycle for developing and maintaining secure products. The requirements can be applied to new or existing process for developing, maintaining, and retiring hardware, software, or firmware for new or existing products. (The public review document is a copy of IEC 62443-4-1, secured against everything except reading.)

### **IEC 62443-2-4A, Amendment 1 - Security for industrial automation and control systems - Part 2-4: Security program requirements for IACS service providers** (amendment)

The proposal is to adopt IEC 62443-2-4 Amendment 1. The document lists 20 pages of changes to IEC 62443-2-4. Some changes change a word; some substitute entire paragraphs.

## New ANS projects

ANSI has announced the following new projects that might materially affect *Standards Watch* readers—or at least be interesting to them. Contact the developer if you (a) want to be involved in the project, (b) object to the project and wish it to be abandoned, or (c) if you would like to point out that its scope is covered by an existing standard, thereby possibly making the project redundant or conflicting.

### **BSR/ASME HST-4-202x, Performance Standard for Overhead Electric Wire Rope Hoists** (revision of ANSI/ASME HST-4-2016)

The project is needed to update the standard to reflect current industry practices and terminology clarifications. (a) This standard establishes performance requirements for electric wire rope hoists for vertical lifting service involving material handling of freely suspended (unguided) loads using wire rope with one of the following types of suspension:

- (1) lug;
- (2) hook;
- (3) trolley;
- (4) base or deck mounted;
- (5) wall or ceiling mounted.

Contact: Terrell Henry, [ansibox@asme.org](mailto:ansibox@asme.org)

### **BSR/ASSP Z244.1-2016 (R202x), Control of Hazardous Energy Lockout, Tagout and Alternative Methods** (reaffirmation and redesignation of ANSI/ASSE Z244.1-2016)

This standard covers machines, equipment, and processes in which the unexpected energization or start-up of the machines or equipment, release of stored energy or the actions of persons could result in harm. This standard establishes requirements for the control of hazardous energy associated with machines, equipment or processes that could cause harm to personnel. The standard specifies the use of lockout (primary method), tagout, or alternative methods to control hazardous energy associated with machines, equipment, or processes that could cause harm to personnel. This standard applies to activities such as erecting, installing, constructing, repairing, adjusting, inspecting, unjamming, set-up, testing, troubleshooting, cleaning, dismantling, servicing, and maintaining machines, equipment, or processes.

Contact: Lauren Bauerschmidt, [LBauerschmidt@assp.org](mailto:LBauerschmidt@assp.org)

### **BSR/IES RP-27-202x, Recommended Practice: Photobiological Safety for Lamps and Lamp Systems**

(revision, redesignation and consolidation of ANSI/IESNA RP-27.1-2015, ANSI/IESNA RP-27.2-2000 (R2010), ANSI/IES RP-27.3-2017)

This recommended practice covers the classification, labeling and informational requirements for lamps that emit optical radiation in the wavelength range from 200 nm to 3000 nm, with exception for LEDs used in optical fiber communication systems and for lasers. Lamps included are incandescent filament lamps including tungsten halogen types and incandescent heating sources, low pressure discharge lamps, high intensity discharge (HID) lamps, short arc lamps, carbon arcs, electroluminescent lamps, LEDs, organic LEDs (OLEDs), and laser-driven broadband sources. For the purposes of this document, induction lighting is classified under fluorescent lamps and plasma lighting is classified under HID lamps. Federal mandatory requirements for lamps subject to specific Federal Regulations take precedence over requirements included in this consensus standard.

Contact: Patricia McGillicuddy, [pmcgillicuddy@ies.org](mailto:pmcgillicuddy@ies.org)

### **BSR/ISA 95.00.06-202x, Enterprise-Control System Integration - Part 6: Messaging Service Model**

(revision of ANSI/ISA 95.00.06 -2014)

This part 6 standard defines a set of services that may be used to exchange information messages in a publish/subscribe mode and a request/response mode. It defines a minimal interface subset to message exchange systems.

Contact: Charles Robinson, [crobinson@isa.org](mailto:crobinson@isa.org)

### **BSR/ISA 101.01-202x, Human Machine Interfaces for Process Automation Systems** (revision of ANSI/ISA 101.01-2015)

The standard provides a comprehensive overview of the key elements of human-machine interface for process automation systems, including menu hierarchies, screen navigation conventions, graphics and color conventions, dynamic elements, alarming conventions, security methods and electronic signature attributes,



interfaces with background programming and historical databases, pop-up conventions, help screens and methods used to work with alarms, program object interfaces, and configuration interfaces to databases, servers, and networks.

Contact: Charles Robinson, [crobinson@isa.org](mailto:crobinson@isa.org)

### **BSR/UL 3300-202x, Standard for Safety for Service, Communication, Information, Entertainment and Education Robots, General Requirements** (new standard)

These requirements cover the safety of the robotic function of Service, Communication, Information, Entertainment and Education (SCIEE) robots. These requirements supplement the safety requirements for the intended, non-robotic product function as described in the relevant identified standard(s) and, where applicable, cover robotics intended for indoor and outdoor use. The scope includes service robots intended for commercial use applications where ongoing operation of the robot does not require instructed or skilled person intervention during operation. These requirements do not cover:

- Robots intended to treat, alleviate instability, or move individuals in hospitals, care facilities, or in the home;
- Robots operated exclusively for industrial purposes or in hazardous locations;
- Material-handling robots for use in restricted environments;
- Robots for on- or off-road transport of persons;
- Robots intended for use in a food establishment except where the robot serves as a conveyance to directly relinquish food to the consumer;
- Robots for which safety of the robotic function is described in the relevant end-product safety standard.

Examples of such Standards include ANSI/CSA C22.2 No. 336, Particulate requirements for rechargeable battery-operated commercial robotic floor treatment machines with traction drives, and UL 1017, Standard for Vacuum Cleaners, Blower Cleaners, and Household Floor Finishing Machines;

- Robots identified as a toy by the manufacturer and intended use by children for play only by UL 696, Standard for Electric Toys and/or ASTM F963, Standard Consumer Safety Specification for Toy Safety; and
- Robots intended for use as personnel protective equipment.

Contact: Jennifer Fields, [jennifer.fields@ul.org](mailto:jennifer.fields@ul.org)

### **BSR/UL 62990-1-202x, Standard for Safety for Workplace Atmospheres - Part 1: Gas Detectors - Performance Requirements of Detectors for Toxic Gases** (adoption with modifications of IEC 62990-1)

The project is needed for UL adoption of the IEC 62990-1 standard for replacement of the ANSI/ISA 92.00.00 standard in order to include both health monitor and safety monitor type toxic gas detector performance requirements for workplace environments. The standard specifies general requirements for design, function and performance, and describes the test methods that apply to portable, transportable, and fixed equipment for the detection and concentration measurement of toxic gases and vapors in workplace atmospheres and other industrial and commercial applications.

Contact: Vickie Hinton, [Vickie.T.Hinton@ul.org](mailto:Vickie.T.Hinton@ul.org)

---

## **Final actions on American National Standards**

The documents listed below have been approved by the ANSI Board of Standards Review or by an ANSI-Audited Designator on the date noted.

Seven addenda to ANSI/ASRHAE/ICC/USGBC/IES Standard 189.1-2017, bringing the current addenda total for this edition to 22:

- **ANSI/ASRHAE/ICC/USGBC/IES Addendum ad** to ANSI/ASRHAE/ICC/USGBC/IES Standard 189.1-2017, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017): 4 November 2019
- **ANSI/ASRHAE/ICC/USGBC/IES Addendum ag** to ANSI/ASRHAE/ICC/USGBC/IES Standard 189.1-2017, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017): 4 November 2019
- **ANSI/ASRHAE/ICC/USGBC/IES Addendum al** to ANSI/ASRHAE/ICC/USGBC/IES Standard 189.1-2017, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017): 4 November 2019

- **ANSI/ASRHAE/ICC/USGBC/IES Addendum am** to ANSI/ASRHAE/ICC/USGBC/IES Standard 189.1-2017, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017): 4 November 2019
- **ANSI/ASRHAE/ICC/USGBC/IES Addendum k** to ANSI/ASRHAE/ICC/USGBC/IES Standard 189.1-2017, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017): 4 November 2019
- **ANSI/ASRHAE/ICC/USGBC/IES Addendum n** to ANSI/ASRHAE/ICC/USGBC/IES Standard 189.1-2019, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017): 4 November 2019
- **ANSI/ASRHAE/ICC/USGBC/IES Addendum y** to ANSI/ASRHAE/ICC/USGBC/IES Standard 189.1-2017, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (addenda to ANSI/ASHRAE/USGBC/IES Standard 189.1-2017): 4 November 2019

**ANSI/IES LM-75-2019**, Approved Method: IES Guide to Goniometer Measurements and Types, and Photometric Coordinate Systems (new standard): 22 November 2019

**ANSI/NFPA 600-2020**, Standard on Facility Fire Brigades (revision of ANSI/NFPA 600-2015): 24 November 2019

**ANSI/NFPA 601-2020**, Standard for Security Services in Fire Loss Prevention (revision of ANSI/NFPA 601-2015): 24 November 2019

**ANSI/NFPA 664-2020**, Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities (revision of ANSI/NFPA 664-2017): 24 November 2019

**ANSI/NFPA 730-2020**, Guide for Premises Security (revision of ANSI/NFPA 730-2018): 24 November 2019

**ANSI/NFPA 731-2020**, Standard for the Installation of Electronic Premises Security Systems (revision of ANSI/NFPA 731-2017): 24 November 2019

**ANSI/NFPA 1250-2020**, Recommended Practice in Fire and Emergency Service Organization Risk Management (revision of ANSI/NFPA 1250-2015): 24 November 2019

**ANSI/NFPA 1561-2020**, Standard on Emergency Services Incident Management System and Command Safety (revision of ANSI/NFPA 1561-2014): 24 November 2019

**ANSI/NFPA 1616-2020**, Standard on Mass Evacuation, Sheltering, and Re-entry Programs (revision of ANSI/NFPA 1616-2017): 24 November 2019

**ANSI/NFPA 1620-2020**, Standard for Pre-Incident Planning (revision of ANSI/NFPA 1620-2015): 24 November 2019

**ANSI/SAIA A11.1-2019**, Standard for Testing and Rating Scaffold Assemblies and Components (new standard): 11/21/2019

**INCITS/ISO/IEC 15414:2015 [2019]**, Information technology – Open distributed processing - Reference model - Enterprise language (identical national adoption of ISO/IEC 15414:2015 and revision of INCITS/ISO/IEC 15414:2006 [R2014]): 22 November 2019

## Draft IEC & ISO documents

This section lists proposed documents that the International Electromechanical Commission (IEC) is considering for approval and that may be of interest to *Standards Watch readers*. Anyone interested in reviewing and commenting on a document should order a copy from their national representative and submit their comments through them. Comments from US citizens on IEC documents should be sent to Charles T. Zegers at [czegers@ansi.org](mailto:czegers@ansi.org). Comments from US citizens on ISO documents should be sent to Karen Hughes at

[isot@ansi.org](mailto:isot@ansi.org). Any prices, if shown, are for purchases through ANSI. The sort order is by due date then alphanumeric.

**ISO/DIS 14091**, Adaptation to climate change - Guidelines on vulnerability, impacts and risk assessment, 19 December 2019, \$112.00

**56/1874/FDIS, IEC 62960 ED1**: Dependability reviews during the life cycle, 3 January 2020

**JTC1-SC25/2932/DTR, ISO/IEC TR 11801-9909 ED1**: Information technology - Generic cabling for customer premises - Part 9909: Evaluation of balanced cabling in support of 25 Gb/s for reach greater than 30 meters, 17 January 2020 (Yes, this part is part nine-thousand, nine-hundred, and nine.)

**JTC1-SC25/2933/FDIS, ISO/IEC/IEEE 60559 ED2**: Floating-Point arithmetic, 17 January 2020

**23/887/CD, IEC 63044-1/AMD1 ED1**: Amendment 1 - Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 1: General requirements, 24 January 2020

**ISO/DIS 20414**, Fire safety engineering - Verification and validation protocol for building fire evacuation models, 6 February 2020, \$146.00

**100/3316/CDV, IEC 60268-7/AMD1 ED3**: Sound system equipment - Part 7: Headphones and earphones, 14 February 2020

**ISO/DIS 41014**, Facility management - Development of facility management strategy, 19 February 2020, \$112.00

**65/776/CDV, IEC 62832-1 ED1**: Industrial-process measurement, control and automation - Digital factory framework - Part 1: General principles, 21 February 2020

**65/774/CDV, IEC 62832-2 ED1**: Industrial-process measurement, control and automation – Digital Factory framework - Part 2: Model elements, 21 February 2020

**65/775/CDV, IEC 62832-3 ED1**: Industrial-process measurement, control and automation - Digital Factory framework - Part 3: Application of Digital Factory for life cycle management of production systems, 21 February 2020

**77A/1058/CDV, IEC 61000-3-2/AMD1/FRAG2 ED5**: Amendment 1/Fragment 2: Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current  $\leq 16$  A per phase), 21 February 2020

**110/1170/CD, IEC 63145-21-20 ED1**: Eyewear display - Part 21-20: Specific measuring methods for VR type - Image quality, 21 February 2020

---

## Recently published IEC & ISO documents

Listed here are documents recently approved by the IEC or ISO that may be of use or interest to *Standards Watch* readers. Prices shown are from the [ANSI Webstore](#).

**IEC 60364-5-53 Ed. 4.0 b:2019**, Low-voltage electrical installations - Part 5-53: Selection and erection of electrical equipment – Devices for protection for safety, isolation, switching, control and monitoring, \$352.00

**ISO 7870-1:2019**, Control charts - Part 1: General guidelines, \$138.00

**ISO 8100-30:2019**, Lifts for the transport of persons and goods – Part 30: Class I, II, III and VI lifts installation, \$162.00

**ISO 21384-3:2019**, Unmanned aircraft systems - Part 3: Operational procedures, \$103.00

**ISO 22510:2019**, Open data communication in building automation, controls and building management - Home and building electronic systems - KNXnet/IP communication, \$232.00

**ISO 37105:2019**, Sustainable cities and communities – Descriptive framework for cities and communities, \$209.00

**ISO/IEC 23093-3:2019**, Information technology - Internet of media things - Part 3: Media data formats and APIs, \$232.00

**ISO/IEC 26561:2019**, Software and systems engineering – Methods and tools for product line technical probe, \$185.00

**ISO/IEC 26562:2019**, Software and systems engineering – Methods and tools for product line transition management, \$162.00

## TSP January 2020 meeting schedule

The following meetings will be at the Wyndham Garden Anaheim in conjunction with the 2020 NAMM Show.

Control Protocols E1.20 TG	14:00 – 18:00	Wednesday 15 January 2020
Control Protocols E1.37-4 TG	19:00 – 23:00	Friday 17 January 2020
Control Protocols E1.37-5 TG	19:00 – 23:00	Wednesday 15 January 2020
Control Protocols E1.59 Automation Feedback TG	08:00 – 23:00	Thursday 16 January 2020
Control Protocols E1.68 Compliance TG	14:00 – 18:00	Thursday 16 January 2020
Control Protocols Next Gen Library	19:00 – 23:00	Saturday 18 January 2020
Control Protocols Next Gen Overall CG	14:00 – 18:00	Friday 17 January 2020
Control Protocols Working Group	09:00 – 11:30	Friday 17 January 2020
Electrical Power E1.65 Inspection TG	20:00 – 23:00	Thursday 16 January 2020
Event Safety Fire Safety TG	09:00 – 13:00	Saturday 18 January 2020
Event Safety Rigging Task Group	09:00 – 13:00	Friday 17 January 2020
Event Safety Working Group	14:00 – 18:00	Saturday 18 January 2020
Floors Working Group	09:00 – 13:00	Saturday 18 January 2020
Followspot Position Working Group	09:00 – 13:00	Thursday 16 January 2020
Photometrics Working Group	15:00 – 18:00	Friday 17 January 2020
Rigging Working Group:	19:00 – 23:00	Friday 17 January 2020
Stage Machinery E1.6-4 TG	14:00 – 18:00	Friday 17 January 2020
Stage Machinery E1.64 TG	09:00 – 13:00	Thursday 16 January 2020
Stage Machinery Working Group	14:00 – 18:00	Thursday 16 January 2020
Technical Standards Council	09:00 – 13:00	Sunday 19 January 2020

The April schedule for meetings to be held at the USITT Conference and Stage Expo in Houston, TX is available at <https://esta.org/ESTA/meetings.php>.

---

## ESTA Standards Watch

is distributed as a benefit to ESTA members and as a communication medium for participants in ESTA's Technical Standards Program. Original material is copyright the Entertainment Services and Technology Association.

### Editors:

Karl G. Ruling, Technical Standards Manager  
Entertainment Services and Technology Association  
630 Ninth Avenue, Suite 609  
New York, NY 10036  
USA  
[karl.ruling@esta.org](mailto:karl.ruling@esta.org)  
1 212 244 1505 ext. 703  
Fax 1 212 244 1502

Richard Nix, Asst. Technical Standards Manager  
Entertainment Services and Technology Association  
630 Ninth Avenue, Suite 609  
New York, NY 10036  
USA  
[richard.nix@esta.org](mailto:richard.nix@esta.org)  
1 212 244 1505 ext. 649  
Fax 1 212 244 1502

## **TSP donors who have made long-term, multi-year pledges**

About the Stage  
Actors' Equity Association  
Altman Lighting  
Barbizon Lighting Company  
B-Hive Industries  
Scott Blair  
BMI Supply  
Boston Illumination Group  
Candela Controls  
Chauvet  
City Theatrical  
Clark-Reder Engineering  
Columbus McKinnon Corporation  
Tracey Cosgrove and Mark McKinney  
Bruce Darden  
Doug Fleenor Design  
Earl Girls Inc. EGI Pro  
Electronic Theatre Controls  
Entertainment Project Services  
Geiger Engineers, PC  
Tony Giovannetti  
GLP German Light Products  
Golden Sea Professional Equipment Limited  
H & H Specialties  
Harlequin Floors  
High Output  
Neil Huff  
Hughston Engineering  
IATSE Local 891  
InCord  
Beverly and Tom Inglesby  
Interactive Technologies  
InterAmerica Stage  
iWeiss Inc.  
J.R. Clancy  
Jules Lauve  
Brian Lawlor  
Lex Products  
Link USA, Inc.  
Lycian Stage Lighting  
John T. McGraw  
McLaren Engineering Group  
Mike Garl Consulting  
Mike Wood Consulting  
Morpheus Lights  
NAMM  
Niscon  
Oasis Stage Werks  
Reed Rigging  
Reliable Design Services  
Robe  
Rosco Laboratories  
Rose Brand  
Alan M. Rowe  
David Saltiel  
Sapsis Rigging  
Stage Equipment & Lighting  
Stage Rigging  
Stagemaker  
Stageworks  
Syracuse Scenery and Stage Lighting, Co.  
Dana Taylor  
Steve Terry  
Texas Scenic Company  
Theatre Projects Consultants  
Theatre Safety Programs  
TMB  
Tyler Truss Systems  
Vertigo  
Vincent Lighting Systems  
Steve Walker & Associates  
Walt Disney Parks and Resorts  
Westview Productions  
WNP Services, Inc.

---

## Investors in Innovation, supporters of ESTA's Technical Standards Program

### VISIONARY LEADERS (\$50,000 & up)

ETC

PLASA

ProSight Specialty Insurance

#### VISIONARY (\$10,000 & up; >100 employees/members)

Chauvet Professional

Cisco

Columbus McKinnon Entertainment Technology

Robe

Walt Disney Parks and Resorts

#### VISIONARY (\$5,000 & up; 20–100 employees/members)

Altman Lighting, Inc.

German Light Products

JR Clancy

McLaren Engineering Group

Rose Brand

Stage Rigging

Theatre Projects

TMB

Tyler Truss Systems, Inc.

#### VISIONARY (\$500 & up; <20 employees/members)

About the Stage

B-Hive Industries, Inc.

Scott Blair

Boston Illumination Group

Louis Bradfield

Candela Controls, Inc.

Clark Reder Engineering

Tracey Cosgrove & Mark McKinney

Cyclops Lighting

Doug Fleenor Design

EGL Event Production Services

Entertainment Project Services

Neil Huff

Hughston Engineering Inc.

Interactive Technologies

Jules Lauve

Brian Lawlor

Michael Lay

Limelight Productions, Inc.

Link

John T. McGraw

Mike Garl Consulting

Mike Wood Consulting

Reed Rigging

Reliable Design Services

Alan Rowe

Sapsis Rigging Inc.

Stageworks

Dana Taylor

Steve Terry

Theatre Safety Programs

Vertigo

Steve A. Walker & Associates

Westview Productions

WNP Services

#### INVESTOR (\$3,000–\$9,999; >100 employees/members)

Actors' Equity Association

Barbizon Lighting Company

Golden Sea Professional Lighting Provider

IATSE Local 728

IATSE Local 891

Lex

NAMM

Rosco Laboratories

Texas Scenic Company

#### INVESTOR (\$1,500–\$4,999; 20–100 employees/members)

American Society of Theatre Consultants

Area Four Industries

BMI Supply

City Theatrical Inc.

H&H Specialties, Inc.

InterAmerica Stage, Inc.

Lycian Stage Lighting

Morpheus Lights

Niscon Inc.

Tomcat

#### INVESTOR (\$200–\$499; <20 employees/members)

Bruce Darden

Guangzhou Color Imagination LED Lighting

Indianapolis Stage Sales & Rentals, Inc.

Lighting Infusion LLC

Nanyi Audio & Lighting Enterprise Co., Ltd.

Qdot Lighting Ltd.

Robert Scales

Stephen Vanciel

**SUPPORTER** (\$50 - \$2,999; >100 employees/members)

Ian Foulds, IATSE Local 873  
IATSE Local 51

Harlequin Floors  
Thorn Stage Equipment

**SUPPORTER** (\$50 - \$1,499; 20–100 employees/members)

ACT Lighting Inc./AC Power Distribution  
ARM Automation, Inc.  
Blizzard Lighting, LLC  
Geiger Engineers  
Guangzhou YaFeng Optoelectronic Equipment Co.  
Guangzhou Yilaiming Photoelectric Technology Co.,  
Ltd.  
HAYA Light Equipment Ltd. Co.  
High Output  
InCord  
Intella Systems Co., Ltd.  
iWeiss

LA ProPoint, Inc.  
Nanshi Lighting  
Oasis Stage Werks  
Shenzhen Ifountain Technology  
Stage Equipment & Lighting  
Stagemaker  
Syracuse Scenery and Stage Lighting Co., Inc.  
Taurus Light Co. Ltd.  
Ultratec Special Effects  
Vincent Lighting Systems  
Zhuhai Shengchang Electronics Co.

**SUPPORTER** (\$50 - \$199; <20 employees/members)

Roy Bickel  
Capture Visualisation AB  
DMX Pro Sales  
Tony Giovannetti  
Pat Grenfell  
Mitch Hefter  
John Huntington  
Beverly and Tom Inglesby  
Eddie Kramer  
Jason Kyle

LuxBalance Lighting  
Tyrone Mellon, Jr.  
Orange Pi DMX  
Lizz Pittsley  
Showman Systems  
Michael Skinner  
Skjonberg Controls Inc.  
Arjan van Vught  
Charlie Weiner

---

Extraordinary legacy gift: Ken Vannice