EH&S NA TC Chapter

Meeting Summary and Minutes

NA Fall Standards Meeting

Thursday, Nov 10, 2022

9:00 AM – 3:00 PM Pacific

SEMI HQ, Milpitas, CA

**TC Chapter Announcements**

Next TC Chapter Meeting

Thursday, April 6, 2023 in conjunction with NA Spring Standards Meetings at SEMI HQ, Milpitas, CA. Check [www.semi.org/en/standards](http://www.semi.org/en/standards) for the latest update.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Meeting Attendees  **Co-Chairs:** Chris Evanston (Salus Engineering International), Sean Larsen (Lam Research), Bert Planting (ASML)  **SEMI Staff:** Kevin Nguyen (SEMI) | | | | | |
| **Company** | **Last** | **First** | **Company** | **Last** | **First** |
| **Axcelis Technologies** | **Brick** | **Clifton** | **Tokyo Electron** | **Mashiro** | **Supika** |
| *Brooks* | *Cerretani* | *Ben* | *Mattson* | *Mendolla* | *Melinda* |
| **Lam Research** | **Crane** | **Lauren** | **Tokyo Electron** | **Petraszak** | **Andrew** |
| **AGC** | **Elkassmi** | **Ahmed** | **ASML** | **Planting** | **Bert** |
| *Salus Engineering* | *Evanston* | *Chris* | **Tokyo Electron** | **Rosen** | **Hannah** |
| **Applied Materials** | **Faust** | **Bruce** | *Texas Instruments* | *Schwab* | *Paul* |
| *Cymer, ASML* | *Frankfurth* | *Mark* | *NOVA* | *Shichtman* | *Alex* |
| *Nikon Precision* | *Girlea* | *Lucian* | *Safety Guru* | *Sklar* | *Eric* |
| **Intel** | **Gottsacker** | **Patrick** | *MURATA Machinery* | *Tominaga* | *Tadamasa* |
| *Lam Research* | *Larsen* | *Sean* | *Kateeva* | *Trout* | *Steve* |
| *Tokyo Electron* | *Machida* | *Ryo* | **AGC** | **Yamanouchi** | **Ichiro** |

*Italic* indicates online participant. Bold indicates in person participant.

| Leadership Changes | | |
| --- | --- | --- |
| WG/TF/SC/TC Name | Previous Leader | New Leader |
| S6 Revision Task Force | Glenn Holbrook (ASM)  John Visty (Salus Engineering) | Glenn Holbrok (ASM) |

Committee Structure Changes

| Previous WG/TF/SC Name | New WG/TF/SC Name or Status Change |
| --- | --- |
| S2 Chemical Exposure Task Force | TF was disbanded |
| Hydrogen Safety Task Force | Flammable Gas Task Force (name change) |

Ballot Results

|  |  |  |
| --- | --- | --- |
| *Document #* | *Document Title* | *Committee Action#1,#2* |
| 6885A | Line Item Revision to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revision Related to Equipment Decommissioning) |  |
| Line Item 1 - Add Delayed Revision Section X to SEMI S02-0821 | Passed with editorial changes |
| 6940 | Line Item Revisions to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revision Related to the Invocation of SEMI S18 (Flammable Silicon Compounds) and S30 (Energetic Materials)) |  |
| Line Item 1 - Add Delayed Revision Section X to SEMI S02-0821 | Failed and returned to TF for rework |
| Line Item 2 - Add Delayed Revision Section Y to SEMI S02-0821 | Failed and returned to TF for rework |
| 6944 | Line Item Revisions to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revisions Related to Fire Protection) |  |
| Line Item 1 -Delayed Revision Section X to SEMI S02-0821 | Failed and returned to TF for rework |
| Line Item 2 - Add Delayed Revision Section Y to SEMI S02-0821 | Failed and returned to TF for rework |
| 6941 | Line Item Revision to SEMI S30-0719E, Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes (regarding heating of piping) |  |
| Line Item 1 - Add section 8.13 and modify paragraph 17.3.3 | Failed and returned to TF for rework |
| Line Item 2 - Adding, as ¶17.8.8, criteria specific to managing the risks of loss of heating downstream of process chambers. | Failed and returned to TF for rework |
| SEMI S23 | Guide for Conservation of Energy, Utilities and Materials Used by Semiconductor Manufacturing Equipment (Unballoted editorial changes) | Passed. |
| SEMI S10 | Safety Guideline for Risk Assessment and Risk Evaluation Process  (Unballoted editorial changes) | Passed. |

#1 **Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

#2 **Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting or abandoning.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Activities Approved by the GCS between meetings of the TC Chapter | | | | | --- | --- | --- | --- | | # | Type | SC/TF/WG | Details | | None |  |  |  |   Authorized Activity |

| *#* | *Type* | *SC/TF/WG* | *Details#1* |
| --- | --- | --- | --- |
| 6980 | SNARF | Flammable Gas TF | Line Item Revisions to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Re: Flammable gas) |
| 6981 | SNARF | Ergonomics TF | Line Item Revisions to SEMI S8-0218, Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment |

#1 SNARFs and TFOFs are available for review on the SEMI web site at: [http://downloads.semi.org/web/wstdsbal.nsf/tfofsnarf](http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF)

Authorized Ballots

| *#* | *When* | *TF* | *Details* |
| --- | --- | --- | --- |
| 6831C | Cycle 9-2022, 1 or 2-2023 | S1 Revision TF | Revision of SEMI S1, Safety Guideline for Equipment Safety Labels |
| 6884A | Cycle 9-2022, 1 or 2-2023 | S2 Mechanical TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Mechanical) |
| 6885A | Cycle 9-2022, 1 or 2-2023 | S12 (Equipment Decon) Review TF | Revision of SEMI S12, Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination |
| 6907 | Cycle 9-2022, 1 or 2-2023 | S7 Revision TF | Revision to SEMI S7, Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications |
| 6940A | Cycle 9-2022, 1 or 2-2023 | Energetic Materials EHS TF | Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding S30 and S18) |
| 6941A | Cycle 9-2022, 1 or 2-2023 | Energetic Materials EHS TF | Line Item Revision to SEMI S30, Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes (Regarding heating of piping) |
| 6944A | Cycle 9-2022, 1 or 2-2023 | Fire Protection TF | Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding Fire Protection) |
| 6981 | Cycle 9-2022, 1 or 2-2023 | Ergonomics TF | Line Item Revisions to SEMI S8, Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment |

Granted a One-Year Extension

| # | TF | Title | Expiration Date |
| --- | --- | --- | --- |
| None |  |  |  |

SNARF(s) Abolished

| # | TF | Title |
| --- | --- | --- |
| None |  |  |

| Standard(s) to receive Inactive Status | |
| --- | --- |
| Standard Designation | Title |
| None |  |

| New Action Items | | |
| --- | --- | --- |
| Item # | Assigned to | Details |
| Nov10-2022#1 | S23 Global TF leaders and EH&S NA TC Co-chairs | EH&S NA TC Chapter to present to the NARSC and request the Regs SC to change procedure by allowing one ballot action to a create from an original standard to two or more new standards one of which might retain the original standard designation. |

| Previous Meeting Action Items | | |  |
| --- | --- | --- | --- |
| Item # | Assigned to | Details | Status |
| None |  |  |  |

1. **Welcome, Reminders, and Introductions**
   1. Bert Planting called the meeting to order at 9:00 AM. The meeting reminders on antitrust, intellectual property, and holding meetings with international attendance were reviewed. Attendees introduced themselves.
2. **Review of Previous Meeting Minutes**
   1. The TC Chapter reviewed the minutes of the previous meeting. Several typographical changes were suggested by Eric Sklar who sent a marked up MS Word file to Kevin Nguyen.

|  |  |
| --- | --- |
| **Motion:** | Accept the minutes as amended. |
| **By / 2nd:** | By: Lauren Crane / Lam Research Corporation  Second: Sean Larsen / Lam Research Corporation |
| **Discussion:** | None |
| **Vote:** | 14-0. Motion passed. |

Attachment: EHS NA TC Minutes 07142022\_es06nov22a

1. **Ballot Review**

**Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

**Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting.

* 1. TC Chapter adjudication of ballots is detailed in the Audits & Review (A&R) Subcommittee Forms for procedural review. The A&R forms are available as attachments to these minutes. The attachment file name for each balloted document is provided under each ballot review section below.
  2. ***Doc. 6885A,*** ***Line Item Revision to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revision Related to Equipment Decommissioning)***
     1. Line Item 1 - Add Delayed Revision Section X to SEMI S02-0821
* Passed the TC Chapter review with editorial changes. Refer to attachments below for full details.

**Attachment: 6885A\_RespComp\_es26sep22a\_es19oct22a\_tf09nov22a**

**Attachment: 6885A AR**

* 1. ***Doc. 6940, Line Item Revisions to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revision Related to the Invocation of SEMI S18 (Flammable Silicon Compounds) and S30 (Energetic Materials))***
     1. Line Item 1 - Add Delayed Revision Section X to SEMI S02-0821.
* Motion: To find LAM LC1 Negative is related and persuasive. **(Needs > 1/3 votes to pass.)**  
  Reason:  
  By: Lauren Crane / Lam Research Corporation  
  Second: Sean Larsen / Lam Research Corporation  
  Discussion: Per Supika, Japan would like SEMI S18 as guidance document, not an evaluation document.  Her advice is not to use S18 as an evaluation document.  
  Chris Evanston - Lauren's point on the negative is good.  There is inconsistency in S2 on how referenced standards should be documented in S2 report.  
  Result: 12-Y 1-N Voting Result: Pass - 92.31%
* Final Action  
  Motion: Line item 1 failed TC Chapter review and will be returned to the TF for rework.  
  Reason: None.  
  By: Chris Evanston / Salus Engineering International  
  Second: Hannah Rosen / TEL Technology Center America  
  Discussion: Sean Larsen: What is the preferred method on how to handle referenced document in S2? He suggests to bring this up in MESSC for discussion.  
  Result: 14-Y 3-N Voting Result: Pass - 82.35%
* Line Item 1 failed and returned to TF for rework and reballot. Refer to attachment below for details of the negative and the TF report.

**Attachment: 6940li1\_RespComp\_tf11oct22a\_tf08nov22a**

* + 1. Line Item 2 - Add Delayed Revision Section Y to SEMI S02-0821.
* Motion: To find AXLS 1 Negative is related and persuasive. **(Needs > 1/3 votes to pass.)**  
  Reason:  
  By: Clifton Brick / Axcelis Technologies  
  Second: Andrew Petraszak / TEL Technology Center America  
  Discussion:  
  Result: 8-Y 1-N Voting Result: Pass - 88.89%
* Final Action  
  Motion: Move to find Line item 2 failed TC Chapter review and will be returned to the TF for rework and reballot  
  Reason: None.  
  By: Eric Sklar / Safety Guru, LLC  
  Second: Lauren Crane / Lam Research Corporation  
  Discussion:  
  Result: 12-Y 0-N Voting Result: Pass - 100.00%
* Line Item 2 Failed and returned to TF for rework and reballot. Refer to attachment below for details of the negative and the TF report.
* **Attachment: 6940li2\_RespComp\_tf11oct22a\_tf08nov22a**
  1. ***Doc. 6944, Line Item Revisions to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revisions Related to Fire Protection)***
     1. Line Item 1 - Add Delayed Revision Section X to SEMI S02-0821.
* New concern: The numbered ¶ says “system” and the NOTE says “device or system”. What are we intending be done if there is a system (which includes, necessarily, at least one device) that is necessary to mitigate risk, but there is a device, not part of that system, that is not necessary to mitigate risk?
* Motion: To find new concern above is related and persuasive. **(Needs > 1/3 votes to pass.)**  
  Reason:  
  By: Lauren Crane / Lam Research Corporation  
  Second: Andrew Petraszak / TEL Technology Center America  
  Discussion:  
  Result: 12-Y 1-N Voting Result: Pass - 92.31%
* Final Action  
  Motion: Line item 1 failed TC Chapter review and will be returned to the TF for rework.  
  Reason: None.  
  By: Eric Sklar / Safety Guru, LLC  
  Second: Lauren Crane / Lam Research Corporation  
  Discussion:  
  Result: 15-Y 0-N Voting Result: Pass - 100.00%
* Line Item 1 Failed and returned to TF for rework and reballot. Refer to attachment below for details of the TF report.
* **Attachment: 6944li1\_RespComp\_tf06oct22a\_tf08nov22a**
  + 1. Line Item 2 - Add Delayed Revision Section Y to SEMI S02-0821.
* Motion: To find LAM LC5 Negative is related and persuasive. **(Needs > 1/3 votes to pass.)**  
  Reason:  
  By: Lauren Crane / Lam Research Corporation  
  Second: Clifton Brick / Axcelis Technologies  
  Discussion:  
  Result: 12-Y 0-N Voting Result: Pass - 100.00%
* Final Action  
  Motion: Line item 2 failed TC Chapter review and will be returned to the TF for rework.  
  Reason: None.  
  By: Eric Sklar / Safety Guru, LLC  
  Second: Clifton Brick / Axcelis Technologies  
  Discussion:  
  Result: 13-Y 0-N Voting Result: Pass - 100.00%
* Line Item 2 failed and returned to TF for rework and reballot. Refer to attachment below for details of the negative and the TF report.
* **Attachment: 6944li2\_RespComp\_tf06oct22a\_tf08nov22a**
  1. ***Doc. 6941, Line Item Revision to SEMI S30-0719E, Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes (regarding heating of piping)***
     1. Line Item 1 - Add section 8.13 and modify paragraph 17.3.3.
* Motion: To find LAM LC1 Negative is related and persuasive. **(Needs > 1/3 votes to pass.)**  
  Reason:  
  By: Lauren Crane / Lam Research Corporation  
  Second: Lucian Girlea / Nikon Precision Inc.  
  Discussion:  
  Result: 8-Y 1-N Voting Result: Pass - 88.89%
* Final Action  
  Motion: Line item 1 failed TC Chapter review and will be returned to the TF for rework.  
  Reason: None.  
  By: Eric Sklar / Safety Guru, LLC  
  Second: Lauren Crane / Lam Research Corporation  
  Discussion:  
  Result: 13-Y 0-N Voting Result: Pass - 100.00%
* Line Item 1 failed and returned to TF for rework and reballot. Refer to attachment below for details of the negative and the TF report.
* **Attachment: 6941li1\_RespComp\_tf01nov22b\_tf08nov22a**
  + 1. Line Item 2 - Adding, as ¶17.8.8, criteria specific to managing the risks of loss of heating downstream of process chambers.
* Motion: To find LAM LC8a Negative is related and persuasive. **(Needs > 1/3 votes to pass.)**  
  Reason:  
  By: Lauren Crane / Lam Research Corporation  
  Second: Lucian Girlea / Nikon Precision Inc.  
  Discussion:  
  Result: 10-Y 1-N Voting Result: Pass - 90.91%
* Final Action  
  Motion: Line item 2 failed TC Chapter review and will be returned to the TF for rework.  
  Reason: None.  
  By: Eric Sklar / Safety Guru, LLC  
  Second: Lauren Crane / Lam Research Corporation  
  Discussion:  
  Result: Result: 14-Y 0-N Voting Result: Pass - 100.00%
* Line Item 2 failed and returned to TF for rework and reballot. Refer to attachment below for details of the negative and the TF report.
* **Attachment: 6941li2\_RespComp\_tf01nov22a\_tf08nov22a**

1. **Subcommittee & Task Force Reports**
   1. ***S3 Revision TF***
      1. Andy Petraszak reported.

* Except for this week, no TF meeting is held since the summer meetings.
* Current Projected Path Forward:
  + Have the TF review the draft ballot and correct any items found by the TF of the draft ballot – Jan 2023 to Spring Meeting.
* Next Steps:
  + Continue TF meetings to prepare a draft ballot.
  + Projecting to ask for Ballot Approval at the Spring Meeting

**Attachment: S3 Report Fall 2022**

* 1. ***S2 Mechanical TF***
     1. Andy Petraszak reported.
* Except for this week, there have not been TF meetings since the summer meetings.
* Next Steps:
  + Continue to resolve Negatives and Comments from Ballot 6884.
  + Reballot with intent to adjudicate during Spring Meeting.

**Attachment: S2 Mech Report Fall 2022**

* 1. ***Environmental Performance Rating (EPR) TF***
     1. Ben Gross reported:
* Work in progress
* Discussing general structure of the document
* Working on defining real metrics to be used for environmental friendliness and energy efficiency
* A taxonomy for relevant system with variety of data is in the work
* Everyone is invited to the task force. Please contact Ben Gross or SEMI staff for addition to the invitation.
  1. ***S10 Risk Assessment TF***
     1. Eric Sklar reported:
* Ratification Ballot (R6887A)
  + The Ratification Ballot was approved and A&R has found it procedurally acceptable.
  + There was one Disapprove ballot (2 Disapproval Reasons and 12 Editorial Suggestions) cast and the TF and the NA EHS TCC are obligated to respond to it.
  + The responses have been compiled and considered by the Task Force.
  + Task Force undertook to address one of the Disapproval reasons and two of the Editorial Suggestions as future work.
  + Task Force proposes editorial changes to address one of the Disapproval Reasons and nine of the Editorial Suggestions on a PCR for review and approval by the NA EHS TF. (TF leader will provided corrected Figures if the NA EHS TCC approves the PCR.)
  + Task Force calls to the attention of SEMI Staff the remaining Editorial Suggestions, which is that there appears to be no paragraph numbered as A2-2.1. This should be fixed before publication. If the automated cross-references have been broken, they will need to be repaired when the numbering is fixed.
  + Motion: To approve editorial changes as shown in the PCR form, to be made prior to the publication of SEMI S10 Ratification ballot  
    By: Eric Sklar / Safety Guru, LLC  
    Second: Sean Larsen / Lam Research Corporation  
    Discussion: Lauren Crane: section numbering errors will be corrected by SEMI Publication staff.  
    Result: 16-Y 0-N Voting Result: Pass - 100.00%
* TF Plans
  + Address work derived from the Ratification Ballot
  + Resume work on the Severity Groups for equipment and facilities.

**Attachment: S10\_ProceduralReview-EditorialChangeType2**

**Attachment: S10Fall2022.zip**

* 1. ***S2 Pressure Guidelines TF***
     1. Bert Planting reported:
* Proposed during SEMICON West
* Support from the TF to start a section on Hydrogen
* First results of teleconferences
  + Baseline SEMI S2 provide information to guarantee a safe design
  + Make additional changes (editorial) to SEMI S2
  + New RI on how to classify the risk area and approach based on IEC 60079-series and NEC
* Discussion during this week TF meeting
  + Agreed to add changes to S2 (based on proposal slide 6) and add an RI for generic flammable substances
  + Change proposal of note XX of 23.5.5. → normative test
  + Add some examples of the semiconductor industry to the RI
  + Make sure that need of certification of intrinsically safe components is addressed
  + Address forming gasses (flammable and non-flammable)
* Presented a revision of the TFOF from Pressure Guidelines TF to Flammable Gas TF

Motion: Approve the revised TFOF

By: Bert Planting / ASML Netherlands BV

Second: Andrew Petraszak / TEL Technology Center America

Discussion: None

Result: 13-Y 0-N Voting Result: Pass - 100.00%

* Presented a SNARF for Line Item Revisions to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Re: Flammable gas)

Motion: Approve the SNARF for flammable gas  
By: Lauren Crane / Lam Research Corporation  
Second: Bert Planting / ASML Netherlands BV  
Discussion: None  
Result: 11-Y 0-N Voting Result: Pass - 100.00%

**Attachment: TFOF\_Flammable gas safety and regulations**

**Attachment: SNARF\_Flammable gasses Nov2022 (V1)**

**Attachment: Hydrogen addition SEMI-Fall EHS meeting Nov 8 2022**

* 1. ***Manufacturing Equipment Safety Subcommittee (MESSC)***
     1. Lucian Girlea reported:
* SEMI S2 Major Revision
  + TF work concerns:
    - Low bandwidth, resource availability > slow progress, run out of steam?
    - More work adding > “there is already an S2 TF …”
  + Major Revision ballot concerns:
    - Coordination with other S2 TFs > avoid any TF be put on hold, merge changes from many sources to same text, prevent concurrent ballots
    - Limiting ballot object > entire S2 open can lead to excessive iterations
* S2 TF work strategy discussion
  + dividing work into more manageable “portions”
  + coordinating ballot prep with other S2 LI work
  + restricting ballot response to actual changes made
  + other options?

**Attachment: MESSC SEMI 2022 Fall Notes**

* 1. ***S2 Interlocks Design TF***
     1. Lucian Girlea reported:
* Good TF participation, (almost) weekly meetings, making progress.
* TF started with concerns on S2 “fail safe” and “fault tolerant” definitions.
* Due to the scale of changes, this is a Major Revision
* Next Steps?
  + Continue TF work following the current format.
  + Submit a SNARF when anticipating a ballot ready in <6 months.
  + Look for ways of increasing chances of success for the TF and an eventual ballot (see MESSC).

**Attachment: S2 Interlocks Design SEMI 2022 Fall**

* 1. ***S2 Chemical Exposure TF***
     1. John Visty reported:
* He is retired from Salus Engineering. He would like to step down from the TF leadership.
  + Sean Larsen asked how do we go forward? Do we disband the TF? Chris Evanston asked if anyone has any issues with disbandment of the TF? No one has any objections.
* Motion: Disband the S2 Chem Exposure TF  
  By: Lauren Crane / Lam Research Corporation  
  Second: Bert Planting / ASML Netherlands BV  
  Discussion: None  
  Result: 15-Y 0-N Voting Result: Pass - 100.00%
  1. ***S6 Ventilation TF***
     1. Sean Larsen reported:
* Discussed Past Activities
* Voted to stop work on ASM/Intel proposed line-item change by a vote of 4 to 1 in favor of stopping
* Task force to continue to work under TFOF no active SNARFs
* John Visty is retiring so will be stepping down as Co-chair. A replacement is needed.
* Work on providing guidance on release of mixed gases - passing criteria
* Continue to work on ATL gas sensor issues

**Attachment: SEMI S6 - Fall 2022 - Summary**

* 1. ***S23 Global TF***
     1. Lauren Crane reported.
* Near Term History
  + The Task Force has been meeting weekly.
  + Meetings shifted a couple months ago from a US-evening to US-morning time.
  + GTF is very interested in the SEMATECH-SEMI document hosting negotiation that is underway.
* The Split
  + The task force decided to split S23 into two documents.
  + A test method – which will provide more detail on measuring the equivalent energy use for a piece of equipment.
    - The test method will retain the S23 number to limit need to rewrite contracts etc…
  + A guide – which will carry current S23 information not related to testing details.
* The Equipment Energy Efficiency Ranking TF
  + The TF is led by Benjamin Gross (AMAT).
  + The TF still aims to use S23 as part of the ranking process but so far does not envision needing/requesting any changes to S23 to achieve their goals.
* Editorial Change
  + An editorial error was identified by Carlo Luijten and Eric has drafted a PCR (Publication Change Request) for review in the last NA TCC meeting (West 2022).
  + It passed, but as far as I know it has not been published.
* Excel Workbook Change
  + Replacing the file on:  
    http://dom.semi.org/web/wstandards.nsf/supvm  
    will probably require a vote in an NA EHS TCC meeting. Eric proposes we deal with this now, rather than having folks downloading a defective file for several more months.
  + The problem appears to be on the Results-AnnualizedEquivEnergy tab of 6515\_Generic\_29april21a.xlsx.
  + Motion: Replace the existing supplemental materials file 6515\_Generic\_29april21a.xlsx” in “S23\_EXCEL\_FILES.ZIP” with the corrected file from Eric Sklar titled “6515\_Generic\_06nov22a”.  
      
    By: Lauren Crane / Lam Research Corporation  
    Second: Bert Planting / ASML Netherlands BV  
    Discussion:  
    Result: 14-Y 0-N Voting Result: Pass - 100.00%
* Balloting the S23 Split
  + SEMI Standards staff assert that the Guide and Test Method cannot be balloted as a single ballot.
  + The point being, if they are not balloted together (which would make them fail together if failing happens) then the guide perhaps could come into existence without a test method, or visa vera
  + How should we plan our ballot in consideration of this?
  + Motion: When the Guide and the Test Method are ready for ballot, ballot them together in one ballot action.  
    By: Lauren Crane / Lam Research Corporation  
    Second: Melinda Mendolla / Mattson Technology  
    Discussion:
    - Supika Mashiro: no definite rule in the Regs against balloting one single document. Perhaps she suggests the NARSC to request for the change of the rule.
    - Lauren Crane: Not sure how to request the change to the Regs.
    - Supika Mashiro: EH&S TC co-chairs should make a formal request to the NARSC.
    - Eric Sklar: One foreseen action is worth to propose a change to the Regulations?
  + Result: 13-Y 0-N Voting Result: Pass - 100.00%

Motion: NA EHS committee to present to the NARSC and request the Regs SC to change procedure by allowing one ballot action to a create from an original standard to two or more new standards one of which might retain the original standard designation  
By: Lauren Crane / Lam Research Corporation  
Second: Bert Planting / ASML Netherlands BV  
Discussion:  
Result: 13-Y 0-N Voting Result: Pass - 100.00%

**Attachment: 6515\_Generic\_06nov22a**

**Attachment: S23\_ProceduralReview-EditorialChangeType2**

**Attachment: 2022 Nov S23 TF mtg & rpt Crane r2**

* 1. ***S2 Seismic Liaison TF***
     1. Lauren Crane reported.
* The Instigating Issue
  + A concern was raised in MESSC during the Dec 2021 Standards meetings
    - Summary: The ‘old’ S2 Seismic RI, shows a step in the derivation of the horizontal force factor that is not present in **the current RI, which modifies the** output of the general force equation from 1.32 WP to .94WP, the latter being the value in use now (and then) for anticipated horizontal force acting on the CG of the equipment under consideration.
  + As part of our fun, we found “the experts” (the building code authors) have changed their view of the correct force/design load formula – particularly puzzling is the change in the factor amplifying the height-of-equipment-in-the-building term (see dots) that has changed over time from 3, to 2, to 2.5.
* Ideas on what to cover in near future discussion:
  + Rigid or not – how to use it? – {set in ‘parking lot’}
  + Vibration isolation designs are not ‘rigid’.
  + Decide on and pick an equation and examine it for irrelevant factors.
  + Stay with the current S2 H-force factor (.94Wp) because it is ‘field proven’ and justify it alternately?
* Motion: Retain the “anticipated seismic forces” as they are now, justified by the lack of reports in the awareness of vocal task force members that equipment is not surviving seismic events sufficiently; and adjust the RI to better explain the genesis of the values.  
  By: Andrew Petraszak / TEL Technology Center America  
  Second: Lauren Crane / Lam Research Corporation  
  Discussion: Lot discussion of various opinions
  + Eric Sklar: I oppose this motion because the lack of loss history has not been causally linked to designs being at the values stated in S2. The only rationale we could honestly put in S2 is that we have  a number that we now know was incorrectly derived and that having that number has been concurrent with, but is not known to be causal of, a lack of unacceptable loss history.
  + Melinda Mendolla: Objects to this because there is a slide of other derivations and technical info that we can investigate to correct a number that is currently inaccurate even though it has appeared to work; do not want there to be no accurate derivation and basis for this number if training a new person or being questioned on this by client.
  + Supika Mashiro: Change of the factor without good reason to revise (e.g., not an apparent safety fallout caused by overturned equipment through the history of Japanese factories experiencing at least three major seismic events directly hit on semiconductor fabs in its full operation) doesn't seem to value add. All we need is stop presenting the value as calculated with solid engineering basis.

Result: 4-Y 5-N Voting Result: Motion Fail - 44.44%

**Attachment: 2022 Nov Seismic TF mtg & rpt Crane r1**

* 1. ***Fire Protection TF***
     1. Eric Sklar reported.
* Old Business
  + Adding performance criteria (Such as effectiveness, fire size to be considered) for detection and protection systems
  + Adding design criteria (such as treatment of pyrophoric materials) for detection and protection systems
  + Should exhaust ventilation be reduced or stopped if a fire is detected?
* TF Plans
  + Reballot both Line Items in doc. 6944, Revisions to SEMI S2-0821, Environmental, Health, And Safety Guideline For Semiconductor Manufacturing Equipment (Delayed Revisions Related to Fire Protection)

**Attachment: FireProt\_report\_es10nov22a**

* 1. ***S1 Labels TF***
     1. Eric Sklar reported.
* Old Business
  + Adding performance criteria (Such as effectiveness, fire size to be considered) for detection and protection systems
  + Adding design criteria (such as treatment of pyrophoric materials) for detection and protection systems
  + Should exhaust ventilation be reduced or stopped if a fire is detected?
* TF Plans
  + Reballot as 6831C.

**Attachment: S1\_report\_es10nov22a**

* 1. ***Energetic Materials TF***
     1. Eric Sklar reported.
* Old Business
  + Topics Discussed at TF Meetings, but no news this week
    - Topics TF believes should be addressed by a training program
    - Improper adoption of S30
    - Cold traps accumulate material, creating a hazard that needs to be addressed.
  + Still no report of an integrated risk assessment having been done.
  + Some S30 related questions have been raised by 1 or 2 device manufacturers.
* TF Plans
  + Reballot 6940 and 6941 before 2023 Spring Meetings

**Attachment: EnergeticMatls\_report\_es10nov22a**

* 1. ***S2 Control of Hazardous Energy (CoHE) TF***
     1. Eric Sklar reported:
* Topics under Discussion
  + Lockable electrical panels
  + Provision of EIDs as part of the equipment
  + CoHE by personal control of an unlocked EID
  + Clamshells for valve handles
  + Salvage from S20 (Withdrawn Safety Guideline re EIDs and their identification)
  + “Alternative Means”

**Attachment: CoHEreport\_es10nov22a**

* 1. ***S12 Decontamination TF***
     1. Eric Sklar reported.
* Adjudication of S2 Ballot (6885A) completed
* Work on S12 Ballot (6888A)
  + This is now understood to be a much larger project than had been envisioned
  + Changed approach from one based on eliminating chemical contamination because it exists to reducing chemical contamination to a level at which it does not pose an unacceptable risk.
  + Restructure S12
  + Advise NA EHS TCC of the use of “yuck” and words derived therefrom:
    - Reyuckify
    - Yuck
    - Yucky,
    - Deyuckify
    - Deyuckification
    - Deyuckified
  + Motion: Advise TF to replace the “yuck” word set, even at the cost of more awkward constructions  
    By: Eric Sklar / Safety Guru, LLC  
    Second: Lauren Crane / Lam Research Corporation  
    Discussion:
  + The TF voted against 4 to 2
  + Yes means advice to replace of yuck
  + No means not giving advice to replace yuck
  + Result: 7-Y 4-N Voting Result: Pass - 63.64%

**Attachment: S12(decon)\_report\_es10nov22a**

* 1. ***S8 Ergonomics TF***
     1. Paul Schwab reported.
* Task Force has been meeting regularly since January 2022 to work on changes to SEMI S8
* Based on Task Force activities, SNARF #6309 and #6943 need to be expanded so it’s best to create a new SNARF
* Motion: Approve the SNARF for S8 line item revision

By: Paul Schwab / Texas Instruments, Inc

Second: Clifton Brick / Axcelis Technologies

Discussion: None

Result: 9-Y 0-N Voting Result: Pass - 100.00%

* Reviewed and discussed items to be included in the proposed new SNARF document
* Task Force will try to submit a ballot for SEMI Standards 2023 Cycle 1, but that will be a stretch
* Task Force will continue to meet Fridays at 9:00 am Pacific time starting   
  November 25th (if another day time is not preferred) Will skip December 23rd and 30th
* SEMI Document Storage
  + <https://connect.semi.org/communities/community-home?CommunityKey=c1526656-40a4-4245-af86-34d3ecc68624>

**Attachment: SNARF\_SEMI-S8\_ps09NOV2022**

**Attachment: SEMI-S8\_TF\_summary\_10NOV2022**

* 1. ***S7 TF***
     1. Sean Larsen reported.
* The TF will work on preparing the ballot. More cleanup is needed before the ballot can be issued.
  1. ***S2/S22 TF***
     1. Chris Evanston reported.
* The TF has been dormant. The TF will intend to work on a line-item ballot, and a SNARF will submitted. A meeting slot is necessary at the Spring meetings.
  1. ***Other Interest Documents***
     1. F47 TF
* Sean Larsen mentioned F47 is continuing to have discussion on voltage sags on 3 phases vs 1 phase. Progress is made.
  + 1. BIM TF
* Sean Larsen reported the Building Information Modeling (BIM) activity. The ballot is still being discussed. It is unsure if the official ballot is ready to be issued for review at the next meeting in Spring.

1. **Liaison Reports**
   1. *ICRC Liaison*
      1. Bert Planting presented.

* Discussion on training of management on regulations
* Main discussion on materials (PFAS, POPS, …)
  + SESHA has a meeting planned about implement REACH/ROHS
* Machinery Directive
  + SEMI made a letter of concern
  + Relation with AI
  + Concern what is needed for cybersecurity (certification needs)
* How to deal with customers that made changes for safety (e.g., cover of EMO) or don’t perform safety test → Tool is owned by the customer and they can decide. For service by the manufacturer this can be a discussion/negotiation.
* Sustainability: keeping track of what is going on

**Attachment: ICRC SEMI-Standards Fall meeting 2022 -EHS report**

* 1. *Japan EH&S TC Chapter*
     1. Kevin Nguyen reported.
* Last meeting
  + September 8, 2022
* Next meeting
  + December 15, 2022 in conjunction with SEMICON Japan 2022
  + Tokyo Big Sight, Tokyo, Japan + OVTCCM (Hybrid)
* S23 Revision Global Task Force
* Other Topics
  + SEMI S2 tutorial seminar was held for two months in August and September 2022.
  + A two-month seminar with the same content as in August will be held in October and November 2022.

**Attachment: JA EHS Liaison\_20221019\_v1.0**

* 1. *Taiwan EH&S TC Chapter*
     1. Kevin Nguyen reported.
* Last meeting
  + July 7, 2022
* Next meeting
  + TBD
* New Co-chairs
  + Jean Yang-Innolux
  + C. Huang-SAHTECH
* Seismic Task Force
  + Disbanded
* Equipment Safety TF
  + Discussed topics
    - Safety guideline for collaborative robot
    - Safety guideline for energy storage system
    - Safety hydrogen energy/fuel cell
* **Attachment: EHS Taiwan TC Liaison report\_2022\_Sep\_v2**
  + 1. *RSC/Co-chairs report*
    2. Chris Evanston reported.
* SEMI publication is dealing with backlog issue. They are looking ways to reduce the bottleneck. Also, they are looking for a headcount increase to help speeding up the publication process.
* A ballot format checklist is in the work. The goal is to help ballots conforming to the SEMI Style Manual.
  1. **SEMI Staff Report**
     1. Kevin Nguyen (SEMI) reported.
* SEMI upcoming event
  + Upcoming NA Meetings
    - NA Standards Spring Meetings
      * April 3-6, 2023
      * SEMI HQ in Milpitas, California
* 2023 Critical Dates for SEMI Standards Ballots
  + <https://www.semi.org/en/collaborate/standards/ballots>
* SEMI Standards Publications
  + Total SEMI Standards in portfolio: 1,069
    - Includes 320 Inactive Standards
  + Publication backlog contributing factors
    - Increased A&R cycles have resulted in a constant rate of documents for processing.
    - Ballots are becoming more complex and require more time to process.
    - As the Regulations, Procedure Manual, and Style Manual are updated, there is the potential for delays in processing documents (e.g., ensuring documents comply).
* NEW! SEMI Corporate PPT Template
  + SEMI launched a new corporate PPT template earlier this year
  + We encourage TFs to begin transitioning over to the new template
    - Please reach out to your Staff contact for assistance
    - Templates will be sent out by Staff and can be found on the SEMI Web site www.semi.org/standards (under Tools for Developing Standards)

**Attachment: Staff Report Nov 2022 v6**

1. **Old Business**
   1. None
2. **New Business**
   1. 5 year review (S1, S7, S12)
      1. These standards are due for 5 year review. Various task forces are reviewing them at the moment. No further action is needed.
   2. Upcoming Ballot Authorization
      1. The following ballots are authorized for the before next meeting.

| *#* | *When* | *TF* | *Details* |
| --- | --- | --- | --- |
| 6831C | Cycle 9-2022, 1 or 2-2023 | S1 Revision TF | Revision of SEMI S1, Safety Guideline for Equipment Safety Labels |
| 6884A | Cycle 9-2022, 1 or 2-2023 | S2 Mechanical TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Mechanical) |
| 6885A | Cycle 9-2022, 1 or 2-2023 | S12 (Equipment Decon) Review TF | Revision of SEMI S12, Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination |
| 6907 | Cycle 9-2022, 1 or 2-2023 | S7 Revision TF | Revision to SEMI S7, Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications |
| 6940A | Cycle 9-2022, 1 or 2-2023 | Energetic Materials EHS TF | Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding S30 and S18) |
| 6941A | Cycle 9-2022, 1 or 2-2023 | Energetic Materials EHS TF | Line Item Revision to SEMI S30, Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes (Regarding heating of piping) |
| 6944A | Cycle 9-2022, 1 or 2-2023 | Fire Protection TF | Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding Fire Protection) |
| 6981 | Cycle 9-2022, 1 or 2-2023 | Ergonomics TF | Line Item Revisions to SEMI S8, Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment |

Motion: Authorize the Documents in the table above for Letter Ballot in Cycle 9-2022, 1, or 2 of 2023  
By: Lauren Crane / Lam Research Corporation  
Second: Eric Sklar / Safety Guru, LLC  
Discussion: None  
Result: 9-Y 0-N Voting Result: Pass - 100.00%

* 1. **Teleconferences**
* Eric Sklar presented the Google calendar for all EH&S TF teleconference meetings.
  + <https://calendar.google.com/calendar/u/0/embed?src=0dblgh8j8j0im0e8bt4jkbocs4@group.calendar.google.com>
* Motion: Move that the NA EHS TC assign the time slots, as shown on the Google Calendar ( <https://calendar.google.com/calendar/u/0/embed?src=0dblgh8j8j0im0e8bt4jkbocs4@group.calendar.google.com> ) No TF or other group within this TC may schedule a meeting in a time slot assigned to another group without that other group leader's consent.  
    
  By: Eric Sklar / Safety Guru, LLC  
  Second: Lauren Crane / Lam Research Corporation  
  Discussion:  
  Result: 7-Y 0-N Voting Result: Pass - 100.00%

1. **Next Meeting and Adjournment**
   1. The next meeting is scheduled for Thursday, April 6, 2023. Refer to <http://www.semi.org/standards> for the current list of meeting schedules.

There being no further business, a motion was made to adjourn. Adjournment was at 5:00 PM.

Respectfully submitted by:

Kevin Nguyen,

SEMI Standards Operations Manager

Phone: 408-943-7997

Email: [knguyen@semi.org](mailto:knguyen@semi.org)

Minutes tentatively approved by:

|  |  |
| --- | --- |
| Sean Larsen (Lam Research) | <Date approved> |
| Chris Evanston (Salus Engineering International) | <Date approved> |
| Bert Planting (ASML) | <Date approved> |

| Index of Available Attachments#1 | | |
| --- | --- | --- |
| Title | Title |
| EHS NA TC Minutes 07142022\_es06nov22a | S2 Interlocks Design SEMI 2022 Fall |
| 6885A\_RespComp\_es26sep22a\_es19oct22a\_tf09nov22a | SEMI S6 - Fall 2022 - Summary |
| 6885A AR | 6515\_Generic\_06nov22a |
| 6940li1\_RespComp\_tf11oct22a\_tf08nov22a | S23\_ProceduralReview-EditorialChangeType2 |
| 6940li2\_RespComp\_tf11oct22a\_tf08nov22a | 2022 Nov S23 TF mtg & rpt Crane r2 |
| 6944li1\_RespComp\_tf06oct22a\_tf08nov22a | 2022 Nov Seismic TF mtg & rpt Crane r1 |
| 6944li2\_RespComp\_tf06oct22a\_tf08nov22a | FireProt\_report\_es10nov22a |
| 6941li1\_RespComp\_tf01nov22b\_tf08nov22a | S1\_report\_es10nov22a |
| 6941li2\_RespComp\_tf01nov22a\_tf08nov22a | EnergeticMatls\_report\_es10nov22a |
| S3 Report Fall 2022 | CoHEreport\_es10nov22a |
| S2 Mech Report Fall 2022 | S12(decon)\_report\_es10nov22a |
| S10\_ProceduralReview-EditorialChangeType2 | SNARF\_SEMI-S8\_ps09NOV2022 |
| S10Fall2022.zip | SEMI-S8\_TF\_summary\_10NOV2022 |
| TFOF\_Flammable gas safety and regulations | ICRC SEMI-Standards Fall meeting 2022 -EHS report |
| SNARF\_Flammable gasses Nov2022 (V1) | JA EHS Liaison\_20221019\_v1.0 |
| Hydrogen addition SEMI-Fall EHS meeting Nov 8 2022 | EHS Taiwan TC Liaison report\_2022\_Sep\_v2 |
| MESSC SEMI 2022 Fall Notes | Staff Report Nov 2022 v6 |

1. Due to file size and delivery issues, attachments must be downloaded separately. A .zip file containing all attachments for these minutes is available at www.semi.org. For additional information or to obtain individual attachments, please contact Kevin Nguyen at the contact information above.