Facilities & Gases North America Joint TC Chapter

Meeting Summary and Minutes

NA Standards Fall 2017 Meetings
Tuesday, November 7, 09:00 – 12:00 Noon
SEMI Headquarters, Milpitas, California

TC Chapter Announcements

Next TC Chapter Meeting
NA Standards Spring 2018 Meetings
Tuesday, April 10, 09:00 – 12:00 Noon
SEMI Headquarters, Milpitas, California

Table 1 Meeting Attendees

*Italics* indicate virtual participants

**Facilities Co-Chairs:** Steve Lewis (BW Design Group)
**Gases Co-Chairs:** Mohamed Saleem (Brooks Instrument)
**SEMI Staff:** Laura Nguyen

<table>
<thead>
<tr>
<th>Company</th>
<th>Last</th>
<th>First</th>
<th>Company</th>
<th>Last</th>
<th>First</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Pressure (AP) Technology</td>
<td>Kiekve</td>
<td>Bill</td>
<td>Ultra Clean Technology (UCT)</td>
<td>Chen</td>
<td>Yanli</td>
</tr>
<tr>
<td>Brooks Instrument</td>
<td>Saleem</td>
<td>Mohamed</td>
<td>Ultra Clean Technology (UCT)</td>
<td>Milburn</td>
<td>Matt</td>
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<tr>
<td>BW Design Group</td>
<td>Lewis</td>
<td>Steve</td>
<td>Ultra Clean Technology (UCT)</td>
<td>Ramamurti</td>
<td>Rahul</td>
</tr>
<tr>
<td>CBRE</td>
<td>Sanders</td>
<td>Chris</td>
<td>WIKA Instruments Corporation</td>
<td>Christian</td>
<td>Jeff</td>
</tr>
<tr>
<td>Fujikin of America</td>
<td>Kitano</td>
<td>Erica</td>
<td>WIKA Instruments Corporation</td>
<td>Fritz</td>
<td>Thomas</td>
</tr>
<tr>
<td>Hitachi High-Technologies Corp.</td>
<td>Hiromichi</td>
<td>Enami</td>
<td>SEMI</td>
<td>Amano</td>
<td>James</td>
</tr>
<tr>
<td>Power Standards Lab</td>
<td>Mceachern</td>
<td>Alex</td>
<td>SEMI</td>
<td>Nguyen</td>
<td>Laura</td>
</tr>
</tbody>
</table>

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

<table>
<thead>
<tr>
<th>Document #</th>
<th>Document Title</th>
<th>Committee Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities</td>
<td>Reapproval of SEMI E51-0200, Guide for Typical Facilities Services and Termination Matrix</td>
<td>Failed</td>
</tr>
<tr>
<td>Gases</td>
<td>Revision to SEMI E28-1110, Guide for Pressure Specifications of the Mass Flow Controller</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Table 4 Ballot Results

<table>
<thead>
<tr>
<th>Document #</th>
<th>Document Title</th>
<th>Committee Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6125A</td>
<td>Revision to SEMI F23-0697 (Reapproved 0712), Particle Specification for Grade 10/0.2 Flammable Specialty Gases</td>
<td>Passed, Ratification, Ballot to be issued</td>
</tr>
<tr>
<td>6211</td>
<td>Reapproval of SEMI F22-0812, Guide for Bulk and Specialty Gas Distribution Systems</td>
<td>Passed, as balloted</td>
</tr>
<tr>
<td>6213</td>
<td>Reapproval of SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems</td>
<td>Failed</td>
</tr>
<tr>
<td>6214</td>
<td>Reapproval of SEMI F53-0600 (Reapproved 0412), Test Method for Evaluating the Electromagnetic Susceptibility of Thermal Mass Flow Controllers</td>
<td>Failed</td>
</tr>
<tr>
<td>6215</td>
<td>Reapproval of SEMI F55-0600 (Reapproved 0412), Test Method for Determining the Corrosion Resistance of Mass Flow Controllers</td>
<td>Failed</td>
</tr>
<tr>
<td>6216</td>
<td>Reapproval of SEMI F56-0600 (Reapproved 0412), Test Method for Determining Steady-State Supply Voltage Effects for Mass Flow Controllers</td>
<td>Failed</td>
</tr>
<tr>
<td>6212</td>
<td>Reapproval of SEMI F38-0699 (Reapproved 0611), Test Method for Efficiency Qualification of Point-of-Use Gas Filters</td>
<td>Failed</td>
</tr>
</tbody>
</table>

#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.

Table 5 Activities Approved by the GCS between meetings of the TC Chapter

<table>
<thead>
<tr>
<th>#</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Facilities</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gases</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 6125A | SNARF      | Gases Spec. TF | Revision to SEMI F23-0697 (Reapproved 0712), Particle Specification for Grade 10/0.2 Flammable Specialty Gases with title change to Specification for Particle Concentration of Grade 10/0.2 Hydrogen Gas 
- Revision SNARF distributed for two-week TC Member review 
- GCS approved revision SNARF and authorized for ballot 
- Balloted in Voting Cycle 7-2017 |
- TC Member Review took place between 09/11/2017 and 09/25/2017 before approval at the TC Chapter Meeting |
| 6291 | SNARF      | Filters & Purifiers TF | New Standard, Test Method for the Determination of Metallic Elements Present on Wetted Surfaces of Ultra High Purity Gas Delivery Components and Plumbing Systems 
- TC Member Review took place between 09/11/2017 and 09/25/2017 before approval at the TC Chapter Meeting |

Table 6 Authorized Activities

Listing of all revised or new SNARF(s) approved by the Originating TC Chapter.

<table>
<thead>
<tr>
<th>#</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Facilities</td>
<td></td>
<td></td>
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</tbody>
</table>
| 6313 | SNARF      | NA Facilities Committee | Reapproval of SEMI F47-0706 (Reapproved 0812), Specification for Semiconductor Processing Equipment Voltage Sag Immunity 
- Authorized new SNARF |
|    | Gases      |          |                                                                         |
- Authorized new SNARF |

#1 SNARFs and TFOFs are available for review on the SEMI Web site at:
http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF
Table 7 Authorized Ballots

<table>
<thead>
<tr>
<th>#</th>
<th>When</th>
<th>TF</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>6313</td>
<td>Cycle 9, 2017</td>
<td>NA Facilities Committee</td>
<td>Reapproval of SEMI F47-0706 (Reapproved 0812), Specification for Semiconductor Processing Equipment Voltage Sag Immunity</td>
</tr>
<tr>
<td>Gases</td>
<td>R6125A</td>
<td>Cycle 9, 2017</td>
<td>Gases Specification TF</td>
</tr>
</tbody>
</table>

Table 8 SNARF(s) Granted a One-Year Extension

None

Table 9 SNARF(s) Abolished

<table>
<thead>
<tr>
<th>#</th>
<th>TF</th>
<th>Title</th>
</tr>
</thead>
</table>
| Facilities | 6210 | NA Facilities Committee | Reapproval of SEMI E51-0200, Guide for Typical Facilities Services and Termination Matrix  
- Reapproval ballot failed Committee review, new SNARF to be issued to reflect change in scope |
- Standard to receive Inactive Status; SNARF retired |
- Standard to receive Inactive Status; SNARF retired |
- Standard to receive Inactive Status; SNARF retired |
| 6212 | Filters & Purifiers TF | Reapproval of SEMI F38-0699 (Reapproved 0611), Test Method for Efficiency Qualification of Point-of-Use Gas Filters  
- Reapproval ballot failed Committee review, new SNARF to be issued to reflect change in scope |
- Reapproval ballot failed Committee review, new SNARF to be issued to reflect change in scope |
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**Table 9 SNARF(s) Abolished**

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<tr>
<th>#</th>
<th>TF Title</th>
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</thead>
</table>
| 6213 | Materials of Construction of Gas Delivery Systems TF | Reapproval of SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems – *Reapproval ballot failed Committee review, new SNARF to be issued to reflect change in scope*

**Table 10 Standard(s) to receive Inactive Status**

<table>
<thead>
<tr>
<th>Standard Designation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>SEMI F13 Guide for Gas Source Control Equipment</td>
</tr>
<tr>
<td></td>
<td>SEMI F14 Guide for the Design of Gas Source Equipment Enclosures</td>
</tr>
</tbody>
</table>

#1 Inactive, adj. — Status of a Standard or Safety Guideline that is not currently supported by the GTC. [Regulations 4.2.19]

#2 Inactive Standards and Inactive Safety Guidelines are still available from SEMI.

#3 Inactive Standards and Inactive Safety Guidelines will receive an ‘INACTIVE’ watermark and Notice, but will still be available in the ‘Current Standards’ section of the SEMI Standards Web site.

**Table 11 New Action Items**

<table>
<thead>
<tr>
<th>Item #</th>
<th>Assigned to</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017Nov#01</td>
<td>Laura Nguyen</td>
<td>Send Inactive Report to Mohamed.</td>
</tr>
<tr>
<td>2017Nov#02</td>
<td>Bill Kiikvee</td>
<td>To contact the group for SEMI F101 input.</td>
</tr>
<tr>
<td>2017Nov#03</td>
<td>Laura Nguyen</td>
<td>To send TF SEMIViews access for SEMI E68, E69.</td>
</tr>
<tr>
<td>2017Nov#04</td>
<td>Erica Kitano</td>
<td>Look at the actual frequency range that MFC would be exposed to in the field to determine whether the range of 14kHz – 1GHz is sufficient – contact Melinda (TUV) for assistance.</td>
</tr>
<tr>
<td>2017Nov#05</td>
<td>Laura Nguyen</td>
<td>To send TF SEMIViews access for SEMI F43, F59, F112 to review before ballot for reapproval ballot.</td>
</tr>
</tbody>
</table>

**Table 12 Previous Meeting Action Items**

<table>
<thead>
<tr>
<th>Item #</th>
<th>Assigned to</th>
<th>Details</th>
</tr>
</thead>
</table>
| 2017July#01 | Laura Nguyen    | Follow-up with Japan and why they are planning to send F1 and F106 to Inactive status. 
*Completed. Closed.* |
| 2017July#02 | Bala Mohammed   | Bala Mohammed will send Matt information for someone that is familiar with this space that works with him at Applied Materials. *Ongoing.* |

**1 Welcome, Reminders, and Introductions**

Steve Lewis (BW Design Group) called the meeting to order at 9:00. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

**Attachment:** SEMI Standards Required Meeting Elements

**2 Review of Previous Meeting Minutes**

The TC Chapter reviewed the minutes of the previous meeting.
Motion: To accept the previous meeting minutes as written.
By / 2nd: Chris Sanders (CBRE) / Thomas Fritz (WIKA)
Discussion: None.
Vote: 8-0 in favor. Motion passed.
Attachment: [2017West] F&G Minutes FINAL

3 Liaison Reports
3.1 Facilities & Gases Japan TC Chapter

Laura Nguyen (SEMI) reported for the Japan TC Chapter. Of note:

Gases
Leadership
- Committee Co-chairs
  - Hiromichi Enami (Hitachi High Technologies)
  - Isao Suzuki (MKS Japan)

Current Organization Chart of Japan TC Chapter [See attachment for Org Chart]

Meeting Information
- Last meeting
  - June 23, 2017 during Japan Summer Meetings 2017 at SEMI Japan, Tokyo, Japan
- Next meeting
  - December 12, 2017 during Japan Winter Meetings 2017 at SEMI Japan, Tokyo, Japan

Standard(s) to receive Inactive Status

<table>
<thead>
<tr>
<th>Standard Designation</th>
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</thead>
<tbody>
<tr>
<td>SEMI F82-1012</td>
<td>Specification For Dimension Of Mass Flow Controller/Mass Flow Meter For 1.125 Inch Type Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F83-1012</td>
<td>Specification For Dimension Of Two Port Components (Except Mfc/Mfm) For 1.125 Inch Type Two Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F84-1012</td>
<td>Specification For Dimension Of Three Port Components (Except Mfc/Mfm) For 1.125 Inch Type Two Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F85-1012</td>
<td>Specification For Dimension Of One Port Components For 1.125 Inch Type Four Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F86-1012</td>
<td>Specification For Dimension Of Two Port Components (Except Mfc/Mfm) For 1.125 Inch Type Four Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F87-1012</td>
<td>Specification For Dimension Of Three Port Components (Except Mfc/Mfm) For 1.125 Inch Type Four Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F88-1012</td>
<td>Specification For Dimension Of Standard Size Mass Flow Controllers And Mass Flow Meters For 1.5 Inch Type Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F90-1012</td>
<td>Specification For Dimension Of Standard Size Two Port Components (Except Mfc/Mfm) For 1.5 Inch Type Two Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F91-1012</td>
<td>Specification For Dimension Of Compact Size Two Port Components (Except Mfc/Mfm) For 1.5 Inch Type Two Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F92-1012</td>
<td>Specification For Dimension Of Compact Size Three Port Components For 1.5 Inch Type Two Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>Standard Designation</td>
<td>Title</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------</td>
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<tr>
<td>SEMI F93-1012</td>
<td>Specification for Dimension of One Port Components for 1.5 Inch Type Four Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F94-1012</td>
<td>Specification for Dimensions of Two Port Components (Except Mfc/Mfm) for 1.5 Inch Type Four Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
<tr>
<td>SEMI F95-1012</td>
<td>Specification for Dimension of Three Port Components for 1.5 Inch Type Four Fastener Configuration Surface Mount Gas Distribution Systems</td>
</tr>
</tbody>
</table>

**Task Force Updates**

- Gas Panel Test Method Task Force
  - No activity
- 5-year-review Task Force
  - No activity
- Live Gas Flow Rate Task Force
- Activity and Plan update.
- Some questions are pointed out on the test result from members and TF will continue to review/plan for next step considering the point.

**Facilities**

**Leadership**

- Committee Co-chairs
  - Hiromichi Enami (Hitachi High Technologies)
  - Isao Suzuki (MKS Japan)

**Current Organization Chart of Japan TC Chapter**

[See attachment for Org Chart]

**Meeting Information**

- Last meeting
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**Standard(s) to receive Inactive Status**

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</thead>
<tbody>
<tr>
<td>SEMI F1-0812</td>
<td>Specification for Leak Integrity of High-Purity Gas Piping Systems and Components</td>
</tr>
<tr>
<td>SEMI F106-1012</td>
<td>Test Method for Determination of Leak Integrity of Gas Delivery Systems by Helium Leak Detector</td>
</tr>
</tbody>
</table>

**Staff Contact:** Mizue Iwamura (miwamura@semi.org)

**Discussion:**

Mohamed: Concerned sending SEMI F1 to Inactive Status. SEMI F1 is widely used in the industry, and most important document for leak rate; it is critical for us to keep SEMI F1 active.

Hiromichi: Would like NA to send proposal to Japan team to implement
Action Item: 2017Nov#01, Send Inactive Report to Mohamed.
Attachment: 171023_JA_G+F_LiaisonR_6

3.2 Gases & Liquid Chemicals Europe TC Chapter
There is no update since last meeting. The Gases & Liquid Chemicals Europe TC Chapter will be held in conjunction at SEMICON Europa 2017.

3.3 SEMI Staff Report
Laura Nguyen (SEMI) gave the SEMI Staff Report. Of note:
SEMI Global 2017 Calendar of Events
- SEMICON Europa (November 14-17, 2017; Munich, Germany)
- SEMICON Japan (December 13-15, 2017; Tokyo, Japan)
SEMI Global 2018 Calendar of Events
- SEMICON Korea (January 31-February 2; Seoul, Korea)
- 2018Flex/MSTC (February 12-15; Monterey, California)
- SEMICON China (March 14-16; Shanghai, China)
- SEMICON Southeast Asia (May 8-10; Kuala Lumpur, Malaysia)
- SEMICON West (July 10-12; San Francisco, California)
Upcoming North America Standards Meetings
- NA Standards Spring 2018 Meetings (April 9-12, 2018, SEMI HQ in Milpitas, California)
- SEMICON West 2018 (July 9-12, 2018, San Francisco, California)
- NA Standards Fall 2018 Meetings (November 5-8 [tentative], SEMI HQ in Milpitas, California)
Letter Ballot Critical Dates for 2017 & 2018
- Cycle 8-17: ballot submission due: Oct 13/Voting Period: Oct 27 – Nov 27
- Cycle 9-17: ballot submission due: Nov 16/Voting Period: Nov 29 – Dec 29
- Cycle 1-18: ballot submission due: Jan 3/Voting Period: Jan 16 – Feb 15
- Cycle 3-18: ballot submission due: Mar 9/Voting Period: Mar 23 – Apr 23
- Cycle 4-18: ballot submission due: Apr 20/Voting Period: Apr 30 – May 30
Standards Publications Report

<table>
<thead>
<tr>
<th>Cycle</th>
<th>New</th>
<th>Revised</th>
<th>Reapproved</th>
<th>Withdrawn</th>
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<tr>
<td>July 2017</td>
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<td>1</td>
<td>0</td>
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<tr>
<td>August 2017</td>
<td>3</td>
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<tr>
<td>September 2017</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>October 2017</td>
<td>1</td>
<td>12</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Total in portfolio – 978 (includes 210 Inactive Standards)

Facilities Nonconforming Titles (See PM Appendix 4) *(None)*

Gases Nonconforming Titles

- SEMI C6.2-93 (Reapproved 1111), Particle Specification for Grade 20/0.02 Oxygen Delivered as Pipeline Gas
- SEMI C6.4-90 (Reapproved 1111), Particle Specification for Grade 20/0.02 Nitrogen (N2) and Argon (Ar) Delivered as Pipeline Gas
- SEMI C6.3-89 (Reapproved 1111), Particle Specification for Grade 20/0.2 Hydrogen (H2) Delivered as Pipeline Gas
- SEMI C6.5-90 (Reapproved 1111), Particle Specification for Grade 10/0.2 Nitrogen (N2) and Argon (Ar) Delivered as Pipeline Gas
- SEMI C6.6-90 (Reapproved 1111), Particle Specification for Grade 10/0.1 Nitrogen (N2) and Argon (Ar) Delivered as Pipeline Gas
- SEMI C6.7-93 (Reapproved 1111), Particle Specification for Grade 10/0.2 Nitrogen in High Pressure Gas Cylinders
- SEMI C71-0815, Specification and Guide for Boron Trichloride (BCI3)

Facilities Five-Year Review

<table>
<thead>
<tr>
<th>Designation #</th>
<th>Standard Title</th>
<th>Action By</th>
<th>Original TF assigned to</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEMI F40-0699E</td>
<td>Practice for Preparing Liquid Chemical Distribution Components for Chemical Testing</td>
<td>Past due</td>
<td>N/A</td>
</tr>
<tr>
<td>SEMI F107-0309</td>
<td>Guide for Process Equipment Adapter Plate</td>
<td>Past due</td>
<td>Adapter Plate Guideline TF</td>
</tr>
<tr>
<td>SEMI F47-0706 (Reapproved 0812)</td>
<td>Specification for Semiconductor Processing Equipment Voltage Sag Immunity</td>
<td>Past due</td>
<td>SEMI F47 Revision TF</td>
</tr>
<tr>
<td>SEMI E76-0299 (Reapproved 0913)</td>
<td>Guide for 300 mm Process Equipment Points of Connection to Facility Services</td>
<td>West 2018</td>
<td>NA Facilities Committee</td>
</tr>
</tbody>
</table>

Gases Five-Year Review

<table>
<thead>
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</tr>
<tr>
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<td>Guide for Process Equipment Adapter Plate</td>
<td>Past due</td>
<td>Adapter Plate Guideline TF</td>
</tr>
<tr>
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<td>Specification for Semiconductor Processing Equipment Voltage Sag Immunity</td>
<td>Past due</td>
<td>SEMI F47 Revision TF</td>
</tr>
<tr>
<td>SEMI E76-0299 (Reapproved 0913)</td>
<td>Guide for 300 mm Process Equipment Points of Connection to Facility Services</td>
<td>West 2018</td>
<td>NA Facilities Committee</td>
</tr>
</tbody>
</table>
5-Year Review (In-progress/Needs Action)

Materials of Construction of Gas Delivery Systems TF

- SEMI F4-0211, Specification for Pneumatically Actuated Cylinder Valves
- SEMI F6-92, Guide for Secondary Containment of Hazardous Gas Piping Systems
- SEMI F13-1101, Guide for Gas Source Control Equipment
- SEMI F14-93 (Reapproved 0699), Guide for the Design of Gas Source Equipment Enclosures
- SEMI F32-0211, Test Method for Determining of Flow Coefficient for High Purity Shutoff Valves

Mass Flow Controller TF

- SEMI F64, Test Method for Determining Pressure Effects on Indicated and Actual Flow for Mass Flow Controllers
  - Reapproval Ballot, Publication pending
  - Task Force agreed to address Accept with Comment in future Line Item Ballot

SNARF 3 Year Status, TC Chapter may grant a one-year extension {None}

SNARF(s) Approved by GCS in between TC Chapter Meetings

Gases

- Filters & Purifiers Task Force

- Gases Specification Task Force
  - 6125A: Revision to SEMI F23-0697 (Reapproved 0712), Particle Specification for Grade 10/0.2 Flammable Specialty Gases with title change to Specification for Particle Concentration of Grade 10/0.2 Hydrogen Gas
    - Balloted in Voting Cycle 7-17

Intercommittee Ballots Cycle 6-17 (Metrics TC)

- Doc #R5596A – New Standard, Guide To Assess and Minimize Electromagnetic Interference (EMI) in a Semiconductor Manufacturing Environment
  - Inter Committee ballot to Facilities TC, Balloted Cycle 6-17

Intercommittee Ballots Cycle 7-17 (Liquid Chemicals TC)
• Doc #6136 – Revision to SEMI F98-0305 (Reapproved 1111) with title change to Guide for Water Reuse in Semiconductor Industry
  o Intercommittee to Facilities TC, Balloted Cycle 7-17
• Doc #5942 – Revision to SEMI E49.4-0298 with title change to: Guide for Ultrahigh Purity Solvent Distribution Systems with Metallic Fluid Paths in Semiconductor Manufacturing Equipment
  o Intercommittee ballot to Facilities TC, Balloted Cycle 7-17
• Doc #5978 – Revision to SEMI E49.5-1104 with title change to: Guide for the Design of Ultrahigh Purity Solvent Distribution Systems with Non-Metallic Fluid Paths in Semiconductor Manufacturing Equipment
  o Intercommittee ballot to Facilities TC, Balloted Cycle 7-17

Attachment: [2017Fall] Staff Report F&G

4 Ballot Review

NOTE 1: TC Chapter adjudication on ballots reviewed 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 number for each balloted document is provided under each ballot review section below.

4.1 Facilities

4.1.1 Document # 6210, Reapproval of SEMI E51-0200, Guide for Typical Facilities Services and Termination Matrix

• The committee found the negatives related and persuasive. The ballot failed and returned to the task force for re-work and re-ballot in the next cycle if ready.

  Motion: To fail Doc 6210 based on negative 7.1.1.
  By / 2nd: Joyce Chen (UCT) / Jeff Christian (WIKA)
  Discussion: None.
  Vote: 8-0 in favor. Motion passed.

Attachment: [Ballot Results] Facilities Cycle 07-17

  Motion: To abolish SNARF 6210 and new SNARF to be issued to reflect change in scope.
  By / 2nd: Joyce Chen (UCT) / Rahul Ramamurti (UCT)
  Discussion: None.
  Vote: 8-0 in favor. Motion passed.

4.2 Gases

4.2.1 Document # R6056B, Revision to SEMI E28-1110, Guide for Pressure Specifications of the Mass Flow Controller

• The ballot passed TC Chapter review with technical changes during Fall 2017 Meetings. A Ratification Ballot was issued in Cycle 6, 2017. R6056B reached an acceptance rate of at least 30%, and was forwarded to A&R for Procedural Review. There was one valid disapprove vote that total to be less than 10% of the total number of Voting Interest. The details of the disapprove vote will be later addressed at the next time the documents ballots or during the next 5-Year Review, whichever comes first. The ISC A&R SC approved R6056B for publications in the September 2017 A&R Cycle. See attachment for details.

Attachment: R6056BProceduralReview

4.2.2 Document # 6125A, Revision to SEMI F23-0697 (Reapproved 0712), Particle Specification for Grade 10/0.2 Flammable Specialty Gases
The ballot passed TC Chapter review with technical changes. Ratification Ballot to be issued. See attachment for ballot adjudication.

**Attachment:** 6125ProceduralReview

4.2.3 Document # 6211, Reapproval of SEMI F22-0812, Guide for Bulk and Specialty Gas Distribution Systems

- The ballot passed TC Chapter review as balloted. See attachment for ballot adjudication.

**Attachment:** 6211ProceduralReview

4.2.4 Document # 6212, Reapproval of SEMI F38-0699 (Reapproved 0611), Test Method for Efficiency Qualification of Point-of-Use Gas Filters

- The committee found the negatives related and persuasive. The ballot failed and returned to the task force for rework and re-ballot.

**Motion:** To fail Doc 6212 based on negative 2 (TEL).

**By / 2**nd: Jeff Christian (WIKA) / Joyce Chen (UCT)

**Discussion:** None.

**Vote:** 7-0 in favor. Motion passed.

**Motion:** To abolish SNARF 6212 and new SNARF to be issued to reflect change in scope.

**By / 2**nd: Joyce Chen (UCT) / Rahul Ramamurti (UCT)

**Discussion:** None.

**Vote:** 7-0 in favor. Motion passed.

4.2.5 Document # 6213, Reapproval of SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems

- The committee found the negatives related and persuasive. The ballot failed and returned to the task force for rework and re-ballot.

**Motion:** To fail Doc 6213 based on negative section 7.7.4 (UCT).

**By / 2**nd: Joyce Chen (UCT) / Chris Sanders (CBRE)

**Discussion:** None.

**Vote:** 7-0 in favor. Motion passed.

**Motion:** To abolish SNARF 6213 and new SNARF to be issued to reflect change in scope.

**By / 2**nd: Chris Sanders (CBRE) / Joyce Chen (UCT)

**Discussion:** None.

**Vote:** 7-0 in favor. Motion passed.

4.2.6 Document # 6214, Reapproval of SEMI F53-0600 (Reapproved 0412), Test Method for Evaluating the Electromagnetic Susceptibility of Thermal Mass Flow Controllers

- The committee found the negatives related and persuasive. The ballot failed and returned to the task force for rework and re-ballot.

**Motion:** To fail Doc 6214 based on negative comment #1 (UCT)

**By / 2**nd: Joyce Chen (UCT) / Rahul Ramamurti (UCT)
Discussion: None.
Vote: 7-0 in favor. Motion passed.

Motion: To abolish SNARF 6214 and new SNARF to be issued to reflect change in scope.
By / 2nd: Erica Kitano (Fujikin) / Chris Sanders (CBRE)
Discussion: None.
Vote: 7-0 in favor. Motion passed.

4.2.7 Document # 6215, Reapproval of SEMI F55-0600 (Reapproved 0412), Test Method for Determining the Corrosion Resistance of Mass Flow Controllers

- The committee found the negatives related and persuasive. The ballot failed and returned to the task force for re-work and re-ballot.

Motion: To fail Doc 6215 based on negative SG01.
By / 2nd: Thomas Fritz (WIKA) / Jeff Christian (WIKA)
Discussion: None.
Vote: 7-0 in favor. Motion passed.

Motion: To abolish SNARF 6215 and new SNARF to be issued to reflect change in scope.
By / 2nd: Rahul Ramamurti (UCT) / Jeff Christian (WIKA)
Discussion: None.
Vote: 7-0 in favor. Motion passed.

4.2.8 Document # 6216, Reapproval of SEMI F56-0600 (Reapproved 0412), Test Method for Determining Steady-State Supply Voltage Effects for Mass Flow Controllers

- The committee found the negatives related and persuasive. The ballot failed and returned to the task force for re-work and re-ballot.

Motion: To fail Doc 6216 based on negative section 2.1.
By / 2nd: Jeff Christian (WIKA) / Joyce Chen (UCT)
Discussion: None.
Vote: 7-0 in favor. Motion passed.

Motion: To abolish SNARF 6216 and new SNARF to be issued to reflect change in scope.
By / 2nd: Thomas Fritz (WIKA) / Erica Kitano (Fujikin)
Discussion: None.
Vote: 7-0 in favor. Motion passed.

[[Break: 9:52-10:00]]

5 Subcommittee and Task Force Reports

5.1 Facilities

5.1.1 Power Grid Harmonics Task Force
Alex McEachern (Power Standards) reported for the Power Grid Harmonics Task Force. The task force does not have a draft document at this time. The meeting held on Monday, April 9, was a relaunch of the task force. There is active participation from companies such as Intel, Samsung, Applied Materials, and is visibly moving forward.

Please contact Alex at alex@powerstandards.com to be included in task force’s ongoing activities.

SEMI F47 is coming up for Five-Year Review and Alex McEachern, the latest author for SEMI F47, addressed the committee on this topic to issue the Standard for reapproval ballot. The motion is showed below.

**Motion:** To issue a new SNARF for SEMI F47 Reapproval Ballot and to ballot in the next available cycle.

**By / 2nd:** Chris Sanders (CBRE) / Thomas Fritz (WIKA)

**Discussion:** None.

**Vote:** 8-0 in favor. Motion passed.

5.1.2 *SEMI F51 Revision Task Force*

No task force meeting was held. Paul Trio (SEMI) gave a short report. The key items are as followed:

- The latest version of the SEMI F51 specification was published last month.
  - The spec incorporated considerations for packaging, handling, cleaning, bagging, etc.
  - Activity originated from the SCIS Group
- The Seals & Valves team under SCIS is continuing its work on "seal leak rate measurements" and once completed it is expected to be transitioned to SEMI Standards.
  - Set to complete by end of the year; possibly form new TFOF, yet TBD
  - If new TFOF is to be formed, the proposal will be presented at the NA Standards Spring 2019 Meeting

Please contact Paul Trio (SEMI / ptrio@semi.org) and TF leader, Dalia Vernikovsky (Applied Seals/ dalia@appliedsealsglobal.com) for information regarding their activities.

5.1.3 *Building Information Modeling (BIM) for Semiconductor Capital Equipment Task Force*

No task force meeting was held. Ben Bruce (Applied Materials), TF leader, and the task force is reworking the ballot from SEMICON West 2017. Please contact him at Ben_Bruce@amat.com to be included in task force’s ongoing activities.

5.2 *Gases*

5.2.1 Materials of Construction of Gas Delivery Systems Task Force

Bill Kiikvee (AP Tech) reported for the Materials of Construction of Gas Delivery Systems Task Force. This report contained information on introductions, review of prior meetings and activities, ballot results (which can be found in Section 4 of these minutes), old business and new business. The key items of this report are noted below. Please see attachment for further detail.

- Discussed SEMI F101-1105 (Reapproved 111).
- SEMI F101 for review to Parker, Swagelok and Applied Materials for comment. No comments rec’d and AP Tech did not confirm via e-mail or phone that the e-mail were rece’d.
- No members were present at the meeting to confirm receipt of e-mail from Bill or if they had objections/comments.
• Discussed options with group….submit for voting “AS IS”….or get feedback from group. Bill wanted to get confirmation from group prior to submitting the document for voting.

• Bill K. to contact Swagelok, Parker and AMAT for input/feedback. Will have document rewrite done by December 15 for Cycle 1 January 2018 release.

• Bill K. to review SEMI F4 and SEMI F32 rejects and update document. Will be completed by SEMICON Spring 2018 meeting.

• Discussed new material specification, specifically UNS N06022 (i.e. Hastelloy C-22). Agreed that there should be a material specification for chemistry and then separate specification for cleanliness (similar guidelines as SEMI F19 and SEMI F20. No new driving force for industry requirements. UNS 06022 has been in use for many years.

Discussed F6, F13 F14 making them inactive. Cannot find a technical representative to rewrite the documents. There is no Industry push. TF recommends that F6, F13 and F14 be moved to inactive folder. Will review them in future if industry requirements specify these documents. The motion is below.

Motion: To send SEMI F6, F13, F14 to Inactive Status.
By / 2nd: Thomas Fritz (WIKA) / Jeff Christian (WIKA)
Discussion: No technical representative for these documents at this time.
Vote: 7-0 in favor. Motion passed.

Action Item: 2017Nov#02, Bill to contact to group for SEMI F101 input.
Attachment: Materials of construction SEMI Spring 2017 minutes update

5.2.2 Filters & Purifiers Task Force

Joyce Chen (UCT) reported for the Filters & Purifiers Task Force. This report contained information on the following:

1. Review previous meeting minutes.
2. Review the Cycle 6-2017 balloting results for the Document 6212 to TF members
   a. There are numerous rejections for the Document 6212 from Supika Mashiro of TEL, Joyce Chen of UCT and Eric Sklar of Guru.
   b. After reviewing these rejections, the TF members voted and approved to fail this document. TF leaders Joyce and Saleem will submit a new SNARF for editing and withdrawing old SNARF for reapproval. They will also work on the document and provide official response to the rejections and get the document be ready for the Cycle 2-2018 balloting.
3. Joyce updated the status of the two test methods for measuring metallic and hydrocarbon contamination from SCIS group. All TF members voted and agreed to send these two documents out for the Cycle 9-2017 balloting. The motion to authorize the ballot is shown at the end of this task force report.

New Business

Bala from AMAT is not showing up for this meeting because of his business trip. The action items will be followed up by the TF leaders with Bala.

• Will present the project information and some test results collaborated with Balazs lab for particle contribution
• Send a SNAF for the reopening of SEMI F70 for review and revision because Bala thinks that the SEMI F70 is not following the current industrial trend

Motion: To authorize Doc 6290 and 6291 for ballot in Cycle 9, 2017.
By / 2nd: Thomas Fritz (WIKA) / Joyce Chen (UCT)
Discussion: TC Member Review took place between 09/11/2017 and 09/25/2017 before approval by the GCS. GCS approval on 10/10/17.

Vote: 7-0 in favor. Motion passed.

Attachment: Meeting Minutes_FP TF_11_6_2017

5.2.3 Mass Flow Controller Task Force

Erica Kitano (Fujikin) reported for the Mass Flow Controller Task Force. This report contained information on the ballot results (which can be found in Section 4 of these minutes), old business and new business. The key items of this report are noted below. Please see attachment for further detail.

- Document SEMI F53
  - Action Item: Need to look at the actual frequency range that MFC would be exposed to in the field to determine whether the range of 14kHz – 1GHz is sufficient.

- Standards due for Five-Year Review:
  - SEMI E68
  - SEMI E69

Request for SEMIViews access for the above Standards to be reviewed by the TF.

Action Item: 2017Nov#03, Laura to send TF SEMIViews access for SEMI E68, E69.

Action Item: 2017Nov#04, Erica to look at the actual frequency range that MFC would be exposed to in the field to determine whether the range of 14kHz – 1GHz is sufficient – contact Melinda (TUV) for assistance.

Attachment: Nov 6 2017 MFC TF Meeting Summary v2

5.2.4 Gases Specification Task Force

Dr. Thomas Fritz (WIKA) reported for the Gases Specification Task Force. This report contained information on introductions, review of prior minutes and activities, ballot results (which can be found in Section 4 of these minutes), old business, and new business. Of note:

- Welcome/call to order
- Review of previous meeting minutes
- Ballot Review
  - 6125A; Ratification Ballot (See Section 4 of these minutes)

- New Business
  - SEMI C6.2 – C6.7, Particle Specification for Grade…
    - Review documents with the intention to combining them into one document
    - Replace existing documents against one new.
  - Due for Five-Year Review

Action Item: 2017Nov#04, Erica to look at the actual frequency range that MFC would be exposed to in the field to determine whether the range of 14kHz – 1GHz is sufficient – contact Melinda (TUV) for assistance.

Attachment: [Agenda] Gases Spec TF_SEMI_Fall Standards 2017 Meeting
5.2.5 **Heater Jacket Task Force**

Matt Milburn (UCT) reported for the Heater Jacket Task Force. A document on heater materials guide feedback was presented. Please see attachment for details. This feedback will be incorporated into a Guide for heater materials.

Draft document to be sent out to the task force for feedback. Please contact Laura Nguyen and Dr. David Colquhoun, TF leader, analogs@comcast.net to be included in this task force’s activity.

SEMI F109 is coming up for Five-Year Review and the task force addressed the committee on this topic to issue the Standard for reapproval ballot. The motion is showed below.

**Motion:** To issue a new SNARF for SEMI F109 Reapproval Ballot and to ballot in the next available cycle.

**By / 2nd:** Joyce Chen (UCT) / Chris Sanders (CBRE)

**Discussion:** None.

**Vote:** 7-0 in favor. Motion passed.

**Attachment:** heater_doc_feedback_11-1-17

6 **Old Business**

6.1 **Previous Action Items**

Previous action items are noted in Table 12 in ‘red’ and for recent updates in ‘blue’. There is no further old business.

6.2 **Gases**

6.2.1 Standards due for Five-Year Reapproval

Committee co-chairs addressed the committee on this topic. The TC Chapter would like to review the following documents as an Action Item before deciding to issue for reapproval ballot.

**Action Item:** 2017Nov#05, Laura to send TF SEMIViews access for SEMI F43, F59, F112 to review before ballot for reapproval.

7 **New Business**

7.1 **Update SCIS Group**

Matt Milburn (UCT) addressed the committee on this topic.

A current activity occurring in the SCIS Gas Delivery Group is being targeted to become an update to F70. F70 is the particle test method and currently includes static and dynamic methods. The SCIS activity would add a “pulse” method as a test option.

7.2 **Heaters**

Matt Milburn (UCT) addressed the committee on this topic.

Also discussed was the possibility of creating a Thermocouple related standard. This is currently only in the talking stage, but there is a perceived need for standardization specific to the industry.
8 Next Meeting and Adjournment

The next meeting is scheduled for April 9-10 at the SEMI Standards North America Spring 2018 Meetings located at SEMI Headquarters in Milpitas, California. See http://www.semi.org/standards-events for the current list of events.

Tentative Schedule:
Monday, April 9
Gases Task Force Meetings
  09:00-10:00 Materials of Construction of Gas Delivery Systems (TF)
  10:00-11:00 Filters and Purifiers (TF)
  11:00-12:00 Mass Flow Controller (TF)
  13:00-14:00 Gas Specification (TF)
  14:00-15:00 Heater Jacket (TF)
Facilities Task Force Meetings
  13:00-14:00 Power Grid Harmonics (TF)
  TBD Building Information Modeling (BIM) for Semiconductor Capital Equipment (TF)
Tuesday, April 10
  09:00-12:00 Facilities & Gases (C)

Adjournment: 10:47.

Respectfully submitted by:
Laura Nguyen
Coordinator, International Standards
SEMI Headquarters
Phone: 1.408.943.7019
Email: lnguyen@semi.org

Minutes tentatively approved by:
Steve Lewis (BW Design Group), Facilities Co-chair March 8, 2018
Mohamed Saleem (Brooks Instrument), Gases Co-chair <Date approved>

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#4 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 Laura Nguyen at the contact information above.