



Facilities & Gases Joint North America TC Chapter

Meeting Summary and Minutes

SEMICON West Standards Meeting 2022

Tuesday, July 12, 09:00–12:00 Noon (Pacific) Hybrid

Moscone Center, San Francisco, California, and via Official Virtual TC Chapter Meeting (OVTCCM)

TC Chapter Announcements

Next TC Chapter Meeting

NA Standards Fall Meetings 2022

Tuesday, November 8, 09:00 – 12:00 Pacific

SEMI Global Headquarters, Milpitas, California/USA

Table 1 Meeting Attendees

Italics indicate virtual participants

Facilities Co-Chairs: Steve Lewis (Gilbane)

Gases Co-Chairs: Mohamed Saleem (Brooks Instrument)

SEMI Staff: Laura Nguyen

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
<i>Advanced Pressure (AP) Technology</i>	<i>Kiikvee</i>	<i>Bill</i>	Gilbane Co	Lewis	Steve
Applied Materials	Chen	Yanli	Ichor Systems	Findleton	Kevin
<i>Axcelis Technologies</i>	<i>Alliegro</i>	<i>Richard</i>	Mott Corporation	Beaune	Allen
BriskHeat	Colquhoun	David	<i>Nikon</i>	<i>Sutton</i>	<i>Carolyn</i>
Brooks Instrument	Saleem	Mohamed	TEL	Machida	Ryo
<i>Carpenter Technology</i>	<i>Akash</i>	<i>Abraham</i>	TEL	Mashiro	Supika
Cushman & Wakefield	Sanders	Chris	UCT	Milburn	Matt
Daido Steel	Sakura	Takashi	Valex	Kim	Josh
Daido Steel	Yoshida	Yutaka	WIKA Instruments	Christian	Jeff
<i>EPRI</i>	<i>Stephens</i>	<i>Mark</i>	WIKA Instruments	Fritz	Thomas
<i>Exyte Management GmbH</i>	<i>Potts</i>	<i>Michael</i>		<i>Rust</i>	<i>Mike</i>
Festo SE & Co. KG	van den Berg	Max	SEMI	Nguyen	Laura

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

Document #	Document Title	Committee Action ^{#1,2}	A&R Forms for Approved Ballots
<i>Facilities</i>			
None			
<i>Gases</i>			
6933	Line-Item Revisions to SEMI E77-1104 (Reapproved 0815), Test Method for Calculation of Conversion Factors for a Mass Flow Controller Using Surrogate Gases		
L1	Clarify grammar in § 3 and ¶ 7.2.	Passed , with technical changes and with or without editorial changes; Ratification Ballot to be issued.	
L2	Change “must” or “will” to “shall” or “should” as shown.	Passed , as balloted.	
L3	Move ¶ 7.6 to § 8 and ¶ 7.7 to § 12.	Passed , with technical changes and with or without editorial changes; Ratification Ballot to be issued.	
6934	Line-Item Revisions to SEMI E80-0299 (Reapproved 0915), Test Method for Determining Attitude Sensitivity of Mass Flow Controllers (Mounting Position)		
L1	Clarify grammar in ¶ 3.2 and ¶ 7.2.	Passed , with technical changes and with or without editorial changes; Ratification Ballot to be issued.	
L2	Change “must” or “will” to “shall” or “should” as shown.	Passed , as balloted.	
L3	Move ¶ 7.6 to § 13.	Passed , with editorial changes.	

#1 **Passed** ballots and line items will be submitted to the International Standards Committee (ISC) Audit & Review (A&R) Subcommittee (SC) for procedural review, unless otherwise indicated.

#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

#	Type	SC/TF/WG	Details
<i>Facilities</i>			
None			
<i>Gases</i>			
6933	SNARF/ Ballot Authorization	Mass Flow Controller TF	Line-Item Revision to SEMI E77-1104 (Reapproved 0815), Test Method for Calculation of Conversion Factors for a Mass Flow Controller Using Surrogate Gases – Approved by GCS on 05/31/2022
6934	SNARF/ Ballot Authorization	Mass Flow Controller TF	Line-Item Revision to SEMI E80-0299 (Reapproved 0915), Test Method for Determining Attitude Sensitivity of Mass Flow Controllers (Mounting Position) – Approved by GCS on 05/31/2022



Table 6 Authorized Activities

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

#	Type ^{#1}	SC/TF/WG	Details
<i>Facilities</i>			
None			
<i>Gases</i>			
TBD	SNARF	Heater Jacket TF	Replacement of SEMI F109-0212, Guide for Heater Systems Requirements, as a New Standard: Guide for Material Selection for Heater Systems

#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

Listing of documents authorized by the TC Chapter for Letter Ballot.

#	When	TF	Details
<i>Facilities</i>			
None			
<i>Gases</i>			
R6933	Cycle 6 or 7-2022	Mass Flow Controller TF	Line-Item Revision to SEMI E77-1104 (Reapproved 0815), Test Method for Calculation of Conversion Factors for a Mass Flow Controller Using Surrogate Gases
R6934	Cycle 6, or 7-2022	Mass Flow Controller TF	Line-Item Revision to SEMI E80-0299 (Reapproved 0915), Test Method for Determining Attitude Sensitivity of Mass Flow Controllers (Mounting Position)
6394	Cycle 6, or 7-2022	Materials of Construction of Gas Delivery Systems TF	Line Item Revision to SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems
6510	Cycle 6, or 7-2022	Materials of Construction of Gas Delivery Systems TF	Line Item Revision to SEMI F32-0211, Test Method for Determining of Flow Coefficient for High Purity Shutoff Valves

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

#	TF	Title	Expiration Date
<i>Facilities</i>			
None			
<i>Gases</i>			
6612	Materials of Construction of Gas Delivery Systems TF	New Subordinate Standard: Test Method for the Determination of Conductance of Fluid Handling Components at Subatmospheric and Vacuum Pressure, to SEMI F32-0211, Test Method for Determination of Flow Coefficient for High Purity Shutoff Valves	West 2023

Table 9 SNARF(s) Abolished

#	TF	Title
<i>Facilities</i>		
None		
<i>Gases</i>		
6813	Filters & Purifiers TF	SEMI F28-1103 (Reapproved 0815), Test Method for Measuring Particle Generation from Process Panels
6814	Filters & Purifiers TF	SEMI F43-0308 (Reapproved 0613), Test Method for Determination of Particle Contribution by Point-Of-Use Gas Purifiers and Gas Filters
6815	Filters & Purifiers TF	SEMI F59-0302 (Reapproved 0613), Test Method for Determination of Filter or Gas System Flow Pressure Drop Curves
6816	Filters & Purifiers TF	SEMI F67-1101, (Reapproved 0713), Test Method for Determining Inert Gas Purifier Capacity
6817	Filters & Purifiers TF	SEMI F68-1101 (Reapproved 0713), Test Method for Determining Purifier Efficiency
6876	Materials of Construction of Gas Delivery Systems TF	Reapproval of SEMI F60-1214, Test Method for ESCA Evaluation of Surface Composition of Wetted Surfaces of Passivated 316L Stainless Steel Components
6877	Materials of Construction of Gas Delivery Systems TF	Reapproval of SEMI F73-1214, Test Method for Scanning Electron Microscopy (SEM) Evaluation of Wetted Surface Condition of Stainless Steel Components
6879	Materials of Construction of Gas Delivery Systems TF	Reapproval of SEMI F77-0915, Test Method for Electrochemical Critical Pitting Temperature Testing of Stainless Steel Surfaces Used in Corrosive Gas Systems

Table 10 Standard(s) to receive Inactive Status

None

Table 11 New Action Items

Item #	Assigned to	Details
2022Mar#01	Laura Nguyen	Check SEMI E49.6 and E49.8 date and add to Five-Year Review if applicable. Completed.
2022Mar#02	Laura Nguyen	Work with Committee to propose new TF for SEMI E49.6, E49.8 revision. Ongoing.

Table 12 Previous Meeting Action Items

Item #	Assigned to	Details
2019Nov#01	Laura Nguyen	Create invite-only TF in connect@SEMI for SEMI E49.6-E49.8 revision. Ongoing.
2021Feb#01	Bill Kiikvee	Reach out to Swagelok contact on Doc 6612. Ongoing.
2021Feb#03	Bill, Mohamed, Max, Matthew Milburn	Review SEMI F19. Ongoing.
2021July#01	Laura Nguyen	Mohamed to reach out to Steve about creating a new Task Force for the Reapproval Ballots that failed (SEMI E6, E76). Ongoing.
2021July#02	Laura Nguyen	Work with Mohamed to abolish Reapproval SNARFs and reissue new SNARFs. Ongoing.



1 Welcome, Reminders, and Introductions

Steve Lewis (Gilbane) called the meeting to order at 09:00. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meetings 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: By: Kevin Findleton / Ichor Systems
Second: Matt Milburn / Ham-let

Discussion: None.

Vote: 11-0 in favor. Motion passed.

Attachment: [2022Spring] F&G NA TC Chapter Meeting Minutes FINAL

2.1 Liaison Reports

2.2 Gases & Liquid Chemicals Europe TC Chapter

No update.

2.3 Gases & Facilities Japan TC Chapter

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

Meeting Information

- o Last meeting: Friday, May 13, 2022, via Official Virtual TC Chapter Meeting (OVTCCM)
- o Next meeting: Thursday, September 15, 2022, via SEMI Japan office + Official Virtual TC Chapter Meeting (OVTCCM) (Hybrid)

F&G Leadership

- Committee Co-chairs
 - o Hiromichi Enami (Consultant), Isao Suzuki (Consultant), Masafumi Kitano (Fujikin)

F&G Current Organization Chart of Japan TC Chapter {See attachment for Org Chart}

Gases

Ballot Results

Doc #	Document Title	TC Chapter Action
6890	Reapproval of SEMI F80-0309(Reapproved 0914) TEST METHOD FOR DETERMINATION OF GAS CHANGE/PURGE EFFICIENCY OF GAS DELIVERY SYSTEM	Failed, returned to TF for rework

Task Force Highlights

- Due to the Ballot Result for #6890, 5 Year Review Task Force is assigned to conclude until the next TC chapter meeting, either coming up with a new SNARF, or a recommendation to discontinue the work.

Staff Contact: Keigo Nakajima, knakajima@semi.org

Attachment: 20220513_JA_G+F_LiaisonR_v1.0



2.4 Facilities Korea TC Chapter

No update.

2.5 SEMI Staff Report

Laura Nguyen (SEMI) gave the SEMI Staff Report. Of note:

SEMI Global 2022 Calendar of Events

- SEMICON West (July 12-14; San Francisco, CA/USA)
- SMEICON Taiwan (Sept 14-16; Taipei, Taiwan)
- SEMICON Europa (Nov 15-17; Munich, Germany)
- SEMICON Japan (December 15-17; Tokyo, Japan)

Upcoming NA Meetings

- NA Standards Fall Meetings
 - November 7-10, 2022 (Tentative) at SEMI HQ, Milpitas, California/USA

Critical Dates for SEMI Standards Ballots

- Cycle 6-2022: Ballot Submission Due: July 26/Voting Period: Aug 9 – Sept 8
- Cycle 7-2022: Ballot Submission Due: Aug 30/Voting Period: Sept 13 – Oct 13
- Cycle 8-2022: Ballot Submission Due: Oct 4/Voting Period: Oct 18 – Nov 17
- Cycle 9-2022: Ballot Submission Due: Nov 15/Voting Period: Nov 29 – Dec 29

Critical Dates: <http://www.semi.org/en/Standards/Ballots>

Standards Publications Report

<i>Cycle</i>	<i>New</i>	<i>Revised</i>	<i>Reapproved</i>	<i>Withdrawn</i>
March 2022	0	1	8	0
April 2022	2	7	3	0
May 2022	0	1	1	0
June 2022	2	8	6	0

Total in portfolio – 1,064 (includes 320 Inactive Standards)

New Standards

<i>Cycle</i>	<i>Designation</i>	<i>Title</i>	<i>Committee</i>	<i>Region</i>
April 2022	SEMI E132.2	Specification for 300 mm Tape Frame FOUP Load Port	Information & Control	NA
April 2022	SEMI MS14	Guide for Critical Parameters of Gas Sensors	MEMS/NEMS	NA
June 2022	SEMI C104	Guide for Reporting Performance Parameters of the Polymer Windows for Chemical Mechanical Planarization (CMP) Pads Used in Semiconductor Manufacturing	Liquid Chemicals	NA
June 2022	SEMI M91	Test Method for Determination of Threading Screw Dislocation Density in 4H-SiC by X-Ray Topography	Compound Semiconductor Materials	EU

Inactive Standards

<i>Committee</i>	<i>Number of Inactive Standards</i>
Assembly & Packaging	78
Automated Test Equipment	2
Compound Semiconductor Materials	4
Environmental Health & Safety	8
Facilities	14
FPD – Equipment	5
FPD – Factory Automation	14
FPD – Materials & Components	18
Gases	18
Information & Control	38
Liquid Chemicals	29
MEMS	4
Metrics	12
Micropatterning	30
Photovoltaic	3
Physical Interfaces & Carriers	27
Silicon Wafer	12
Traceability	8

Facilities: On-going

- SEMI E51, Guide for Typical Facilities Services and Termination Matrix
 - RA ballot failed TCC review; SNARF abolished Fall 2017; Action needed to either send to Inactive Status or issue new SNARF to reflect change in scope
 - Searching for volunteers to lead this activity
- SEMI F47, Specification for Semiconductor Processing Equipment Voltage Sag Immunity
 - Reapproval ballot failed TCC review; Spring 2018 – SNARF expired; SNARF abolished Fall 2019
 - Voltage Sag Immunity TF to issue minor revision SNARF to keep from moving to Inactive Status
- SEMI E76, Guide for 300 mm Process Equipment Points of Connection to Facility Services
 - RA ballot failed TCC review; Summer 2021 – Action needed to either send to Inactive Status or Abolish RA SNARF 6773 and reissue new SNARF
 - Searching for volunteers to lead this activity
- SEMI E6, Guide for Semiconductor Equipment Installation Documentation
 - RA ballot failed TCC review; Summer 2021 – Action needed to either send to Inactive Status or Abolish RA SNARF 6771 and reissue new SNARF
 - Searching for volunteers to lead this activity

Facilities Five-Year Review

Designation #	Standard Title	Action By	Assigned to
SEMI F51-0917	Guide for Elastometric Sealing Technology	Sept 2022	F51 Revision TF

SNARF 3-Year Status

- Facilities



- 6628: New Standard, Guide for Facilities Data Package for Semiconductor Manufacturing Equipment Installation and Building Information Modeling
 - SNARF expires January 2023
- Gases
 - 6394: Line-Item Revision to SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems
 - 6510: Line-Item Revision to SEMI F32-0211, Test Method for Determining of Flow Coefficient for High Purity Shutoff Valves
 - 6612: New Subordinate Standard: Test Method for the Determination of Conductance of Fluid Handling Components at Subatmospheric and Vacuum Pressure, to SEMI F32-0211, Test Method for Determination of Flow Coefficient for High Purity Shutoff Valves
 - SNARF expires October 2022; Action Needed

Gases: On-going

- Reapproval Ballots below failed TC Chapter Review; Summer 2021
- Action Item to Abolish RA SNARFs and reissue new SNARFs
 - 6813: SEMI F28-1103 (Reapproved 0815), Test Method for Measuring Particle Generation from Process Panels
 - 6814: SEMI F43-0308 (Reapproved 0613), Test Method for Determination of Particle Contribution by Point-of-Use Gas Purifiers and Gas Filters
 - 6815: SEMI F59-0302 (Reapproved 0613), Test Method for Determination of Filter or Gas System Flow Pressure Drop Curves
 - 6816: SEMI F67-1101 (Reapproved 0713), Test Method for Determining Inert Gas Purifier Capacity
 - 6817: SEMI F68-1101 (Reapproved 0713), Test Method for Determining Purifier Efficiency

Gases SNARFs Approved by GCS

#	Type	SC/TF/WG	Details
6933	SNARF/ Ballot Authorization	Mass Flow Controller TF	Line-Item Revision to SEMI E77-1104 (Reapproved 0815), Test Method for Calculation of Conversion Factors for a Mass Flow Controller Using Surrogate Gases – Approved by GCS on 05/31/2022
6934	SNARF/ Ballot Authorization	Mass Flow Controller TF	Line-Item Revision to SEMI E80-0299 (Reapproved 0915), Test Method for Determining Attitude Sensitivity of Mass Flow Controllers (Mounting Position) – Approved by GCS on 05/31/2022

Five-Year Review

Designation #	Standard Title	Action By	Assigned to
SEMI E49.6-1103 (Reapproved 1211)	Guide for Subsystem Assembly and Testing Procedures – Stainless Steel Systems	Past due	(Create new TF?)
SEMI E49.8-1103 (Reapproved 1211)	Guide for High Purity and Ultrahigh Purity Gas Distribution Systems in Semiconductor Manufacturing Equipment	Past due	(Create new TF?)
SEMI C14-95 (Reapproved 0913)	Test Method for Particle Shedding Performance of 25 cm Gas Filter Cartridges	Past due	Filters & Purifiers TF
SEMI F36-0299 (Reapproved 0913)	Guide for Dimensions and Connections of Gas Distribution Components	Past due	Filters & Purifiers TF



Designation #	Standard Title	Action By	Assigned to
SEMI F19-0815	Specification for the Surface Condition of the Wetted Surfaces of Stainless Steel Components	Past due	Materials TF
SEMI F21-1016	Classification of Airborne Molecular Contaminant Levels in Clean Environments	Past due	Filters & Purifiers TF
SEMI F62-1016	Test Method for Determining Mass Flow Controller Performance Characteristics for Ambient and Gas Temperature Effects	Past due	Mass Flow Controller TF
SEMI C54-1116	Specification for Oxygen	Past due	Gases Specification TF
SEMI C70-1116	Specification for Tungsten Hexafluoride	Past due	Gases Specification TF

Designation #	Standard Title	Action By	Assigned to
SEMI C58-1116	Specification for Hydrogen	Past due	Gases Specification TF
SEMI C56-1116	Specification for Dichlorosilane	Past due	Gases Specification TF
SEMI F113-1116	Test Method for Pressure Transducers Used in Gas Delivery Systems	Past due	Pressure Measurements TF
SEMI C60-0317	Specification for Nitrous Oxide	Past due	Gases Specification TF
SEMI C59-0317	Specification for Nitrogen	Past due	Gases Specification TF
SEMI C57-0317	Specification for Argon	Past due	Gases Specification TF

Designation #	Standard Title	Action By	Assigned to
SEMI C3-0317	Specification for Gases	Past due	Gases Specification TF
SEMI E56-0317	Test Method for Determining Accuracy, Linearity, Repeatability, Short-Term Reproducibility, Hysteresis, and Deadband of Thermal Mass Flow Controllers	Past due	Mass Flow Controller TF
SEMI E29-1110 (Reapproved 0417)	Terminology for the Calibration of Mass Flow Controllers and Mass Flow Meters	Past due	Mass Flow Controller TF
SEMI F30-0517	Test Method for Verification of Purifier Performance Testing for Trace Gas Impurities and Particles at an Installation Site	Past due	Filters & Purifiers TF

Designation #	Standard Title	Action By	Assigned to
SEMI F29-0997 (Reapproved 0517)	Test Method for Purge Efficacy of Gas Source System Panels	Past due	Filters & Purifiers TF
SEMI E66-0611 (Reapproved 0517)	Test Method for Determining Particle Contribution by Mass Flow Controllers	Past due	Mass Flow Controller TF
SEMI E16-0517	Guide for Determining and Describing Mass Flow Controller Leak Rates	Past due	Mass Flow Controller TF
SEMI F20-0706E (Reapproved 0917)	Specification for 316L Stainless Steel Bar, Forgings, Extruded Shapes, Plate, and Tubing for Components Used in General Purpose, High Purity and Ultra-High Purity Semiconductor Manufacturing Applications	September 2022	Materials TF
SEMI F81-0611 (Reapproved 0917)	Specification for Visual Inspection and Acceptance of Gas Tungsten Arc (GTA) Welds in Fluid Distribution Systems in Semiconductor Manufacturing Applications	September 2022	Materials TF



Designation #	Standard Title	Action By	Assigned to
SEMI F78-0611 (Reapproved 0917)	Practice for Gas Tungsten Arc (GTA) Welding of Fluid Distribution Systems in Semiconductor Manufacturing Applications	September 2022	Materials TF
SEMI F69-1213E ("E" approved 10/2017)	Test Method for Transport and Shock Testing of Gas Delivery Systems	October 2022	Materials TF
SEMI E27-1017	Guide for Mass Flow Controller and Mass Flow Meter Linearity	October 2022	Mass Flow Controller TF
SEMI E18-1017	Guide for Temperature Specifications of the Mass Flow Controller	October 2022	Mass Flow Controller TF
SEMI F24-1217	Specification for Particle Concentration of Grade 10/0.2 Inert Specialty Gases	December 2022	Gases Specification TF

Attachment: Staff Report July 2022 v7_F&G

3 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.

3.1 Gases Ballot Review

3.1.1 Document 6933 — Line-Item Revisions to SEMI E77-1104 (Reapproved 0815), Test Method for Calculation of Conversion Factors for a Mass Flow Controller Using Surrogate Gases

3.1.1.1 Line Item #1: Clarify grammar in § 3 and ¶ 7.2.

- The ballot passed TC Chapter with technical changes and with or without editorial changes; Ratification Ballot to be issued. See attachment for ballot adjudication.

3.1.1.2 Line Item #2: Change “must” or “will” to “shall” or “should” as shown.

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

3.1.1.3 Line Item #3: Move ¶ 7.6 to § 8 and ¶ 7.7 to § 12.

- The ballot passed TC Chapter with technical changes and with or without editorial changes; Ratification Ballot to be issued. See attachment for ballot adjudication.

Attachment: 6933_ProceduralReview

3.1.2 Document 6934 — Line-Item Revisions to SEMI E80-0299 (Reapproved 0915), Test Method for Determining Attitude Sensitivity of Mass Flow Controllers (Mounting Position)

3.1.2.1 Line Item #1: Clarify grammar in § 3 and ¶ 7.2.

- The ballot passed TC Chapter with technical changes and with or without editorial changes; Ratification Ballot to be issued. See attachment for ballot adjudication.

3.1.2.2 Line Item #2: Change “must” or “will” to “shall” or “should” as shown.

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

3.1.2.3 Line Item #3: Move ¶ 7.6 to § 13.

- The ballot passed TC Chapter review with editorial changes. See attachment for ballot adjudication.

Attachment: 6934_ProceduralReview

4 Subcommittee and Task Force Reports

4.1 Facilities

4.1.1 Power Grid Harmonics Task Force – Did not meet

4.1.2 SEMI F51 Revision Task Force – Did not meet

4.1.3 Voltage Sag Immunity Task Force

Mark Stephens (EPRI) gave the Task Force report. Of note:

- To review the TF's Member list, co-leader structure, schedule of tasks, and plans and brainstorming, please refer to the PPT attachment.
- Upcoming 3-Phase AC Drive Testing
 - Working with a large semiconductor fab task force member, three different AC Drive make and models have been identified as critical to the Fab operations in critical pump and fan applications.
 - The Fab has identified the hardware and is shipping it to EPRI's laboratory in Knoxville, Tennessee for testing.
 - Tests will be done against single, two, and three phase voltage sags.
 - The impact of the voltage sags and ride-through settings will be documented.
 - The generic findings from the work will be communicated to the Task Force (no make and model information)
 - Tests expected to start late July 2022 and run through August 2022.
 - Note: Task Force Members (Participants fabs/tool suppliers) can offer up specific make and model requests for subassembly and component testing.
- Upcoming Fab PQ Assessment and Tool Testing
 - Sponsored by their participant utility, a large 300mm semiconductor company has come forward to offer up multiple tools for analysis and testing at one of their fabs.
 - The fab is experiencing multiple tool trips for voltage sags that appear to be above the SEMI F47 standard.
 - Fab has begun Implementing Continuous Improvement cycle on PQ performance of the tools and sees this activity as key to understanding and making greater improvements.
 - Tests are expected to begin in 3Q 2022 and potentially go through 1Q 2023.
 - Work is expected to occur at the fab and at OEM sites if necessary to complete the entire picture.
- Discussion
 - How to know if Tools are compliant with SEMI F47?
 - RFQ – must request
 - Review Response from the OEM
 - Does the RFQ require compliance documentation or just a check box?
 - Tool Supplier: Any compliance is required in RFQ – user must include standard that they want supplier to comply included in the form. Supplier will respond if compliance or not. Typically, in SEMI F47 – depends on if it is requested by purchaser or not.
 - Auxiliary items are sometimes bought by user – so no chance to test as a whole by OEM
 - Q. Japanese system of power distribution different.
 - Delta or wye
 - Make effort to make it closer to the fab voltage
 - Does voltage or frequency
 - Discussion of D-Y vs D-D , impedance grounded system and differences
 - Fab: Auxiliary items may not be F47 compliant. S/W updates on components
- Additional Workshop Planning
 - The TF held the first workshop in April 2021 (Virtual).



- Workshop Covered:
 - SEMI Voltage Sag Immunity Task Force Work
 - Regional Voltage Sags- Importance of Addressing Three-Phase Voltage Sags in SEMI F47
 - Utility Dynamic VAR device fault response, fault mitigation techniques, and power quality measures addressed with protection design
 - Seeing it from both sides: The importance of Power Quality Metering at the utility and inside the Fab Distribution System.
 - Waveform captures of voltage sag events can be automatically analyzed by software to determine their source and impact
 - Power Quality and Monitoring, What Does the Data Tell Us?
 - SEMI F47 and Power Quality Perspectives and Considerations from a Tool OEM
 - Power Supply Considerations and Standards for Voltage Sag Ride Through
- Future Workshop Topics (Ideas)
 - SEMI Voltage Sag Immunity Task Force Work
 - Presentations on Solutions at Component, Sub-assembly, Tool, Plant Power Distribution, and Grid-Level
 - 3-Phase Sag Generators – what level of power and current would be useful and be portable, additional test modes, safety, etc.
 - Standard recipe to use for tool types – worst case. Should be practical and make sense for any testing.
 - Superposition game – part testing vs. testing as whole
 - How to find constraints on the “no”
 - Test components – Test on range of voltages and frequencies @ full load
- Workshop Timing (Fall 2022, Winter/Spring 2023)
- F47 Overdue for Update
 - May need to do an update / approval for extension for additional
 - Need to act soon to keep the document
 - Issue SNARF to re-approve current version of SEMI F47-0706
 - Revision SNARF
 - Two-week review can take place after TC Chapter
 - Small revision to maintain the documents
 - Laura will find old ballot results from 2017
- Next TF Meeting plan
 - Thursday, September 15, 3:30 TO 5:00 pm EST
 - To be a part of this effort or learn more, contact: Mark Stephens, mstephens@epri.com and Laura Nguyen, lnguyen@semi.org

Attachment: VS Immunity Task Force Report Out 0712222

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

Michael Potts (Exyte) reported for this task force. Of note:

Summary

- Resolved previous ballot comments, prepping for re-ballot in cycle 7 (30-Aug-2022 submit)
 - 0 comments remaining previously 28), however some diagram and table edits required
 - Add supplier part number field to the various DS tables for different systems, as applicable.
 - 0 Structural open comments (previously 15)



- 1 pedestal support foot diagram edit
- 0 Elec open comments (previously 10)
 - Various (approx. 5-10) DS Table edits for Customer vs Supplier table consistency
- 0 Process open comments (previously 3)
 - Various (approx. 5-10) DS Table edits for Customer vs Supplier table consistency

Next BIM TF Meeting: 11-Aug, 3PM - 4PM Pacific

Attachment: SEMI BIM Task Force Meeting_TC_Summary_20220712

4.2 Gases

4.2.1 Materials of Construction of Gas Delivery Systems Task Force

Mohamed Saleem (Brooks Instrument) reported for this task force on the behalf of Bill Kiikvee (AP Tech). Of note:

Meeting Summary:

- Reviewed Ballots for adjudication.
 - Refer to §4 for ballot review.
- SNARFs for SEMI F32 Line Item (6510) and SEMI F74 (6394) are expiring, action is needed.
 - Ask TC Chapter to extend SNARFs approaching three-year document development period.

Mohamed Saleem addressed the Committee on the below:

Motion: Approve a 1 year extension of the project period for the SNARF 6394 and authorize for Letter Ballot in Cycle 4 or 5-2022.
By / 2nd: By: Thomas Fritz / WIKA Instrument Corporation
Second: Max van den Berg / Festo SE & Co. KG
Discussion: None.
Vote: 10-0 in favor. Motion passed.

Motion: Approve a 1 year extension of the project period for the SNARF 6510 and authorize for Letter Ballot in Cycle 4 or 5-2022.
By / 2nd: By: Matt Milburn / Ham-let
Second: Max van den Berg / Festo SE & Co. KG
Discussion: None.
Vote: 11-0 in favor. Motion passed.

4.2.1 Filters & Purifiers Task Force – Did not meet

Mohamed Saleem (Brooks Instrument) reported for this task force. Of note:

Meeting Summary

- Past documents from summer meetings to be addressed at a later time.
 - 6813: SEMI F28-1103 (Reapproved 0815), Test Method for Measuring Particle Generation from Process Panels
 - 6814: SEMI F43-0308 (Reapproved 0613), Test Method for Determination of Particle Contribution by Point-Of-Use Gas Purifiers and Gas Filters
 - 6815: SEMI F59-0302 (Reapproved 0613), Test Method for Determination of Filter or Gas System Flow Pressure Drop Curves



- 6816: SEMI F67-1101, (Reapproved 0713), Test Method for Determining Inert Gas Purifier Capacity
- 6817: SEMI F68-1101 (Reapproved 0713), Test Method for Determining Purifier Efficiency

4.2.2 Mass Flow Controller Task Force

Mohamed Saleem (Brooks Instrument) reported for this task force. Of note:

Meeting Summary

- Reviewed Ballots for adjudication.
 - Refer to §4 for ballot review.

Mohamed Saleem addressed the Committee on the below:

Motion: Abolish SNARF Documents #6878 and #6880.
By / 2nd: By: Kevin Findleton / Ichor Systems
Second: Matt Milburn / Ham-let
Discussion: None.
Vote: 12-0 in favor. Motion passed.

Mohamed Saleem addressed the Committee on the below:

Motion: Kelly M. steps down from MFC TF and Motion to approve Kevin Findleton as new co-leader to Mass Flow Controller TF.
By / 2nd: By: Matt Milburn / Ham-let
Second: Thomas Fritz / WIKA Instrument Corporation
Discussion: None.
Vote: 9-0 in favor. Motion passed.

Attachment: Mass Flow TF Summary03_28_2022

4.2.3 Gases Specification Task Force – Did not meet

Mohamed Saleem (Brooks Instrument) reported for this task force. Of note:

- Reviewed Ballots for adjudication.
 - Refer to §4 for ballot review.

4.2.4 Heater Jacket Task Force

David Colquhoun (BriskHeat) reported for this task force. Of note:

- The Task Force reviewed:
 - General design guideline for heater. Old spec (SEMI F109) merged with new details of materials use and limits augmented into spec.
 - Proposal for specifications for heater particulation study and methods of testing for such.
 - Great discussion in the TF to limit contamination examination test method to heaters exposed to atmosphere rather than liquids.
 - SNARF for “Replacement of SEMI F109-0212, Guide for Heater Systems Requirements, as a New Standard: Guide for Material Selection for Heater Systems” went out for two week review. Next step is to ask the TC Chapter to approve the new SNARF for doc number assignment.



David Colquhoun addressed the Committee on the below:

- Motion:** Approve the SNARF “Replacement of SEMI F109-0212, Guide for Heater Systems Requirements, as a New Standard: Guide for Material Selection for Heater Systems” as amended in the meeting.
- By / 2nd:** By: Michael Potts / Exyte Management GmbH
Second: Carolyn Sutton / Nikon Precision Inc.
- Discussion:** None.
- Vote:** 9-0 in favor. Motion passed.

Attachment: SNARF_GuideHeaterMaterials (replacement) v1_atm

5 Old Business

5.1 Five-Year Review

Refer to Staff Report in §2.5 for full list of Five-Year. Contact Laura Nguyen (SEMI) if you like to review any in further detail.

6 New Business

There is no New Business.

7 Action Item Review

7.1 New Action Items are noted in Table 11. Previous action items are noted in Table 12 in ‘red’ and for recent updates in ‘blue’. There is no further business.

8 Next Meeting and Adjournment

8.1 The next meeting is tentatively scheduled for the week of November 7-10, in conjunction with SEMI Standards NA Fall Meetings 2022. Schedule details TBD. Please check www.semi.org/standards for updates.

Adjournment: 11:22.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

Phone: +1.408.943.7019

Email: lnguyen@semi.org

Minutes tentatively approved by:

Steve Lewis (Gilbane), Facilities Co-chair	<Date approved>
Mohamed Saleem (Brooks Instrument), Gases Co-chair	<Date approved>

Minutes approved by: **F&G NA OVTCCM on November 8, 2022.**



Table 13 Index of Available Attachments^{#1}

<i>Title</i>	<i>Title</i>
SEMI Standards Required Meetings Elements	VS Immunity Task Force Report Out 0712222
[2022Spring] F&G NA TC Chapter Meeting Minutes FINAL	SEMI BIM Task Force Meeting_TC_Summary_20220712
20220513_JA_G+F_LiaisonR_v1.0	Minutes-Materials-Gases TF-West2022
Staff Report July 2022 v7_F&G	FP TF Meeting summary 07_12_2022
6933_ProceduralReview	Mass Flow TF Summary 07_11_22
6934_ProceduralReview	Gases Spec TF Meeting Summary 07_11_2022

#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 Laura Nguyen at the contact information above.