

Newsletter

December, 2020



ICR



Hot Issue

1. 2020 Auditor Training Course
2. SEMI Safety Standards Education 2020
3. WiFi6E (WiFi 6 GHz)



2020 Auditor Training Course



- ICR International Certification Registrar Ltd. Is an auditor training provider directly registered to Exemplar Global.
- ICR held an **auditor training course in October-November 2020.**
- Through the AU, TL, FS and MD courses, all the trainees have completed the training so that the students can be qualified for each module.
- Our training teaches auditors how to provide impartial audits based on objective evidence.



 **Inquiries**

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SEMI Safety Standards Education 2020



- ICR participated in 'SEMI Safety Standards Education 2020' to introduce the contents of standards and examples of evaluation to semiconductor manufacturers based on their expertise and technology in SEMI Evaluation.

SEMI 안전표준교육 2020

2020.10.22-23 | 온라인 개최

중급과정 - 10월 23일 (금)

9:00 am -
9:50 am

I C R

[SEMI S6] Safety Guideline for Exhaust of Semiconductor Manufacturing Equipment (Part 1)

9:50 am -
10:40 am

[SEMI S6] Safety Guideline for Exhaust of Semiconductor Manufacturing Equipment (Part 2)

10:40 am -
10:50 am

Break

10:50 am -
11:30 am

I C R

[SEMI S6] Exhaust Performance Evaluation Procedures and Cases (Part 1)

11:30 am -
12:30 am

[SEMI S6] Exhaust Performance Evaluation Procedures and Cases (Part 2)

SEMI Safety Standards Education 2020



- ICR provided training on 'SEMI S6 - Safety Guidelines for Exhaust of Semiconductor Manufacturing Equipment and Exhaust Performance Evaluation Procedures and Cases' and focused on easy understanding of standards and test procedures.

SEMI S6 Purpose

- Eliminate hazards using the exhaust system
- Provides safety performance criteria for exhaust system of semiconductor manufacturing equipment using chemicals.
- Provide test methods for assessing conformance to performance criteria for exhaust system
 - In the event of an outflow of used materials from the process state, to check if hazardous materials are detected below the Criteria
 - Test method with 'tracer gas'

SEMI S6 Terminology

- Primary exhaust ventilation(PEV)
 - Airflow that extracts hazardous substances from the equipment during normal operation condition.
 - Ex) Exhaust provided to extract vapor from the liquid surface of the open process equipment.
- Secondary exhaust ventilation(SEV)
 - Exhaust provided continuously to extract hazardous substances if hazardous substances are released due to failure or maintenance
 - Ex) Hazardous substances exist only inside the pipe, and no hazardous substances are released from normal operation. The exhaust system provided to prevent possible poisoning and fire if hazardous substances can be discharged during failure and maintenance.

SEMI S6 Design criteria

- Efficiency
 - Require 10 to - 375 Pa exhaust pressure
 - If Exhaust pressure greater than 375 Pa is required.
 - Require users to provide evidence
 - Provides a way to achieve the required static pressure
 - a means of preventing all parts of the extract line from reaching positive pressure (Ex: Interlocking device)

SEMI S6 Design criteria

- Proper choice of Intake holes and vents
 - Bad: Diagram showing dead space in a chamber with a single intake hole.
 - Good: Diagram showing improved intake hole placement.
 - Better: Diagram showing further improved intake hole placement.
 - Best: Diagram showing optimal intake hole placement for minimal dead space.

SEMI S6 Tracer gas Test

- Why use Tracer gas(SF₆)
 - Non-toxic materials.
 - Non-flammability materials.
 - Little distribution in natural state
 - Row reactivity
 - No change in concentration other than physical dilution factors

SEMI S6 on-site evaluation

- Release NBA
 - If discharged from a fault condition, a liquid leak that forms an evaporation pool occurs.

한글	영문
P	Pressure
MW	Molecule weight
V _{av}	Surface air velocity
L	Surface length
T _{surf}	Surface Temperature
Q _{evap}	Evaporation per cross-sectional area
A _{cs}	Cross-sectional area
M _{evap}	Evaporation

$$Q_{evap} = \frac{6.939 \times 10^{-4} \times (MW)^{0.833} \times \left(\frac{1}{1000} + \frac{1}{29} \right)^{0.25}}{T_{surf}^{0.25}} \times \frac{V_{av}}{\sqrt{L \times P}}$$

$$M_{evap} = Q_{evap} \times A_{cs}$$

SEMI Safety Standards Education 2020



- Experienced engineers at ICR provide services by conducting SEMI evaluation and testing <Tracer gas test (SEMI S6), Voltage sag test (SEMI F47), electrostatic test (SEMI E78), etc.> for semiconductor machinery.
- ICR Engineers (SEMI evaluation and testing)
 - Hyunjun Park (phj@icrqa.com)
 - Seokho Lee (seokho@icrqa.com)

Example of the Tracer gas test (SEMI S6)



Inquiries

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WiFi6E (WiFi 6 GHz)



- The Wi-Fi Alliance released **the standard for WiFi6E** on January 3, 2020.
- Wi-Fi frequencies up to now have been using two frequency bands: 2.4 GHz and 5 GHz. The 5 GHz band initially had a small transmission distance and was greatly affected by obstacles, but the speed was so fast and the 5 GHz band was used less, so it was used a lot. However, due to the recent increase in many devices, the 5 GHz band has also become very crowded.
- **WiFi6E uses the new 6 GHz band** instead of the saturated 2.4 GHz and 5 GHz bands. E of WiFi6E stands for Extended. This means that WiFi6E (IEEE 802.11ax-announced in 2018), which used only the existing 2.4 GHz and 5 GHz bands, added the 6 GHz band.

WiFi6E (WiFi 6 GHz)



- The speed was increased by eliminating congestion by adding usable bands to the existing bands, and 14 channels of 80 MHz width and 7 channels of 160 MHz width can be used.
- **As the speed increases**, there are also disadvantages. **The transmission distance is not long**, like the downside when the first 5 GHz band was announced. (The 2.4 GHz band has the longest transmission distance.) However, since it shows high performance in terms of speed and quality, future wireless connection improvements can be expected.

 **Inquiries**

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ICRO-31/R20161125 본 문서는 법률 제 14088호 저작권법의 보호대상이며, ICR의 지적 자산으로 불법 편집 및 복사를 금합니다.

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