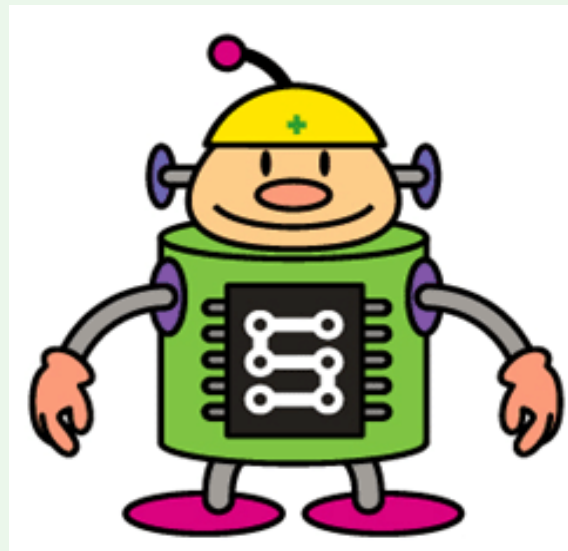


Introduction to **SEAJ**-Recommended Service Safety Training Program



SEAJ

SEAJ

Semiconductor Equipment Association of Japan (**SEAJ**), founded in March 1985, promoted by the major semiconductor equipment manufacturers, is a nationwide organization of semiconductor manufacturing, flat panel display (FPD) and solar-photovoltaic (PV) manufacturing equipment manufacturers and related equipment manufacturers.

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What is SEAJ-Recommended Service Safety Training Program

Semiconductor, flat panel display or photovoltaic device manufacturing facilities contain a lot of hazards and risks. This is due to the fact that their manufacturing processes are based on physical chemical reactions and utilize the manufacturing equipment that is becoming more automated and complicated in recent years.

Moreover, due to pressures to startup a new device manufacturing facility under tight timelines, there are additional safety risks resulting from a diverse workforce, comprised of different equipment manufacturers and trade contractors, who are expected to work together seamlessly in complicated and tight environments. Additionally, beyond startup environments, it is also important to secure the safety of the workers who are involved in field service or production as well.

In the past, there was never a standard textbook of safety training for workers involved in installation, maintenance or service of manufacturing equipment. While there has been a guideline such as SEMI S19 "Safety Guideline for Training of Manufacturing Equipment Installation, Maintenance and Service Personnel", without a standardized textbook and curriculum, each equipment company was developing their own independent safety training.

In view of such situations, Semiconductor Equipment Association of Japan prepared the standard textbook and training program in 2002. The textbook was revised in 2003 to cover the core curriculum defined by SEMI S19. Since then, the textbook has been revised several times capturing requirement changes and referencing the latest examples of safety incidents. SEAJ started to train the trainers in 2003 to promote this safety training program in the semiconductor manufacturing equipment industry, and as a result the accumulative number of trainees to date has reached more than 30,000 in Japan and overseas.

We believe that the workers who have received the common safety training would have developed common practices and awareness of safety, ultimately creating a safer working environment together through mutual communication and understanding.

The following is the outline of the safety training program which we are promoting.

History of SEAJ-Recommended Service Safety Training Program

2001/02	Established SEAJ Safety Training Working Group
2002/01	Started the training for companies in Japan
2002/04	Started the training for companies in Japan
2003/11	Released training textbook and supplemental video ("Safety in Cleanroom") covering core curriculum defined by SEMI S19-1102
2005年7月	Released training textbook R.1.00 and started refresh training R.2.00 for companies in Japan
2011年4月	Released training textbook R.2.00
2012年1月	Released refresh training R.2.00

Outline of safety training

- Target work / place
Work related to installation, maintenance, service, and operation of device manufacturing equipment which are conducted under cleanroom environment such as fab and sub-fab.
- Target trainees
Engineers of equipment manufacturers (such as field service engineers) and other workers who work at cleanroom
- Length of training
Initial training About two days
Refresh training About one day
- Confirmation method of training effectiveness
Implementation of skill check
- Certificate of completion
Issuance of SEAJ certificate
- Validity period
Three years (maximum)
Refresh training should be conducted within three years.



Certificate (for trainees / for trainers)

SEAJ 「SEAJ推奨サービス安全教育」修了証(トレーナー)
「SEAJ Recommended Safety Training」Certificate(Trainer)

Number. 0101



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Semiconductor Equipment Association of Japan

修了日 (Completed Date) 2011/04/01
有効期限 (Valid Date) 2014/04/01

SEAJ 「SEAJ推奨サービス安全教育」修了証
「SEAJ Recommended Safety Training」Certificate

Number. 30303



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SEAJ推奨サービス安全教育
SEAJ Recommended Safety Training

教育コース (Training Course)	修了日 (Completed Date)	有効期限 (Valid Date)
作業リーダー教育 Work Leader Training	2011/8/31	2014/4/1
ガスの安全教育 Gas Safety Training	2011/8/31	2014/4/1

SEAJ推奨サービス安全教育はSEMI S18-1102第8章の全てを網羅している。
SEAJ Recommended Safety Training covers All the subject of Section 8 Core Curriculum of SEMI S18-1102.

- Ones for trainees are in blue while ones for trainers are in gold.
- The certificates have serial numbers.
- Each company which has the certified trainer(s) can purchase blank cards of the certificate from SEAJ after completion of the training and issue the certificate with the name of the person in charge of the company.

Contents of safety training

- This safety training covers the core curriculum defined by SEMI S19 “Safety Guideline for Training of Manufacturing Equipment Installation, Maintenance and Service Personnel”.
- The curriculum of the safety training has been developed by SEAJ Safety Training Working Group, which consists of 22 member companies .
- Also device manufacturers have participated in the Working Group to jointly develop standard practices related to facility of device manufacturers.

Chapter 1 Safety basics	In this chapter, trainees will learn basic concept of safety and basic knowledge which is required to establish safe and comfortable work environment free of injury or accident.
Chapter 2 Workplace / work environment	In this chapter, trainees will learn various environmental factors existing in workplace and their hazards which affect workers and their work.
Chapter 3 Ergonomics	In this chapter, trainees will learn injuries caused by inappropriate working posture or activities and what each worker should pay attention to during work to prevent or mitigate these injuries.
Chapter 4 Hand tools and power tools	In this chapter, trainees will learn safe and proper usage of hand tools such as screwdrivers and wrenches and power tools such as electric drills.
Chapter 5 Material handling equipment	In this chapter, trainees will learn how to secure safety during carrying task using material handling equipment, especially how to supervise lifting work appropriately. Also the trainees will practice how to use material handling equipment appropriately.
Chapter 6 Confined space	In this chapter, trainees will learn how to recognize a confined space and its related hazards and how to eliminate the hazards in order to work safely in confined space.
Chapter 7 Elevated work / Practical training	In this chapter, trainees will learn how to protect workers against fall during elevated work, which is performed in an elevated position using stepladders, scaffolds, etc.
Chapter 8 Electrical work	Trainees will learn how to perform electrical work safely without harming themselves and persons around them or damaging equipment. Completion of this chapter is recognized equivalent to “Electricity License” of a specific customer.
Chapter 9 Chemical hazards	Trainees will learn hazards associated with chemicals and basics of proper handling of chemicals so as to prevent injury and incident due to chemicals.
Chapter 10 Radiation energy	Trainees will learn basic knowledge of radiation energy and how to protect themselves against its exposure, which may result in death.
Chapter 11 Mechanical and thermal hazards	Trainees will recognize mechanical and thermal hazards and learn knowledge necessary for safe work.
Chapter 12 Pressure and vacuum	Trainees will learn how to eliminate or mitigate hazards associated with high pressure or vacuum which are widely used in semiconductor and FPD device manufacturing facilities.
Chapter 13 Unmanned Transport Vehicle	Trainees will learn characteristics, behavior and hazards of unmanned transport vehicle which are used for materials transportation in semiconductor and FPD device manufacturing facilities so as to prevent accidental contact with unmanned transport vehicles.
Chapter 14 Industrial robot	Trainees will learn characteristics of behavior and hazards of industrial robots and how to protect themselves against the hazards.
Chapter 15 Control of hazardous energy	Trainees will learn types of hazardous energies and their hazards, importance of controlling hazardous energies, and its principles so as to protect workers against unexpected release of hazardous energy.
Chapter 16 Personal Protective Equipment (PPE) / Practical training	Trainees will learn purpose of personal protective equipment (PPE) and how to use it properly.
Chapter 17 Risk assessment	Trainees will learn the internationally recognized definition of safety , concept of safety, evaluation of risk and a method of risk assessment, and will acquire an ability to assess risk associated with equipment or work, and to recommend process and method to reduce the risk.
Chapter 18 Emergency response	Trainees will learn standard procedures in case of an emergency including reporting and initial responses.