

## Preparing manufacturing systems equipment for operation

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### Overview

This standard identifies the competences you need to prepare manufacturing systems equipment for a semiconductor wafer processing or die assembly/test operation, printed circuit board manufacture, printed circuit assembly operation, electronic component manufacture, or thin film, thick film or flexible film circuitry manufacture, in accordance with approved procedures. In particular, you will be expected to prepare the specific system for operation, to conduct a number of generalised preparations that support manufacture, to review the equipment/system set-up information, to check all key safety aspects and to report the completion of your preparation activities. The equipment and systems covered include those used for electronic component manufacture, manufacturing processing or wiring and assembly activities. Your responsibilities will require you to comply with organisational policy and procedures for the preparation activities undertaken and to report any problems with those activities to the relevant authority. You will be expected to work with a minimum of supervision, taking responsibility for your own actions and for the quality and accuracy of the work that you produce. Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying the equipment preparation procedures. You will understand the equipment used and the preparations required, in adequate depth to provide a sound basis for carrying out the activities to the required specification. You will understand the safety precautions to be taken when working in the manufacturing environment and with the associated equipment. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others in the workplace.

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### Performance criteria

#### You must be able to:

1. work safely at all times, complying with health and safety legislation, regulations, directives and other relevant guidelines
2. follow the relevant work instructions and any other specifications
3. prepare all the required equipment and ensure that it is in safe and usable condition
4. prepare manufacturing systems equipment to specification
5. ensure that required safety arrangements are in place to protect other workers from activities likely to disrupt normal working
6. deal promptly and effectively with problems within your control and report those that cannot be solved
7. ensure that work records are completed, stored securely and available to others, as per organisational requirements
8. leave the work area in a safe condition on completion of the activities, as per organisational and legal requirements

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### Knowledge and understanding

#### You need to know and understand:

1. the specific safety precautions to be taken whilst carrying out the activities (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials)
2. the health and safety requirements of the work area and the activities, and the responsibility these requirements place on you
3. the hazards associated with the activities and how to minimise them and reduce risks
4. the personal protective equipment and clothing (PPE) to be worn during the activities
5. voltage ranges, what constitutes a hazardous voltage and how to reduce the risks of a phase to earth shock
6. how to obtain the authority to enter the relevant work areas and any specific permit-to-work procedures that are used
7. how to check equipment/systems relevant to the work activities, to ensure that they are available and in good and safe working order (equipment status logs checked, all associated safety devices in place and in good order, warning lights functioning, equipment/system reports/records checked)
8. how to set up and prepare different types of equipment/systems for specific use, allied to given operational needs (such as diffusion furnaces, ion implanters, vacuum coating equipment, plating systems, wave soldering equipments, automated back-plane termination systems, contact insertion/PCB assembly equipment)
9. the problems that can occur with the equipment/systems preparations being undertaken and how to deal with them
10. the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve
11. how to access, use and maintain information to comply with organisational requirements and legislation

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## Scope/range related to performance criteria

1. Prepare the manufacturing system for operation by carrying out all of the following activities:
  1. use the correct issue of drawings, specifications, job/order instructions and procedures
  2. follow clean work area protocols, where appropriate
  3. use grounded wrist straps and other electrostatic discharge (ESD) precautions, as appropriate
  4. adhere to health and safety regulations, systems and procedures to realise a safe system of work
2. Obtain data for the systems/equipment preparation from appropriate company information sources, to include all of the following:
  1. documentation (such as work orders, contracts, memos, plans/designs, purchase orders)
  2. standard operating procedures (such as process control sheets/charts, quality standards)
  3. equipment operating instructions
  4. schedules
3. Prepare the equipment for one of the following manufacturing processes:
  1. semiconductor wafer processing
  2. electronic component manufacture
  3. die assembly/test operations
  4. flexible film circuitry
  5. printed circuit board manufacture
  6. thick film circuitry
  7. printed circuit board assembly
  8. thin film circuitry
  9. other process (specify)
4. Review the equipment/system set-up information and complete all of the following activities:
  1. set up all basic relevant parameters (such as entering data items from the process recipe, temperatures, dwell times, vacuum/pressure levels, current/voltage levels)
  2. prepare all related equipment jigs and fixtures for the operations to be conducted
  3. check that all safety interlocks are in place and in good working order

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4. check that the equipment/system is configured for the specific use

plus two more from the following:

5. clean the equipment housings and work fixings
6. connect process gases/load consumables
7. load the components to be processed
8. post warning notices/set up protective guards

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