

Overview

This standard covers the configuration of 3D Printing equipment. 3D Printing, also known as additive manufacturing is a process that creates objects by adding material in thin layers until a product is completed. There are many different types of 3D printing and more are emerging all the time. Objects can be "printed" from hundreds of different materials including but not restricted to plastic, metal, nylon, paper and even foods.

This standard applies to you if you are responsible for the preparation of 3D printing equipment. You may work in a studio, engineering company, manufacturing company, university, architects bureau, or digital printing environment

Prepare 3D printing equipment for use

Performance criteria

You must be able to:

1. check equipment is in serviceable condition and ready for production and that any necessary calibration or other periodic checks are up to date
2. check that files are in the correct format for the job
3. check that you have sufficient supplies of appropriate materials to complete work
4. check that scaling and measurements are in line with job requirements
5. check that completed objects will fit onto build platforms
6. set up 3D printing parameters in line with job requirements
7. set up printer software so that components are correctly orientated
8. check files are free of errors when loading and that there are no features below the required diameter
9. take necessary action to deal with any further post-processing required
10. take necessary action to support any overhangs
11. check the print output meets job specifications and required quality standards
12. report without delay, any machine faults outside your responsibility to the appropriate person

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Knowledge and understanding

You need to know and understand:

The law as it affects printing

1. defamation
2. copyright and ownership of files and products/models
3. obscenity
4. incitement
5. forgery
6. data protection

Ethical issues relevant to printing

7. confidentiality

Health and safety

8. your duties and responsibilities for health and safety as defined by any specific legislation covering your job role
9. the hazards and risks in your own job, their assessment and the action to take to deal with them
10. manufacturers' and suppliers' health and safety instructions/advice

The safe handling of customer material

11. what kinds of customer materials are likely to be handled, including original photographs or artwork, samples, disks, raw materials for 3D printing or finishing
12. techniques for protecting customer materials
13. the potential for loss or damage

Security and storage

14. computer system security and virus protection
15. the print with time-sensitive or restricted release date
16. the high value products or print with a high risk of theft
17. the secure methods of archiving digital and conventional artwork

Communication requirements and processes

18. how to communicate with colleagues
19. how to communicate with customers
20. how to communicate with suppliers

Workplace policy and practice

21. workplace objectives, priorities, standards and procedures
22. the way you actually do your job, more particularly the activities and techniques and the way that materials and equipment are used

The operation of equipment

23. the set-up of digital communications equipment and software
24. the operation of digital communications equipment and software

Printing

25. the principles of 3D printing
26. types of 3D printer and their differences and similarities
27. how to set up and operate the 3D printer with which you are working
28. how to keep abreast of developments in 3D printing

Digital files

29. file conversion techniques
30. file compression and decompression techniques
31. how to transmit digital files
32. file management procedures
33. the purpose of a supportive raft and how to use it to deal with overhangs

The causes and treatment of common faults

34. raw material faults
35. processing faults
36. machine faults

Administrative procedures

37. planning and scheduling
38. recording and reporting
39. product labelling

Environmental considerations

40. the legal requirements for the classification, storage, carriage and disposal of waste

Quality assurance and control

41. the main features of quality assurance and quality control systems
42. techniques for controlling quality
43. equipment for controlling quality in printing

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Problem solving

- 44. that types of problems that may need to be solved
- 45. sources of information
- 46. techniques for solving complex problems
- 47. techniques for assessing machine faults

Materials

- 48. the types and characteristics of materials being used for 3D printing
- 49. how to maintain the quality of materials during storage and handling

Scope/range

This standard requires the operator to demonstrate that they have the ability to prepare a production-scale 3D printing machine for use – to understand and use correctly all the parameters and options in the printer software and device driver/print dialogue boxes.

Note: This standard has been written for operators of 'production-scale' 3D digital printers and therefore operation of an office or desktop laser/inkjet printer is not relevant to this standard.

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Suite Pre Press

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