PRODPP302

Control output and quality from three dimensional printing machines

Overview

This standard is for printers with responsibility for three dimensional printing machines. 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 different types of 3D printing. Objects can be "printed" from many different materials including but not restricted to plastic, metal, nylon, paper and even foods.

The standard involves the output of the work that meets the quality required by the customer with the minimum of waste materials. It applies, if you work in a studio, pre press or digital printing environment.

This standard covers the configuration and set up of 'production-scale' digital colour printing machines whether they are flat sheet large format or flat sheet-fed machines.

Modern 3D printing machines have become extremely sophisticated, with speeds improving and devices capable of producing high quality products. It includes the running of such machines, including the identification and correction of associated print faults, whether they are caused by machine or materials.

Practical ability must be demonstrated in setting up the machine to produce "printed" work to a high quality standard. This must be done using different materials. It is necessary to run calibration routines at required intervals.

Performance criteria

You must be able to:

Maintain the quality of output from 3D printing machines

1. confirm you have authority to commence production
2. run 3D printing machines achieving the required standard
3. check that output matches the standard, making adjustments where necessary
4. run the required number of good products, keeping spoiled material to a minimum
5. identify and remove any sub-standard products following standard operating procedures
6. report to your manager if circumstances beyond your control prevent you from achieving the required quantity or quality of printed copies
7. remove waste following current legislation
8. record the production and quality assurance details required**Identify and rectify print problems

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9. Identify and correct the cause of machine problems that affect the quality of images and reduce the rate of output
10. Identify and correct the cause of consumable problems that affect the quality of images and reduce the rate of output
11. Identify machine parts that may require replacing and make sure that such parts are available when required
12. Identify maintenance that needs to be carried out on the machine and make sure that it is brought to the attention of the person in your company who will schedule it in the production plans

Knowledge and understanding

You need to know and understand:

1. the law as it affects printing: defamation, copyright and ownership of files and products/models, obscenity, incitement, forgery, data protection
2. ethical issues relevant to printing confidentiality
3. your duties and responsibilities for health and safety as defined by any specific legislation covering your job role
4. the hazards and risks in your own job, their assessment and the action to take to deal with them
5. manufacturers' and suppliers' health and safety instructions/advice
6. what kinds of customer materials are likely to be handled, including original photographs or artwork, samples, files, disks, raw materials
7. techniques for protecting customer materials
8. the potential for loss or damage
9. security and storage: computer system security and virus protection, the print with time-sensitive or restricted release dates, the high value products with a high risk of theft
10. how to securely archive digital and conventional artwork
11. how to communicate with colleagues, customers and suppliers
12. workplace objectives, priorities, standards and procedures
13. the way you actually do your job, more particularly the activities and techniques and the way that materials and equipment are used
14. the set-up of 3D printing equipment and software
15. the operation of 3D printing equipment and software
16. the principles of 3D printing
17. types of 3D printer and their differences and similarities
18. how to keep abreast of developments in 3D printing
19. the principles of digital printing
20. file conversion techniques
21. file compression and decompression techniques
22. how to transmit digital files
23. file management procedures
24. the causes and treatment of common faults: raw material faults, processing faults, machine faults

25. administrative procedures: planning and scheduling, recording and reporting
26. product labelling
27. the legal requirements for the classification, storage, carriage and disposal of waste
28. the main features of quality assurance and quality control systems
29. techniques for controlling quality
30. equipment for controlling quality in printing
31. light standards for viewing and assessing print
32. types of problems that may need to be solved
33. sources of information
34. techniques for solving complex problems
35. techniques for assessing machine faults
36. the types and characteristics of materials being used for 3D printing
37. maintaining the quality of materials during storage and handling

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