SEMFWE364

Monitoring welding activities in production

Overview

This standard identifies the competences you need to monitor welding production activities, in accordance with approved procedures. You will be required to ensure that methods and procedures to achieve the required monitoring are available, that they are implemented correctly and that any problems or lack of compliance are identified.

Your responsibilities will require you to comply with organisational policy and procedures for the monitoring activities undertaken, and to report any problems with those activities that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You will be expected to apply your knowledge of welding technology to a range of work activities, performed in a variety of contexts and with a degree of personal responsibility and autonomy. Responsibility for the work of others and the allocation of resources may be present.

Your underpinning knowledge will provide a good understanding of your work, and will provide an informed approach to applying monitoring procedures to welding production activities. You will understand the relevant welding technology and its application, and will know about the technology in adequate depth to provide a sound basis for carrying out the monitoring activities to the required standard.

You will be aware of any company/customer, legislative or regulatory health, safety and environmental requirements applicable to the welding production activities being monitored. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.

Performance criteria

You must be able to:

1. monitor the engineering process at suitable opportunities
2. monitor the supply and use of resources to ensure that they are effectively used
3. confirm that the materials used during the engineering process comply with specifications
4. confirm that suitable engineering methods and procedures have been used
5. identify any variations from agreed plans and schedules
6. ensure that any problems with the engineering process are identified
7. ensure that the outputs of the engineering process comply with specifications
8. ensure that the engineering process complies with all relevant regulations and guidelines

Knowledge and understanding

You need to know and understand:

1. the specific safety precautions to be taken when working with production welding and related equipment (such as specific legislation or regulations governing the activities or work area, safe working practices and procedures to be adopted, general workshop safety practice, risk assessment procedures and relevant requirements of HASAWA, COSHH and Work Equipment Regulations)
2. the personal protective clothing and equipment (PPE) that should be worn (such as eye protection, ear protection, safety clothing)
3. the hazards associated with the production welding and related processes (such as arc flashes, fumes and gases, safety in enclosed/confined spaces, handling hot welded components/structures), and how they can be minimised
4. the welding production processes being monitored, and their technology (such as basic principles of fusion welding, AC and DC power sources, power ranges, manual metal arc (MMA), MIG, MAG or flux cored-wire arc welding, tungsten arc welding (TIG), submerged arc, oxy/fuel gas and plasma welding, electron beam, resistance welding, laser and friction welding and other relevant fusion welding processes)
5. materials and their behaviour during welding (such as structure and property of metals; heat treatment requirements; types of steel and cracking phenomena, cast iron, copper, nickel, stainless steel, aluminium and their alloys; joining dissimilar materials)
6. construction and design of welded joints (such as design principles of welded construction, joint design, behaviour of welded structures under static and dynamic loading)
7. general principles of welding components and structures (such as use of jigs, fixtures and manipulating devices; residual stresses and distortion; types of defects and their avoidance; quality control during production)
8. types and features of welded joints in plate, tube and sections (including fillet and butt welds, single and multi-run welds, welding positions, weld quality)
9. the monitoring methods and procedures (including when and how monitoring should be used), for the types of production welding activity within your area of responsibility
10. the potential variations from plans and schedules that might occur during the production process

11. the types of problem that could occur with the production or monitoring process, and the organisational methods and procedures for resolving them
12. the importance of solving problems quickly
13. how to check the outputs of the production process against those specified
14. the quality assurance systems that are being used
15. the procedures for obtaining information on resources, and how to verify that the resources used are suitable
16. the importance of maintaining records of the monitoring activities
17. the types of information to be recorded, and the amount of detail required
18. where records are kept, and the procedure for obtaining them
19. the importance of ensuring that any records that you use are correctly updated and returned to the appropriate location
20. the different ways of presenting information to different people
21. the organisational reporting processes and lines of communication
22. the extent of your own responsibility, and to whom you should report if you have problems that you cannot resolve
23. the sources of technical expertise if you have problems that you cannot solve

Scope/range related to performance criteria

1.
Ensure that the required company methods and procedures for monitoring welding in production are available, to include **four** of the following:
- 1.1 welding equipment manufacturer's recommendations
- 1.2 risk assessments
- 1.3 quality assurance procedures and quality plans
- 1.4 permits to work
- 1.5 method statements
- 1.6 evaluation of weld properties
- 1.7 manufacturing instructions

2.
Ensure that implementation of the specified monitoring activities occurs in **four** of the following forms:
- 2.1 observation
- 2.2 welding equipment records
- 2.3 data collection
- 2.4 records produced by production or testing personnel
- 2.5 sampling
- 2.6 periodic checking of equipment settings
- 2.7 testing, inspection or measurement of the product
- 2.8 checking of production rate

3.
Ensure effective use of resources, by checking **two** of the following:
- 3.1 scrap volumes
- 3.2 repair rates
- 3.3 down times
- 3.4 compliance with specified scheduling

4.
Ensure that the materials used comply with specifications and are in accordance with company, client and welding procedures, by means of **two** of the following:
- 4.1 parent material certificates
- 4.2 mechanical test reports
- 4.3 welding consumables certificates
- 4.4 release notes
- 4.5 non-destructive test (NDT) reports
- 4.6 positive material identification (PMI)

5.
Take action, in accordance with company procedures, if any problem or lack of compliance with specifications is identified, to include carrying out **two** of the

following:

5.1 stopping production
5.2 reporting to a higher authority
5.3 quarantining defective goods/materials
5.4 increasing sampling rates
5.5 taking planned remedial action

6.

Ensure that the monitoring process complies with relevant regulations, directives, standards and guidelines from **all** of the following, as appropriate:

6.1 statutory bodies
6.2 manufacturer specific
6.3 company policy and procedures
6.4 national
6.5 industry specific
6.6 international
6.7 client requirements

* *

1.

Communicate the outcomes of the monitoring activity to the relevant people, using the following methods:

1.1 verbal report

Plus **one** more method from the following:

2. specific company documentation
3. electronic mail
4. written or typed report
5. computer-based presentation/media

Behaviours

Additional Information

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment

SEMFWE364

Monitoring welding activities in production

Developed by	Enginuity
Version Number	3
Date Approved	30 Mar 2017
Indicative Review Date	31 Mar 2020
Validity	Current
Status	Original
Originating Organisation	Semta
Original URN	SEMFWE364
Relevant Occupations	Engineering, Engineering and Manufacturing Technologies, Metal Forming, Welding and Related Trades
Suite	Fabrication and Welding Engineering Suite 3
Keywords	fabrication; welding; monitoring welding activities; welding production activities; welding technology; monitoring procedures; quality assurance; risk assessment; data collection; sampling