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Unit 31: Evaluate and Modify Processing Parameters to Meet Process Operations within Polymer Processing and Related Operations

Overview

This unit is about evaluating and modify processing parameters to improve process operations. It covers non-routine modifications carried out to improve quality or system effectiveness, or in response to processing problems. It is suitable for process industries personnel who work within an organisational context which requires them to achieve clearly defined specifications. The work is such that the individual would be expected to clarify and resolve processing issues either as the process operator, quality technician or in a 'trouble shooting' role. The processing system must be machine-based, for continuous or batch production, and should include ancillary equipment.

This unit deals with the following:

1. Monitor and evaluate processing output
2. Modify processing parameters to meet process operations

During this work you must take account of the relevant worksite operational requirements, procedures and safe working practices as they apply to you.

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Performance criteria

You must be able to:

P1 Work safely at all times, complying with health and safety, environmental and other relevant **regulations, legislations and guidelines**

P2 Monitoring processing output over a period of time to identify patterns and levels of variance from specification

P3 Collecting, collating and analysing **data** from appropriate sources to identify the cause and effects of variances for each stage of the processing sequence

P4 Analyse data against **specifications** to clarify the nature of the **problem**

P5 Report any equipment malfunction or failure to the appropriate person

P6 Complete prescribed quality checks on materials and products to accurately assess deviations from **specifications**

P7 Identify the cause of deviations and possible corrective actions

P8 Obtain the assistance of **others** when you are uncertain about the cause of deviations or the appropriate corrective actions

P9 Record all test results and assessments in sufficient detail to enable decisions to be made by interested parties

P10 Modify **processing parameters**, within safety limits, to achieve the specified output tolerances and targets for each stage of the processing sequence

P11 Make modifications in the correct sequence and at the appropriate stage in the process to achieve the required product and production specifications

P12 Record any changes made to the **processing parameters** and take appropriate action to amend the processing specification

P13 Record information about the nature and effects of deviations, and the remedial actions taken, by following organisational procedures

P14 Pass information to the appropriate people within the specified timescale in accordance with organisational procedures

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Knowledge and understanding

You need to know and understand:

K1 The specific organisational health, safety and environmental policies and other **regulations, legislation and guidelines** for your work area and why they are important

K2 The different types potential **hazards**, how they can be minimised and the action to take in the event of a work area hazard

K3 What the workplace procedures are for reporting potential **hazards** you are unable to deal with

K4 When, which and how personal protective equipment should be used

K5 The importance of checking equipment, how to do this and to whom you should report defects

K6 What risks are associated with the working environment

K7 What risk control measures are in place and how to comply with them

K8 Where to find **work procedures** and production requirements and how to interpret these

K9 What sort of documents are kept and how to complete them and the implications of not maintaining them accurately and legible

K10 The importance of disposing of waste **materials** safely and how to do this

K11 The sorts of **problems** that might occur and who you should report these to

K12 The purpose and importance of **quality assurance** checks, and when and how these should be carried out

K13 The importance of monitoring output to identify **variances** and how and when this should be done

K14 How to collect and collate **data** from different **sources**

K15 The different stages involved in the processing sequence and how they interrelate

K16 The importance of collecting data from each stage of the processing sequence

K17 The importance of monitoring output over a period of time and the implications of reaching conclusions on data collected on a single occasion

K18 What length of monitoring time is appropriate for the process

K19 How to analyse data against specifications

K20 How to differentiate between **variances** caused by equipment malfunction or failure and those caused by incorrect or inappropriate **processing parameters**

K21 What quality checks should be carried out and what they will tell you about the processing operations

K22 Who to consult when you are uncertain of the cause and effects of deviations from specification

K23 How to present test results and assessments to facilitate decision making about the appropriate corrective **actions** to take
K24 What conditions and **processing parameters** are required to produce the product within specification
K25 How the processing parameters affect material and product properties and the effects of changing different parameters
K26 The importance of adjusting **processing parameters** to achieve the required specifications and how to do this
K27 The safety limits that apply to different **processing parameters** and the risks associated with setting parameters outside of these limits
K28 The importance of following the prescribed sequence for adjusting processing parameters and the implications of not doing this
K29 The circumstances when processing specifications need to be amended to show revised or new processing parameters and the organisational procedures for doing this
K30 What the specific organisational Health and Safety procedures for evaluating and modifying processing parameters are
K31 What safe working practices apply to your own job role in evaluating and modifying processing parameters
K32 What safe operating procedures apply to different processing equipment
K33 The different type of documentation that is required

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Additional Information

Glossary

1. **Regulations/Legislation/Guidelines**: organisational procedures and guidelines, Work place Policies, Health, safety and environmental requirements and regulations relevant to the work and work area being carried out

2. **Problems** to be dealt with: those which you can deal with directly, those which you need to report and seek the assistance of a specialist

3. **Hazards** and control measures: waste, spillage, obstructions use of tools, hazardous materials. personal protective equipment, equipment, lifting and moving items

4. **Materials**: raw materials, part-processed materials, re-processed materials, finished products, process related materials, e.g. packaging, processing equipment, residual materials for recycling, waste materials for disposal

5. **Operating Procedures/Work Procedures:** Work instructions, Method Statements, Standard Operating Procedures

6. **Problems**: equipment malfunction or failure, non-conforming materials, process related, human error

7. **Source(s)**: visual inspections of the output, VDUs, chart recorders, sensors, test outcomes, measuring processing parameters directly

8. **Data**: equipment performance, materials performance, quality of output, quantity of output

9. **Variance**: quality of output, production rates

10. **Specifications**: product, materials, processing, production

11. **Others**: co-workers, supervisors, technical specialists

12. **Processing parameters**: temperature, pressure, rate, sequence, material additives

13. **Actions**: reporting changes to the person responsible for maintaining specifications, making changes to specifications within the limits of your authority

14. **Quality assurance** that will be determined by: The nature of the equipment being maintained, company policy, company national or

international standards

15. **Documentation:** Records, analysis sheets, report sheets, log book

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