
Overview

This unit deals with the conducting of the proving and testing process using various reference devices and at various locations.

The term "Proving and Testing" will hereinafter be assumed within the term "Proving".

- 1 This unit deals with the following:
- 2 Connecting proving equipment to client system
- 3 Preparing client system for proving
- 4 Monitoring and advising on the condition and validity of reference devices and ancillary equipment, ensuring re-certification
- 5 Carrying out proving operation using reference devices
- 6 Carrying out and recording the results of proving calculations on field data
- 7 Returning the equipment under test to normal operation

During this work you must take account of the relevant operational requirements and safe working practices AS THEY APPLY TO YOU.

Previous Version:

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Proving operations

Performance criteria

You must be able to:

- P1 work safely in accordance with operational requirements
- P2 ensure that all proving equipment is in serviceable condition and correctly set up
- P3 correctly position proving equipment and fire extinguishers following site instructions and method statements
- P4 confirm isolation of the client's system and safety with client's appointed representative
- P5 ensure the appropriate earthing between all proving equipment and site system and electrical continuity of hoses
- P6 correctly connect site services to proving equipment
- P7 ensure the safety of plant, equipment and compatibility of products
- P8 effectively determined product disposal and return facilities
- P9 ensure integrity of proving system
- P10 review historic data sheets for equipment under test
- P11 confirm the safe release of equipment under test
- P12 accurately record readings from client's equipment and test equipment readings
- P13 accurately adjust equipment under test configuration to achieve proving mode and record this accurately
- P14 check that the reference equipment is fit for purpose
- P15 record reference equipment defects and report to appropriate personnel
- P16 replace standard parts of equipment
- P17 accurately establish the effect of external equipment and environmental conditions on reference device performance
- P18 establish the stability of reference device history
- P19 identify and withdraw suspect reference devices from use
- P20 complete all relevant documentation
- P21 provide ongoing advice to appropriate personnel of objectives, process and outcome of monitoring
- P22 accurately record all relevant parameters from reference device and equipment under test
- P23 effectively conduct stabilising runs
- P24 conduct an appropriate number of pre-calibration runs to obtain sufficient data on performance of equipment under test
- P25 check the test readings of the equipment under test against corrected reference device reading
- P26 correctly adjust the device under test to achieve calibration
- P27 accurately complete all relevant documentation
- P28 collate, validate and review the data and results against historic data
- P29 check that appropriate correction factors have been applied to data using

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Proving operations

- the correct methods and formulae
- P30 communicate, agree and receive client approval of test results and any subsequent need for rectification and re-proving with clients
- P31 ensure continuing integrity of reference equipment
- P32 confirm that the results comply with regulatory requirements
- P33 generate provisional results and accurately cross-reference them with ancillary equipment
- P34 prepare site reports including all relevant information
- P35 accurately transfer data to appropriate documentation and records
- P36 update client and own company records following agreed procedures
- P37 ensure that final certification provides client with all necessary proving information
- P38 effectively follow safe shut down, isolation and disposal of waste procedures for the removal of proving equipment
- P39 effectively ensure the integrity of security systems
- P40 effectively disconnect the proving equipment
- P41 effectively return the site to normal and safe condition in accordance with client requirements and other regulations

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Proving operations

Knowledge and understanding

You need to know and understand:

- K1 product compatibility, to include first and last product, high and low flash sequences and vapour balance characteristics
- K2 the principles and practice of product disposal, to include isolation, storage and handling, disposal following agreed operational and environmental procedures
- K3 principles and practice of proving system integrity, to include earthing systems, secure connections, accumulation and elimination of static charge, purging of hoses, filters for product and flow rates and the draining of reference devices when changing product and upon completion of proving
- K4 the principles and practice of switch loading and the associated hazards, e.g. isolation procedures, static electricity and its consequences, continuity testing procedures, appropriate safety tests, earthing procedures and integrity checks
- K5 product disposal arrangements
- K6 the clients' specification and tolerances
- K7 the types of metering equipment and their operating systems
- K8 the differences between mechanical and electronic head devices
- K9 how to interpret records
- K10 how to work with recording systems (to include maintenance)
- K11 the client's policy on product return to storage or disposal
- K12 how to check that the equipment is fit for purpose
- K13 how to interpret and update calibration certificates and other relevant documentation
- K14 how to access and interpret manufacturer's instructions regarding the operation and maintenance of equipment
- K15 the parts lists and methods of updating
- K16 the use of electrical equipment in hazardous areas
- K17 the relevant methods of re-calibrating equipment using appropriate primary standards
- K18 the information required by clients, to include potential deterioration, product loss, meter/prover history and the magnitude of error
- K19 your company and the customer's proving procedures
- K20 the principles and practice of pre-calibration runs, to include the appropriate number, priming, pre-calibration and proving at various flow rates
- K21 the purpose of proving runs
- K22 the principles and practice of calculations
- K23 the effect of pressure and temperature on the test
- K24 the consequences of error

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- K25 the sources of correction factors
- K26 how to complete all relevant documentation
- K27 the correction factors and their application
- K28 the traceability procedures
- K29 the tolerance parameters for proving
- K30 how to use the test results to identify whether the equipment under test is in specification
- K31 when it is appropriate to undertake recertification work and re-proving
- K32 the principles and practice of correction factors
- K33 how to demonstrate traceability of certification
- K34 how to interpret and communicate results to client
- K35 the principles and practice of safe disposal of waste, to include isolation, storage and handling, disposal following agreed operational and environmental procedures
- K36 the site contacts
- K37 the normal operating parameters and ways of reinstating them

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Additional Information

Scope/range related to knowledge and understanding

- 1 the applicable measurement codes of practice and guidelines
- 2 the product knowledge, handling characteristics and procedures
- 3 the documentation relevant to proving, how to access and interpret information from certificates, and gathered data
- 4 the meaning of measurement terminology, to include errors accuracy, precision and uncertainty.
- 5 handling and treatment of test data
- 6 the sources of mis-measurement and treatment of errors
- 7 accessing and interpreting information on proving
- 8 the site safety requirements and procedures, to include requirement for site safety induction, site entry arrangements, Permit to Work system and the site safety regulations for contractors
- 9 how to select, use and care for Personal Protective Equipment (PPE) including sight/hearing protection, gloves, footwear, hard hats, and the appropriate workwear
- 10 current legislative requirements and organisational requirements
- 11 emergency shutdown procedures
- 12 nature and location of site services
- 13 principles and practice of mechanical pressure envelope integrity
- 14 limits of own authority and procedures in the event of breaching those limits
- 15 how to interpret operational requirements e.g. procedures, instructions, codes of practice, standards, schedules
- 16 the compatibility of product, e.g. first and last product, switch loading, high and low flash sequences, vapour balance characteristics and associated hazards
- 17 how to ensure electrical integrity of the proving installation e.g. earthing, static discharge, power requirements and the Area Classification of the installation

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Proving operations

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