NMSA

AN INSTMC SPECIAL INTEREST GROUP

METROLOGY SKILLS FRAMEWORK
NMSA-2.2 - FLOW METROLOGY

National Metrology Skills Alliance

Version 1.0, 20th December 2023

InstMC

Foreword

The National Metrology Skills Alliance (NMSA) comprises a range of industrial and scientific companies together with educators and national bodies involved in metrology. It was formed to promote the standardisation of metrology skills, driving efficiency and consistency across UK industry. This standard framework is the result of the first phase of activity of the NMSA. Further information is available on the InstMC NMSA Special Interest Group website at:

https://www.instmc.org/sigs/national_metrology_skills_alliance

Introduction

The NMSA is structured with 2 sections as shown below in *Figure 1*. NMSA 1 defines standard skills levels for metrology and a suite of generic skills objectives that are applicable to any metrology discipline. NMSA 2 is a library of standards that define the skills objectives for a specific discipline within metrology. These are typically scoped to be relevant for a group of industrial users, rather than strictly aligned to a structure such as the SI units. In this they are flexible and can be tailored to the needs of the group. Each of the NMSA 2 standards are intended to be used in conjunction with NMSA-1.

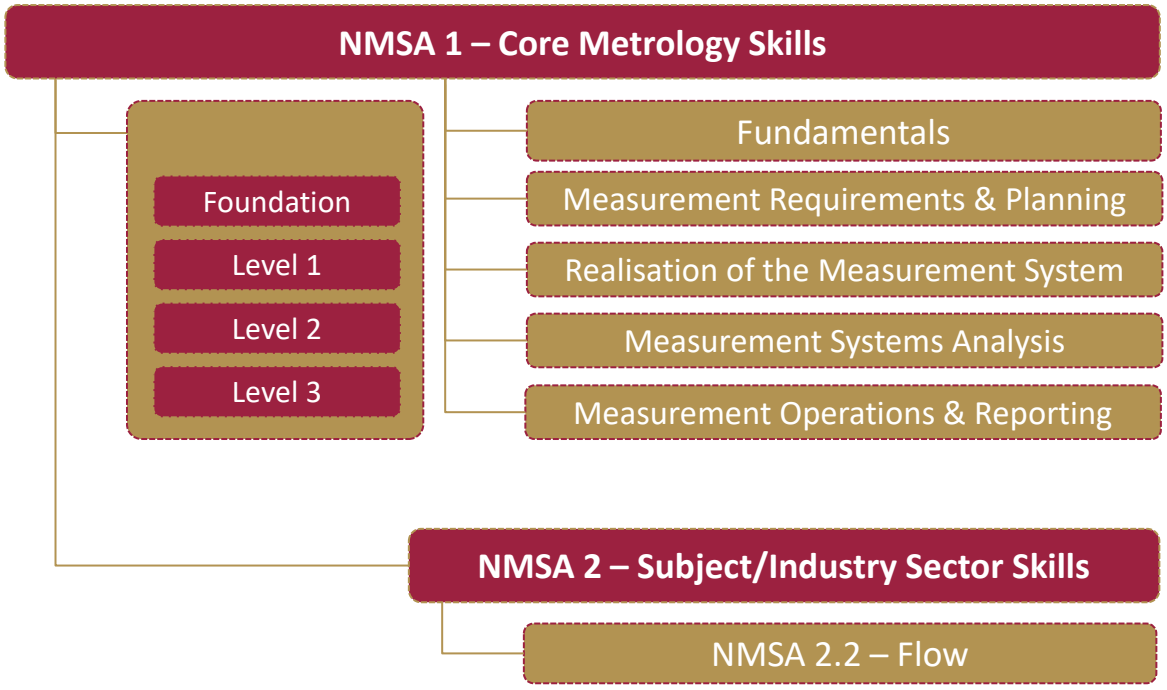

Figure 1 - NMSA Structure

This NMSA 2 standard defines the skills required for flow metrology, including application of measurement within a range of industries utilising flow measurement. The content is not specific to any particular industrial sector and is intended to be flexible to suit application of a range of methods and technologies. The content is based around generic terminology when flow measurements are utilised within industry, the selection of appropriate primary measurement devices, the selection of appropriate secondary measurement devices and flow measurement computation methods and devices. The standard aligns to international recognised standards which include, but not limited to, ISO, NMI, API, BSI.

The standard has been developed by a group of industrial metrologists working within a range of industries that utilise flow measurements to focus on practical application and support key roles in deploying flow metrology. The structure of the document supports the core skill levels as defined in NMSA 1, to define skills and tasks against distinct technology or method areas, where different skills exist. Dependent on the role of the user, they may look to use all sections of the NMSA 2.2 or select only those that are relevant.

Scope

In-Scope

- Terminology and Definitions
- Primary Devices
- Secondary Device
- Flow Computation

Out of Scope

- Flow System Audits

Contents

2.2.1 – Flow Metrology Fundamentals

Metrology knowledge and skills that are used across any Flow Metrology activity.

Category	Description	Foundation	Level 1	Level 2	Level 3
Flow Terminology	Understand the major elements of metrology and terminology and able to describe what they are as applied to Flow Metrology when used for different applications but not limited to: Basic Fluid Properties Basic Pipe Flow Concepts Fluid Mechanics Flow Measurement Calculations	Recall where to find the correct Terminology documentation. Describe the importance of using the correct language and terminology. Identify who to go to for support and further information. *E.g., know the organisation's point of contact for metrology, know of the International Bureau of Weights and Measures (BIPM) website.*	Demonstrate appropriate reference to the documentation in their work. Choose the correct terminology in spoken discussion. Demonstrate the importance of the organisation of such documents.	Demonstrate appropriate reference to the documentation in their work and explain to non-metrologists. Choose the correct terminology in formal documents and spoken discussion. Demonstrate the importance to the organisation of such documents.	Create modify their organisation's terminology documentation to ensure it is up to date and available. Ensure suitability for the requirements of the organisation policies and objectives. Explain terminology at appropriate senior levels. Able to verify the compliance. Is the organisation's operational acceptance authority. Point of contact internally For further support across the organisation.
Units of Measurement	International and organisational standards applicable to business and flow metrology needs operationally and legally but not limited to:	Recall where to find the correct information from verified sources.	Recall where to find the correct documentation and able to reference the documentation. Carryout measurement practice in compliance	Recall where to find the correct documentation and able to reference the documentation to ensure suitability and requirements of the task to hand.	Recall where to find the correct documentation and able to reference the documentation to ensure suitability / requirements of the organisation's policies and objectives.

	ISO Reference Conditions. Imperial Reference Conditions. North American Reference Conditions. European Reference Conditions.		with measurement standards where appropriate under guidance.	Apply standards where appropriate in formal written documentation. Able to summarise and supply evidence of compliance. Able to articulate the importance to the organisation of such standards.	Demonstrate and discuss the significance of compliance at appropriate senior levels. Able to recognise non-compliance, adjust / implement improvement and verify the compliance. Able to create, author and review formal written documentation for standard compliance. Would be the organisation's operational acceptance authority.
Basic Fluid Properties	The fundamental scientific principles underpinning metrology and the instruments used for measurement, traceability and the definition of the SI Units when applied to Basic Fluid Properties applied in Flow Metrology but not limited to: Thermodynamic and Phase Behaviour Fluids Temperature. Pressure.	Describe how metrology instrument's function and gather data in simple terms.	Explain operating principles and SI Units underpinning metrology instruments as used as part of role.	Explain operating principles and SI Units underpinning metrology instruments within function. Contribute to the generation of uncertainties budgets by identifying influencing factors.	Originate material to explain how the operating principles underpinning instruments used within function and traceability route back to National Metrology Institutes. Use knowledge of scientific principles in producing good measurement practise guide and uncertainty budgets.

	Density: Line conditions, Standard and Relative conditions: Viscosity: Dynamic and Kinematic. Non-Newtonian Fluids Vapour Pressure: True and Reid. Phase: Single, Two and Multi. Permittivity: Isentropic Exponent: Velocity of Sound: Compressibility: Calorific Value: Dewpoint: Water and Hydrocarbon Composition: Cloud-Point:				
Pipe Flow Concepts	The fundamental scientific principles underpinning metrology and the instruments used for measurement, traceability and the definition of the SI Units when applied to Pipe Flow Concepts used for Flow Metrology but not limited to: Velocity, Mass, Volume, Multiphase. Reynolds Number. Pipe Roughness.	Describe how metrology instrument's function and gather data in simple terms.	Explain operating principles and SI Units underpinning metrology instruments as used as part of role.	Explain operating principles and SI Units underpinning metrology instruments within function. Contribute to the generation of uncertainties budgets by identifying influencing factors.	Originate material to explain how the operating principles underpinning instruments used within function and traceability route back to National Metrology Institutes. Use knowledge of scientific principles in producing good measurement practise guide and uncertainty budgets.

	Compressibility.				
Fluid Mechanics	The fundamental scientific principles underpinning metrology and the instruments used for measurement, traceability and the definition of the SI Units when applied to Fluid Mechanics conditions applied to Flow Metrology but not limited to: Velocity Profile Installation Effects Pressure Drop Cavitation Flow Mixing	Describe how metrology instrument's function and gather data in simple terms.	Explain operating principles and SI Units underpinning metrology instruments as used as part of role.	Explain operating principles and SI Units underpinning metrology instruments within function. Contribute to the generation of uncertainties budgets by identifying influencing factors.	Originate material to explain how the operating principles underpinning instruments used within function and traceability route back to National Metrology Institutes. Use knowledge of scientific principles in producing good measurement practise guide and uncertainty budgets.
Flow Calculation	The fundamental mathematical principles underpinning metrology, the instruments used for measurement, and the analysis of the data when applied to Flow Calculations when applied to Flow Metrology but not limited to: Flow Instrumentation Accuracies.	Understand how metrology instruments function and gather data. Understand how to analysis data, question data analysis of metrology studies.	Explain underlying mathematical principles for metrology tasks within their role. Carry out and present mathematical calculations for routine metrology tasks. Understand the importance of the application of the correct	Explain underlying mathematical principles for multiple metrology instruments. Carry out and present mathematical calculations for non-routine metrology tasks. Demonstrate the application in statistical processing, analysis	Explain underlying mathematical principles for multiple metrology instruments. Formulate mathematical calculations for complex metrology tasks. Specify analysis methodologies and instrument settings for complex measurements not

	Flow System Uncertainties. Fluid Properties Calculations.		statistical processing, analysis methods, manipulation of data using algebra and calculus.	methods, manipulation of data using algebra and calculus.	previously undertaken by the measurement facility.

2.2.2 - Flow Measurement Technologies – Primary Devices

Category	Description	Foundation	Level 1	Level 2	Level 3
1. Operating principle	Describe the Operating Principle for the Flow measurement Systems: Dynamic Meter Types – Head Meters (flow proportional to Differential Pressure). Linear Meters - (flow proportional to Velocity). Tracer Techniques. Level - (For Open Channel).	Describe the operating principles for each of the measurement systems.	Explain the operating principles for each of the measurement systems.	Evaluate and identify potential improvements to the operating principles for the measurement systems.	Design and develop improvements to the operating principles for the measurement systems.
2.1 Technology selection	Dynamic Meters include but not limited to: Orifice Plates. Flow Nozzles. Venturis. Cone. V-Notch Meters.	List the appropriate measurements devices that could be selected for an application. Describe the relative benefits and limitations of the measurement for an application.	Explain the measurement devices that could be selected for an application. Compare the relative benefits and limitations of the measurement system and devices for an application.	Explain and analyse the measurement devices that could be selected for an application. Justify the selection of the measurement device for an application.	Design a study to critically evaluate the measurement device that could be selected for an application. Approve the selection of the measurement device for an application.
2.2 Technology selection	Linear Meters (non-intrusive) included but not limited to:	List the appropriate measurements devices that could be selected for an application.	Explain the measurement devices that could be selected for an application.	Explain and analyse the measurement devices that could be selected for an application.	Design a study to critically evaluate the measurement device that

	Coriolis Meters. Electro Magnetic Meters. Clamp - on Ultrasonic Meters	Describe the relative benefits and limitations of the measurement for an application.	Compare the relative benefits and limitations of the measurement system and devices for an application.	Justify the selection of the measurement device for an application.	could be selected for an application. Approve the selection of the measurement device for an application.
2.3 Technology selection	Linear Meters (intrusive) included but not limited to: Turbine Meters. Positive Displacement Meters. Vortex Shedding Meters. Multiphase Meters. Optical (laser) Meter. Variable Area Meters. Ultrasonic meters. Anemometers (thermal-hot filament: optical; cup-vane). Pitot tubes. Flow field velocity mapping techniques. Open Channel.	List the appropriate measurements devices that could be selected for an application. Describe the relative benefits and limitations of the measurement for an application.	Explain the measurement devices that could be selected for an application. Compare the relative benefits and limitations of the measurement system and devices for an application.	Explain and analyse the measurement devices that could be selected for an application. Justify the selection of the measurement device for an application.	Design a study to critically evaluate the measurement device that could be selected for an application. Approve the selection of the measurement device for an application.
3. Environmental impacts	Environmental Impacts but not limited to: Process Leakages (Liquids, Gases). Noise. Temperature. Pressure. Vibration. Microwave.	List environmental impacts that could influence the measurement device. Understand the procedure for controlling the environmental impacts.	Explain environmental impacts that could influence the measurement device. Conduct the procedure for controlling environmental impacts.	Evaluate and analyse environmental impacts that could influence the measurement device. Identify and respond to potential improvements to procedures for	Design a study to evaluate the environmental impacts that could influence the measurement device. Create the procedure for controlling environmental impacts.

	Humidity. Electrical/RF Interference.			controlling environmental impacts.	
4. Validation	Selection of appropriate Standards for Installation and or Calibration but not limited to: ISO. NMI. API. IP. BSI. MCERTS. UKETS.	Describe a validation study to prove capability of the measurement systems and devices.	Conduct a validation study to prove the capability of the measurement systems and devices.	Design and instruct a validation system to prove the validation of the measurement systems and devices.	Approve a validation study to prove capability of the measurement systems and devices.
5. Calibration	Selection of the appropriate calibration Process and Procedures but not limited to: Authorised Standard Calibration Laboratories. Manufactures Standard Calibration Systems. Industrial Site Installations.	Describe the approach for the selected calibration for the measurement system or devices.	Explain and carry out the calibration of the measurement system or devices to the defined procedures. Conduct relevant verification on part of the specific measurement systems and device and identify if the results are Pass / Fail. Demonstrate knowledge of actions required for Pass / Fail calibration.	Review the calibration results, method, and parameters for the measurement system or devices. Modify (as required) the internal and or third-party procedures for calibrating the measurement system and devices. Demonstrate awareness of the need for traceability of calibration and how this is achieved.	Approve the calibration results, periods, methods and parameters for the measurement system and device. Create the internal procedures for calibrating the measurement system and devices and track result trends or degradation.

6. Setup and verification	Selection of the appropriate Validation Procedures and methods:	Describe the method for set-up and verification for the measurement system and devices.	Carry-out the set-up and verification for the measurement system and devices.	Review and identify improvements to the set-up and verification of the measurement system and devices.	Create the procedures for the set-up and verification of the measurement system and devices.
7. Project Programming	Selection of the appropriate Project Programme for but not limited to: Measurement system. Device selection. Validation. Calibration. Validation.	Describe the need for a project programme.	Conduct the project programme and control. Conduct and improve if below standard for the measurement system or device.	Design audit for the project programme. Design controls for updating the project programme updating any effects on measured results.	Review and approve the process for project programming.
8. Execution	Utilising the Flow Measurement System and Devices:	Observe the operation of the measurement system and devices.	Carry-out measurement activities utilising the measurement system and devices.	Review and modify the process for control and execution of the measurement system and devices.	Develop the process for control and execution of the measurement system and devices.
9. Errors and fault finding	Conduct a Root-Cause Analyses:	List common errors and faults that could impact the measurement system and devices. Understand the procedures for controlling errors and faults of the measurement systems and devices.	Identify common sources of errors in the measurement systems and devices. Correct errors and faults and prepare the measurement systems for inspection.	Ability to design suitable mitigation techniques to eliminate errors and faults.	Ability to approve mitigation techniques. Specify the techniques utilised by any equipment for data acquisition. Optimise the measurement process on the basis of scientific understanding
10. Interpretation of results	Understand the measurement system and devices outputs:	Understand the results output from the measurement system and devices.	Interpret and explain the results from the measurement system and devices.	Interpret and explain the results output from the measurement system and devices.	Develop the process to control the results template from the measurement system and devices.

2.2.3 – Flow Measurement Technologies - Secondary Devices

Category	Description	Foundation	Level 1	Level 2	Level 3
1. Operating principle	Describe the Operating Principles for the measurement devices when utilised in a Flow Measurement system: Pressure Devices Temperature Devices Quality Measurement Devices	Describe the operating principles for each of the measurement systems.	Explain the operating principles for each of the measurement systems.	Evaluate and identify potential improvements to the operating principles for the measurement systems.	Design and develop improvements to the operating principles for the measurement systems.
2.1 Technology selection	Pressure Devices include but not limited to: Static Pressure Transmitters Differential Pressure Transmitters	List the appropriate measurements devices that could be selected for an application. Describe the relative benefits and limitations of the measurement for an application.	Explain the measurement devices that could be selected for an application. Compare the relative benefits and limitations of the measurement system and devices for an application.	Explain and analyse the measurement devices that could be selected for an application. Justify the selection of the measurement device for an application.	Design a study to critically evaluate the measurement device that could be selected for an application. Approve the selection of the measurement device for an application.
2.2 Technology selection	Temperature Devices included but not limited to: Temperature Elements and Transmitters Thermocouples	List the appropriate measurements devices that could be selected for an application. Describe the relative benefits and limitations of the measurement for an application.	Explain the measurement devices that could be selected for an application. Compare the relative benefits and limitations of the measurement system and devices for an application.	Explain and analyse the measurement devices that could be selected for an application. Justify the selection of the measurement device for an application.	Design a study to critically evaluate the measurement device that could be selected for an application. Approve the selection of the measurement device for an application.

2.3 Technology selection	Quality Measurement Devices included but not limited to: Gas Chromatographs Liquid Chromatographs Gamma & Vibrating Element Densitometers Relative Density Analysers Water in Oil Analysers	List the appropriate measurements devices that could be selected for an application. Describe the relative benefits and limitations of the measurement for an application.	Explain the measurement devices that could be selected for an application. Compare the relative benefits and limitations of the measurement system and devices for an application	Explain and analyse the measurement devices that could be selected for an application. Justify the selection of the measurement device for an application.	Design a study to critically evaluate the measurement device that could be selected for an application. Approve the selection of the measurement device for an application.
3. Environmental impacts	Environmental Impacts but not limited to: Process leakages (Liquid and Gas) Noise Pressure Temperature Vibration Microwave Humidity Electrical/RF Interference	List environmental impacts that could influence the measurement device. Understand the procedure for controlling the environmental impacts	Explain environmental impacts that could influence the measurement device. Conduct the procedure for controlling environmental impacts.	Evaluate and analyse environmental impacts that could influence the measurement device. Identify and respond to potential improvements to procedures for controlling environmental impacts.	Design a study to evaluate the environmental impacts that could influence the measurement device. Create the procedure for controlling environmental impacts.
4. Validation	Selection of appropriate Standards for Calibration and or Installation but not limited to: ISO API IP BS MCERTS UKETS NSTA	Describe a validation study to prove capability of the measurement systems and devices.	Conduct a validation study to prove the capability of the measurement systems and devices.	Design and instruct a validation system to prove the validation of the measurement systems and devices.	Approve a validation study to prove capability of the measurement systems and devices.

5. Calibration	Selection of appropriate Calibration Process and or Procedures but not limited to: Authorised Standard Calibration Laboratories Manufactures Standard Calibration Systems Industrial Site Installations	Describe the approach for the selected calibration for the measurement system or devices.	Explain and carry out the calibration of the measurement system or devices to the defined procedures. Conduct relevant verification on part of the specific measurement systems and device and identify if the results are Pass / Fail. Demonstrate knowledge of actions required for Pass / Fail calibration.	Review the calibration results, method, and parameters for the measurement system or devices. Modify (as required) the internal and or third-party procedures for calibrating the measurement system and devices. Demonstrate awareness of the need for traceability of calibration and how this is achieved	Approve the calibration results, periods, methods and parameters for the measurement system and device. Create the internal procedures for calibrating the measurement system and devices and track result trends or degradation
6. Setup and verification	Selection of the appropriate Validation Procedures and methods:	Describe the method for set-up and verification for the measurement system and devices.	Carry-out the set-up and verification for the measurement system and devices.	Review and identify improvements to the set-up and verification of the measurement system and devices.	Create the procedures for the set-up and verification of the measurement system and devices.
7. Programming	Selection of the appropriate Project Programme for but not limited to: -Measurement system -Device selection -Validation -Calibration --Validation	Describe the need for a project programme.	Conduct the project programme and control. Conduct and improve if below standard for the measurement system or device.	Design audit for the project programme. Design controls for updating the project programme updating any effects on measured results.	Review and approve the process for project programming.
8. Execution	Utilising the Flow Measurement System and Devices:	Observe the operation of the measurement system and devices.	Carry-out measurement activities utilising the measurement system and devices.	Review and modify the process for control and execution of the measurement system and devices.	Develop the process for control and execution of the measurement system and devices.

9. Errors and fault finding	Conduct a Root-Cause Analyses:	List common errors and faults that could impact the measurement system and devices. Understand the procedures for controlling errors and faults of the measurement systems and devices.	Identify common sources of errors in the measurement systems and devices. Correct errors and faults and prepare the measurement systems for inspection.	Ability to design suitable mitigation techniques to eliminate errors and faults.	Ability to approve mitigation techniques. Specify the techniques utilised by any equipment for data acquisition. Optimise the measurement process via use of physics.
10. Interpretation of results	Understand the measurement system and devices outputs:	Understand the results output from the measurement system and devices.	Interpret and explain the results from the measurement system and devices.	Interpret and explain the results output from the measurement system and devices.	Develop the process to control the results template from the measurement system and devices.

2.2.4 – Flow Computation

Category	Description	Foundation	Level 1	Level 2	Level 3
1. Operating principle	Describe the Operating Principles for Flow Computers when used for Measurement Systems that require corrected Flow Computation: Analogue Flow Computation Digital Flow Computation Virtual Flow Computation	Describe the operating principles for the Flow Computer selected.	Explain the operating principles for the Flow Computer selected.	Evaluate and identify potential improvements to the Operating principles for the Flow Computer selected.	Design and develop improvements to the operating principles for the Flow Computer selected.
2.1 Technology selection	Analogue Flow Computation	List the application that could be selected for the Analogue Flow Computer. Describe the relative benefits and limitations of the Analogue Flow Computer.	Explain the application that could be selected for the Analogue Flow Computer. Compare the relative benefits and limitations of the Analogue Flow Computer.	Evaluate and analyse the application that could be selected for the Analogue Flow Computer. Justify the selection of the Analogue Flow Computer for the application.	Design a study to critically evaluate the application that could be selected for the Analogue Flow Computer. Approve the selection of the Analogue Flow computer for the application.
2.2 Technology selection	Digital Flow Computation	List the application that could be selected for the Digital Flow Computer. Describe the relative benefits and limitations of the Digital Flow Computer.	Explain the application that could be selected for the Digital Flow Computer. Compare the relative benefits and limitations of the Digital Flow Computer.	Evaluate and analyse the application that could be selected for the Digital Flow Computer. Justify the selection of the Digital Flow Computer for the application.	Design a study to critically evaluate the application that could be selected for the Digital Flow Computer. Approve the selection of the Digital Flow computer for the application.

2.3 Technology selection	Virtual Flow Computation	List the application that could be selected for the Virtual Flow Computer. Describe the relative benefits and limitations of the Virtual Flow Computer.	Explain the application that could be selected for the Virtual Flow Computer. Compare the relative benefits and limitations of the Virtual Flow Computer.	Evaluate and analyse the application that could be selected for the Virtual Flow Computer. Justify the selection of the Virtual Flow Computer for the application.	Design a study to critically evaluate the application that could be selected for the Virtual Flow Computer. Approve the selection of the Virtual Flow computer for the application.
3. Environmental impacts	Environmental impacts but not limited to: -Cleanliness -Temperature control -Rate of change of temperature -Light levels -Air contaminates -Humidity -Vibration -Interference (electric, magnetic, etc)	List the environmental impacts that could influence the Computer System. Understanding the procedures for controlling environmental impacts.	Explain environmental impacts that could influence the Computer System. Conduct the procedure for controlling the pre-measurement environmental impacts.	Evaluate and analyse environmental impacts that could influence the Computer System. Identify and respond to potential improvements to the procedure for controlling environmental impacts.	Design a study to evaluate the environmental impacts that could influence the Computer System. Create the procedure for controlling environmental impacts.
4. Validation	Computer System analyse including but not limited to: -Measurement capability -Design definition -Design requirements	Describe the importance of correctly specifying the design requirements for the Flow Computer.	Conduct programming / calibration for the tolerances defined in the engineering definitions in line with the pre-defined programming / calibration process.	Design and coordinate program techniques for the design/ specified requirements given also considering uncertainties and confidence levels.	Approve the programming techniques. Approve uncertainty budgets and determine the expected normal distribution.
5. Calibration	Review calibration and verification procedure	Describe the calibration approach for the computer system.	Carry-out the calibration for the computer system to the defined procedure.	Review the calibration (results and parameters) for the computer system.	Approve the calibration results and parameters for the computer system.

	results including but not limited to: - Relevant ISO requirements - Limitations of the calibration / verification - Relevant uncertainty budgets - Test equipment		Explain the calibration approach for the computer system. Demonstrate knowledge of actions required for Pass / Fail calibration / verification.	Modify the calibration procedure for calibrating the computer system. Demonstrate awareness of the need for traceability of the calibration and how this is achieved.	Create the internal procedures for calibrating the measurement system. Determine the results within the computer system from the calibration results and sanction the system as appropriate. Use the calibration results to track trends or degradation of the computer system.
6. Setup and verification	Selection of appropriate Verification Procures and Methods but not limited to: - Calibration / verification - Uncertainty analyses - Rationality check - Handling - Resolution	Describe the method for set-up and verification for the computer system.	Carry-out the set-up and verification of the computer system. Correctly set-up the equipment and perform checks and identify the calibration requirements.	Review and identify improvements to the set-up and verification of the computer system. Design / specify the checks / routines and correct test procedures.	Create the procedure for the set-up and verification of the measurement system. Approve check routines / procedures and acceptance levels.
7. Programming	Issue Programming and Controls but not limited to: - Program identifiers - Program change management	Describe the need for Programming and controls.	Conduct programming of the computer system for basic calculation / activities.	Conduct programming of the computer system for complex calculations / activities.	Create the process / procedures for programming the computer system.

8. Execution	Utilising the Flow Computer System to obtain the following information but not limited to: - Total flow rate - Temperature - Density - Pressure	Observe the outputs of the flow computer system.	Carry-out measurement activities using the flow computer system outputs.	Modify the process / procedures for control of execution of the flow computer system outputs.	Develop the process / procedures of execution of the measurement system outputs.
9. Errors and fault finding	List common errors and faults that could impact the flow computer system, namely incorrect programming but not limited to: -Incorrect selection of flow standards -Incorrect constants -Incorrect alarm levels	List common errors that could impact the flow computer system. Understand the procedure for controlling common errors and faults.	Explain common errors and faults that could impact the flow computer system. Correct the procedure for controlling common errors and faults.	Evaluate and analyses common errors and faults that could impact the flow computer system. Identify and respond to potential improvements for controlling common errors and faults.	Design a study to evaluate common errors and faults that could impact the flow computer system. Create the procedure for controlling common errors and faults.
10. Interpretation of results	Results and reporting, including but not limited to: - Measured Units - Types of Values - Alarms - Events	Understand the results from the flow computer system.	Interpret and explain the result output from the flow computer system.	Evaluate and analyse the results s output from the flow computer.	Develop the process / procedure to control the results template from the computer system.

Version History

Version	Reason for Issue	Date
1.0	First Issue	20/12/2023