

A GUIDE TO UNDERSTANDING ISO 10012: IMPROVING MEASUREMENT MANAGEMENT



EMBEDDING SI-TRACEABLE
THERMOMETRY IN ADVANCED
MANUFACTURING

INSTMC LAUNCHES MEASURED
FUTURES CHALLENGE

ITS-90 AFTER THE 2019 KELVIN:
WHY TEMPERATURE CALIBRATION
STILL RUNS ON A 1990 SCALE

MY JOURNEY TO
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SEPTEMBER 2026 ISSUE 41

PRECISION



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NATIONAL ENGINEERING DAY – 4 NOVEMBER 2026 CELEBRATE AND GET INVOLVED

National Engineering Day on 4 November aims to make the UK's engineers and engineering more visible, and celebrate how they improve everyday lives and shape the world around us.

'Now Hiring: The Engineers of 2076' is this year's National Engineering Day campaign celebrating the Royal Academy of Engineering's 50th anniversary by looking 50 years into the future. Through real job ads for roles that don't exist yet, it will inspire us to imagine the engineering careers that will build life on the Moon, Mars and beyond, with expert-led visions exploring everything from food and homes to healthcare and fashion in space.

How can you get involved?

• *Donate advertising space*

If you have digital screens, outdoor areas or advertising spaces, the Royal Academy of Engineering would love to run their 'Engineers of 2076' recruitment ads there on 4 November just for one day.

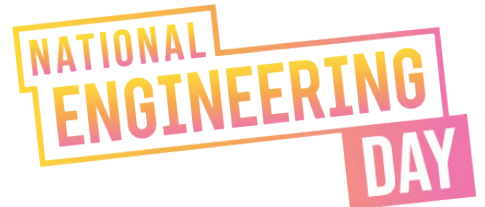
• *Create your own 2076*

space-age engineering job ad
Customise a job ad template to devise your own New Space Age engineering role and share on social media or in print. Imagine a role that doesn't exist yet and pair it with a real engineering job that does. What new skills might engineers need in the New Space Age? Or, looking back at Earth, what engineering roles might your organisation be recruiting for in 2076, and what would the job description include? Share your ideas and join the conversation on social media.

• *Share recruitment ads on your channels*

On National Engineering Day, share the 'Now Hiring: The Engineers of 2076' job ads across your channels – your website, social media, newsletter and screens within your workplace.

• *Bring Mars, Space and the Moon to life for your audiences*



Use your platforms, your expertise and your storytelling to help people imagine life beyond Earth in 2076.

A short film, a social series, an expert Q&A – anything that makes the future feel real and the engineering careers that will build it feel possible.

• *Host an event*

Do you have an event or other activities planned in the first week of November?

From town halls to team meetings, coding clubs to Lunch and Learns, why not theme that week around the recruitment campaign of 2076.

For further information, visit <https://raeng.org.uk/education-and-skills/this-is-engineering/national-engineering-day-resources/>.

THE ENGINEERS OF 2076

A recruitment campaign for the future, where we'll outline some key engineering roles that need to be filled in order to create real life in space, define tomorrow's world and transform life on Earth.

The campaign will seek to humanise **The New Space Age** to focus on the everyday:

- What will we wear?
- What will we eat?
- How will we decorate our homes?
- What will life look like on Earth and in the Solar System?



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CONGRATULATIONS 20-21 TO OUR 2026 INSTMC AWARD WINNERS



Awards were presented by InstMC President Professor Andy Augousti and Prizes & Awards Committee Chair Professor Ken Grattan.

ITS-90 AFTER THE 22-25 2019 KELVIN: WHY TEMPERATURE CALIBRATION STILL RUNS ON A 1990 SCALE

A gallium cell in a calibration laboratory melts at 29.7646 °C. That number is fixed by ITS-90. The cell doesn't know it. It reproduces one physical state – pure gallium passing between solid and liquid – and it will go on reproducing that same state whatever number we write against it.



FOCUS ON A SIG 27 MEASUREMENT

The Measurement Special Interest Group brings together those who believe in the importance of measurement to UK and international trade and commerce. The Group aims to raise awareness in both industrial settings and in individual careers.

INSTMC SPONSORS 28-29 AND ATTENDS DRIVES + CONTROLS 2026



InstMC staff hosted a stand at the exhibition, which formed part of Smart Manufacturing Week at the NEC Birmingham on 3 and 4 June, a standout event in the UK's industrial calendar, bringing together innovation, collaboration and cutting-edge technology under one roof.

SPOTLIGHT ON STAFF: RUTH HENDERSON

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Introducing our Membership & Registration Manager, Ruth Henderson.



PRECISION

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A GUIDE TO UNDERSTANDING ISO 10012: IMPROVING MEASUREMENT MANAGEMENT

BY ALISTAIR NORWOOD CENG MINSTMC,
HEAD OF MEASUREMENT, SELLAFIELD LTD

There are two new ISO quality standards, which have either just been released or will be soon.

In October, a new version of ISO 9001 will be presented at a launch in London (and Precision magazine will be there to cover that important event).

And a new version of ISO 10012 was launched at the start of 2026. It is this version that this article will focus on.

ISO 10012 is designed to involve the whole organisation in ensuring the correct measurements are taken and there is a documented procedure with a whole company approach to improve using data contained in the MMS (measurement management system).

“ISO 10012:2025 introduces a significant change in measurement management by transforming the standard from guidance standard into a certifiable requirements standard. It promotes an organisation-wide approach to measurement management, ensuring confidence in measurement results and supporting improved quality, consistency and customer satisfaction.”

The first things that should be clearly understood before

looking at the whole standard are the fundamental differences between old and new versions of 10012.

The new version of 10012 is a standalone auditable production standard, written for production environments where a whole company is making measurements.

The previous standard was a non-mandatory substandard for ISO 9001 and was not an auditable document.

The ISO writing team, when considering how organisations would implement this standard, would imagine a company in Italy that produces washing machines. They would consider how such a company would implement this new version of the 10012 standard within its production environment.

The standard details the measurements taken by the whole company and the work taken by a whole organisation to measure the process. It must be noted that 10012 looks at a production environment and is not a lab-based standard, such as ISO 17025.

The new 10012 standard covers every part of a company making a measurement, from measurement procedures to what tools are required and the training given. The standard also considers how design and procurement are involved. It is written for a whole company approach, not just for the labs or the final QC.

When working on the new standard, people would ask: “Why do we need a new standard when the previous standard worked well?”



My mind goes to an old 1973 Red Ford Escort 1100 – my first car after passing my driving test. At that time, it was expected that after 60k miles the engine would need major work. For those old enough to remember, you had to run in those engines when they were new – and to begin with, speed was limited to 40mph – and change the oil regularly. There were places in every town where you could get work on engines done. Conversely, I had a Vauxhall Vectra, which did over 200k miles, and the reason that was replaced was the bodywork. Why is there any difference? Because of improvements to the build quality of the old Ford engine. In the early 70s, it was built to a tolerance of 2 or 3 thousand. The Vectra has a tolerance of .1 or lower. The improvements were driven in the main by the increase in quality standards.

This new ISO 10012 is another method of increasing quality.

Changes to the type of this standard

The previous standard was a

Type “B” – a non-mandatory guidance standard, which was an adjunct to 9001. This allowed the standard to give advice, but in the end that advice was not mandatory.

This new standard is a Type “A” requirement standard. This is designed at the outset to be used by all organisations to demonstrate the effectiveness of their measurement management decisions and prove compliance with documented measurement techniques.

This difference means that for an organisation to meet this standard, they will be audited by an independent organisation on adherence to the standard. It should be noted that this is certification, not accreditation. The difference between 17025 and 10012 is that 17025 is accredited and 10012 is certified.

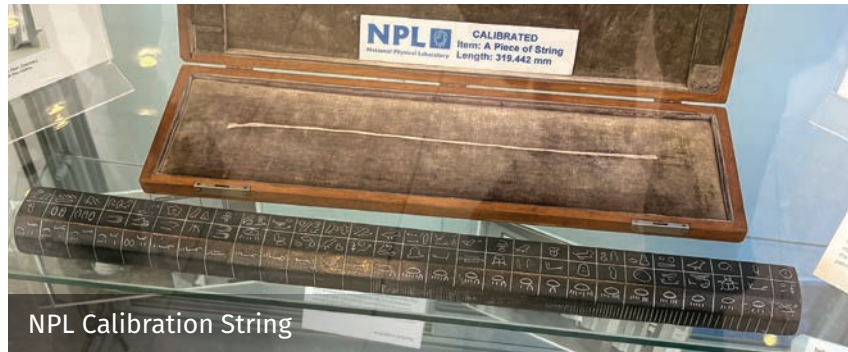
The person carrying out the certification must be approved by the accreditation board for their country. UKAS is the accreditation board in the UK.

So, what has changed in 10012 and why?

In section 5.3, we read how top management must appoint people of the correct level within the organisation to implement the standard, who shall have the responsibility and authority for oversight of the requirements and access to “top management” to resolve measurement issues.

This is an important part of implementation.

Top management should also be demonstrating leadership towards customer needs and requirements: “Top management of the organisation shall demonstrate leadership and commitment with respect to the measurement management system.” The emphasis of this standard is to make things better: better control, better measurement, a better process and, most importantly, a better product.



Much of the aim of the standard is encapsulated in the introductory statement: “A measurement management system can be implemented in design and development, test, monitoring and delivering of valid measurement results. It also provides an organisation with the basis demonstrating conformity to measurement management system requirements.”

As the introduction further states: “The main objective of a measurement management system is to provide confidence in the reliability of a measurement.”

It is this confidence in the measurement that an organisation implementing this standard is looking to achieve: “To improve how and why measurements are made.”

- The standard was written to ensure a whole organisation has the skills training to establish and run an end-to-end measurement management system (MMS). The standard does not specify what should be measured or how that measurement should take place. What it states is that there should be written procedures managing that process – detailing what the process is and how the organisation will control it.
- Identify the risks of implementing a measurement process. How will those risks be overcome? What checks and balances are required for the process?
- Detail and implement the

methodology for identifying the measurement equipment used, and whether it has a conformation.

- Ensure the people using the equipment are certified as competent.
- Where measurements are taken, the procedures and results must be recorded and be available within the company.

As we read in section 8.5, there is a list of criteria the standard is trying to establish – a control process to incorporate. The following is the main criteria for the MMS and help from an internal checklist of what the organisation is measuring:

- What are we trying to measure? There needs to be detailed thought on what and why we are measuring.
- Is the MTE suitable for the measurement?
- How do we record the measurement and distribute the results?
- Environmental conditions impact on results.
- Record the competence of the persons doing the work.
- Determine the metrological conformation.
- Detail the reporting statistical methodology used.

In closing, the standard falls into several blocks:

Making and recording the measurement

- Understanding the individual measurement being made.
- Understanding how the

measurement is recorded – is there a documented procedure?

- Selecting the type of equipment used to make the measurement.
- Understanding how the item is calibrated – in an internal lab or in a 17025 facility. All calibration requires the user to consider uncertainty, traceability and periodicity.
- Statistical method for determining both product and equipment periodicity.

Who can make the measurement

- How is the person making the measurement assessed to be qualified to make that measurement?
- Is the person trained? How is this training recorded? Is the person signing the competence of the individual qualified to sign individuals as qualified?
- Does the person carrying out the individual measurement understand the required process and their part in that process?

Recording the results

- Is there a procedure for making the measurement?
- Does that procedure reference control of equipment and people?
- How are the results recorded and how do they interface with customer needs?
- Control of documented information and future design.

Section 9 is designed to help us understand and evaluate how the MMS works and some of the tools available for incorporating any ongoing and future improvements.

- In 9.1.1, there is a list of things to consider as part of any evaluation. This includes items such as what, when and how.
- In 9.1.2, this is extended to include customers and customer satisfaction. The statement at the end says the organisation shall determine the methods for obtaining, monitoring and reviewing this information. We see from this how important it is to get customer input.

- In 9.2, we see that audits must be planned, and the results recorded.

Note: at the end of 9.2.2, it says: The selection of auditors is based on their level of competence and understanding of measurement processes, including application of measurement uncertainties, use of test equipment and relevant experience. This indicates that auditors must not only be quality auditors, such as those for 9001, but also fully understand metrology.

In section 10, we see improvements. It is a prerequisite for any company choosing to implement this standard to have an ongoing commitment to get better.

The Egyptians in 3000 BC had a gold standard for setting measurement called the cubit. It was the length from elbow to fingertip. The standard altered each time there was a new pharaoh. Nowadays, we base the length of a metre on the distance that light travels in a vacuum in $1/299,792,458$ of a second.

In 10.2, there is the need to set up a non-conformance process: what the non-conformance was and what corrective action has been put in place to deal with consequences of the non-conformity. To do this, work needs to be done on the nature of any non-conformity. The standard requires this to be fully documented and available to interested parties.

Some final thoughts:

The standard is full of notes and three annexes. The three annexes contain information on how to determine issues such as periodicity, uncertainty, calculation of error and pass-fail criteria. The annexes were designed to help personnel such as procurement or production staff, whose day work may not include this type of technical calculation.

Within 8.1.2, under Operational Risk Management, there is the statement:

“When considering risk, organisations may include cybersecurity and counterfeit material issues in their analysis, such as considered in the aerospace and nuclear industries.”

This standard is one of the first to have both counterfeit material and cybersecurity as a consideration in a measurement management system.

From the outset, this standard was written with the aim of guiding an organisation into setting up detailed measurement procedures. As part of that process, it shows a system using measurement equipment and having individuals who are trained, certified and understand the process and their part in that process.

Alistair Norwood is the SME (subject matter expert) in measurement and metrology for Sellafield Ltd and was part of the ISO team who wrote ISO 10012. Alistair is currently managing the ISO group writing the new version of ISO 10007 configuration management. He is chair of BSI SS6, which is responsible for the UK position on statistical procedures for measurement methods and results, and is a member of both the Measurement and the Training SIGs.

Alistair would like to thank David Jones, Head of Site Equipment Services at Sellafield Ltd for encouraging and supporting him in contributing this article.



INTRODUCING ISO 10012

IMPROVING QUALITY, EFFICIENCY AND CUSTOMER FOCUS IN YOUR ORGANISATION

Join the InstMC Measurement SIG and Standards SIG for a webinar exploring how production organisations can benefit from implementing ISO 10012.

KEY ADVANTAGES:



Develop a whole company approach to measurement consistency



Improve customer focus and trust



Reduce costs and manage risk

SESSION INFORMATION:



Date & Time:

5th November 2026, 12.30 PM - 1.30 PM



Speaker:

ALISTAIR NORWOOD, SELLAFIELD LTD



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J.V. PEARCE¹, H. KJELDSSEN², J. NIELSEN², I. MÜLLER³, C. KRAUSE³, G. SUTTON¹, A. FATEEV⁴, A. ANDREU⁵

EMBEDDING SI-TRACEABLE THERMOMETRY IN ADVANCED MANUFACTURING

Towards driftless, in situ temperature measurement and control.

Introduction

Temperature measurement underpins almost every industrial process, directly shaping product quality, energy consumption and environmental impact. In sectors as diverse as metals processing, aerospace manufacturing, energy generation and chemical processing, accurate thermometry is critical for maintaining process control and ensuring compliance with increasingly stringent efficiency and emissions targets. Yet despite its importance, industrial thermometry remains constrained by fundamental limitations. Conventional temperature sensors exhibit calibration drift over time, leading to inaccuracies that compromise both operational efficiency and product consistency. Surface temperature measurements, particularly in harsh or dynamic environments, are especially problematic, while gas-phase thermometry often lacks the precision required for optimal combustion control.

This article presents an overview of a major collaborative research initiative addressing these challenges through the development of embedded, SI-traceable and driftless thermometry solutions in the European Partnership on Metrology project ‘ThermoSI’^[1]. By integrating practical primary thermometry, advanced surface measurement techniques, and artificial intelligence (AI)-driven analysis, the project aims to transform temperature measurement from a periodic calibration exercise into a continuously reliable, in situ capability directly traceable to the SI kelvin.

Industrial need and strategic context

Advanced manufacturing sits at the heart of Europe’s, and the UK’s, industrial strategy, driving competitiveness, sustainability and innovation. However, maintaining leadership in this domain requires significant improvements in process efficiency and measurement reliability. Rising energy costs and global competition have intensified the need for precise control of industrial processes, where even small temperature uncertainties can translate into substantial economic and environmental consequences.

A key barrier to progress is the lack of robust, traceable in-process temperature measurement. Sensors operating in industrial environments are exposed to high temperatures, corrosive atmospheres, radiation and electromagnetic interference, all of which contribute to degradation and calibration drift. Over time, this drift leads to systematic errors that are difficult to detect and correct without interrupting operations.

Surface thermometry presents additional challenges. Thermal imaging techniques depend heavily on accurate knowledge of surface emissivity and environmental reflections, which are often unknown or variable. Contact probes, while widely used, can disturb the measurement itself and are rarely reliable in extreme conditions. Similarly, gas thermometry must evolve towards systems that are inherently traceable, self-validating and capable of operating reliably in situ without frequent recalibration.

Project vision and objectives

The primary goal of the project is to enhance industrial process control by embedding traceable thermometry directly into manufacturing environments. This is achieved through four interconnected technical objectives:

- Quantitative thermal imaging with SI traceability
- Practical primary measurement techniques (i.e. measuring temperature directly without recourse to a temperature scale)
- High-temperature surface thermometry using advanced luminescent ‘phosphor’ coatings
- AI-enabled thermometry for autonomous measurement and control

Together, these innovations aim to deliver temperature measurements with uncertainties below a few degrees Celsius across a wide temperature range, while maintaining traceability either directly to the SI kelvin or via the conventional International Temperature Scale of 1990 (ITS-90).

Advancing thermal imaging

Thermal imaging is widely used for non-contact surface temperature measurement, yet its quantitative application remains limited. The primary challenge lies in accurately accounting for surface emissivity and reflected radiation, both of which depend on the material properties and measurement geometry.

To address this, the project introduces a novel approach based on placing reference artefacts with known temperatures – such as thermographic phosphors – within the field of view of thermal imagers. These artefacts enable real-time correction of measurement errors, effectively anchoring the temperature scale within the image itself.

Extensive characterisation of engineering materials, including steel, aluminium and inconel, has been conducted to determine their spectral and directional emissivity. This data is being incorporated into models that correct for environmental effects and camera non-uniformities. A scene-based correction algorithm

has also been developed, allowing thermal imagers to deliver temperature measurements with uncertainties below 5°C across a wide temperature range.

This represents a significant step towards making thermal imaging a truly quantitative tool for industrial applications.

Driftless thermometry with Johnson noise methods

One of the most transformative aspects of the project is the development of practical primary thermometers based on Johnson noise thermometry (JNT). Unlike conventional sensors, which require periodic calibration, JNT devices measure temperature directly from fundamental physical properties; in this case, the thermal noise voltage generated by electrical resistance.

Because all parameters which change in harsh environments are continuously measured, the temperature is measured absolutely, even as sensor materials degrade ^[2]. This makes JNT particularly attractive for harsh environments such as nuclear reactors and waste processing/storage and high temperature furnaces.

Several JNT architectures are under development, including:

- IJNT, employing high-speed signal processing for enhanced noise detection ^[3]
- DART, combining JNT with resistance thermometry
- CMINT and ULNT – low-cost implementations using off-the-shelf electronic parts.

These systems have already demonstrated impressive performance. For example, DART is designed for uncertainties as low as 10 ppm and has so far achieved 200 ppm, while IJNT has shown resilience to extreme electromagnetic interference. Advanced probe designs

incorporating graphene and platinum-rhodium sensors are being tested at temperatures up to 1200°C, with ongoing efforts to ensure electrical insulation and signal integrity.

The development of robust, deployable JNT systems marks a paradigm shift towards truly driftless thermometry.

Extending phosphor thermometry to extreme temperatures

Thermographic phosphors offer a promising solution for measuring surface temperatures in challenging environments. These materials emit temperature-dependent luminescence when excited by light, enabling non-contact measurement without relying on emissivity assumptions.

Traditionally, phosphor thermometry has been limited to temperatures below 1000°C. This project seeks to extend its applicability to 1250°C through developing new phosphor materials and high-temperature coatings.

Significant progress has been made in identifying suitable phosphors, such as YAG:Dy for intensity-based measurements and YAG:Tb for decay-time analysis. Robust coatings capable of withstanding thermal cycling have been developed, demonstrating stability and reproducibility even above 1100°C.

Custom instrumentation has been built to measure phosphor responses at extreme temperatures, and field trials are underway in aerospace and marine manufacturing environments. These efforts are paving the way for reliable, high-accuracy surface thermometry in processes such as forging, welding and additive manufacturing.

Artificial intelligence and autonomous thermometry

A key enabler of next-generation thermometry is the integration

of AI and machine learning. Many advanced measurement techniques generate complex datasets that are difficult to interpret using conventional algorithms.

One application is the automation of self-validating thermocouples, which incorporate miniature phase-change references to detect and correct calibration drift. Identifying these reference events (i.e. melting plateaus in temperature-time data) within temperature-time data has traditionally required manual intervention. Machine learning models are now being trained to recognise these patterns automatically, enabling real-time recalibration.

AI is also being applied to gas thermometry, particularly in combustion processes. Spectroscopic techniques using infrared absorption or emission spectra can provide detailed temperature profiles but require sophisticated analysis to extract accurate values. By applying machine learning to these datasets, the project aims to achieve temperature measurement uncertainties below 2% in real time.

Additionally, AI-driven interpolation methods are being used to create reference surface temperature standards, enabling accurate calibration across complex geometries.

Industrial impact and applications

The technologies developed in this project have broad applicability across multiple industries. Improved temperature measurement enables tighter process control, reduced energy consumption and lower emissions.

Key application areas include:

- Metals processing, where SI-traceable temperature control is critical for product quality

- Nuclear energy, particularly for long-term monitoring in waste management
- Aerospace and marine manufacturing, where high temperature processes are common and surface temperature measurement is often critical
- Combustion systems, where reliable gas thermometry improves efficiency and reduces pollutants.

Early trials have already demonstrated the feasibility of these approaches in real industrial settings, with ongoing collaborations across the UK and Europe.

The broader impact of improved thermometry extends beyond individual processes. By enhancing energy efficiency across industrial sectors, these technologies contribute to reduced greenhouse gas emissions and improved resource use.

Given that industry accounts for a significant proportion of energy consumption, even modest improvements in measurement uncertainty can yield substantial economic and environmental benefits. Developing new sensor technologies also creates opportunities for innovation and growth within the UK and European manufacturing and instrumentation sectors.

Conclusion

SI-traceable, reliable temperature measurement is a cornerstone of modern industry, yet traditional approaches are increasingly inadequate for the demands of advanced manufacturing. This project demonstrates how a combination of primary thermometry, advanced materials, and AI can overcome longstanding challenges in the field.

By embedding traceable, driftless thermometry directly into industrial processes, it enables a new paradigm of continuous, in situ

measurement and control. The result is not only improved process control and efficiency, but also a stronger foundation for sustainable and competitive manufacturing in the years ahead.

ThermoSI is communicating its progress through publications and project newsletters, including openly accessible technical publications. Information is available on the project website – <https://thermosi.eu> – and the LinkedIn showcase <https://www.linkedin.com/showcase/thermosi-showcase/>.

The project 23IND11 ThermoSI has received funding from the European Partnership on Metrology, co-financed from the European Union's Horizon Europe research and innovation programme and by the Participating States.

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[3] www.johnson-noise-thermometer.com

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Q&A

Jeremy Stern

Under the spotlight in this edition is **Jeremy Stern**, Board Level Quality & Operations Transformation Consultant and Chair of the InstMC Measurement SIG. Jeremy also chairs the InstMC Measured Futures Challenge Steering Group. Find out more about his involvement in this new InstMC competition and his thoughts on how the UK can establish itself as a global hub of engineering innovation.



WHAT WAS THE ROOT OF YOUR INTEREST IN ENGINEERING?

My fascination with engineering stems from playing with Lego Technic as a child, which gave me a fundamental curiosity about how complex mechanisms function. Over a 28-year career spanning the automotive, aerospace/defence, and battery manufacturing sectors, this early interest evolved into a dedication to precision, quality assurance and operational excellence. Leading large-scale engineering transformations reinforced my passion for bridging technical engineering challenges with high-level corporate strategy. For me, engineering has never just been about solving an isolated technical problem; it is about establishing robust, repeatable frameworks that guarantee quality and reliability at scale.

WHAT IS YOUR VISION OF ENGINEERING IN BRITAIN FOR THE NEXT TEN YEARS?

The next decade presents a pivotal transformation for British engineering, anchored by autonomous systems, artificial intelligence, competition from overseas markets and advanced digital manufacturing. My vision is for the UK to cement its status as a premium global hub for engineering innovation and rigorous quality standards.

To achieve this, British engineering must lead the integration of software and hardware technologies. The deployment of advanced automated technologies requires not just technical innovation, but rigorous compliance frameworks, type-approval pathways, and bulletproof quality management systems. By pairing

our traditional manufacturing heritage with cutting-edge digital and sustainable technologies, the UK can champion a new era of high-value, high-precision engineering that competes decisively on the world stage.

WHAT SHOULD THE UK GOVERNMENT DO TO ADDRESS THE SHORTAGE OF UK ENGINEERS?

Addressing the engineering skills deficit requires a synchronised, long-term strategy between government, academia and industry. First, we must reform and modernise technical education. The government should incentivise deep, multi-year apprenticeships and graduate pathways that mirror the fast-evolving demands of modern industry – particularly in high-growth fields. Second, we need to bridge the gap between technical disciplines and commercial leadership. Engineering should be promoted not merely as a technical trade, but as a prestigious, high-impact career path. Finally, streamlining collaboration between professional bodies such as the InstMC and local industries can create targeted training hubs. By reducing the administrative burdens on engineering firms investing in upskilling, the government, companies and professional bodies can encourage a self-sustaining ecosystem that attracts and retains the brightest technical minds.

One of the recent initiatives to come out of the InstMC 2024 Strategy Plan is the InstMC Measured Futures Challenge – a new competition inviting technology and engineering students to design an innovative

idea, system or prototype using measurement, sensing, data or control to address a real-world problem.

I am delighted to be chairing the steering group responsible for defining the scope and purpose of the challenge. Over the past six months, the committee has established competition guidelines and a submission process, set criteria for judging and created examples and ideas to inspire entrants, ready for the launch in September.

This exciting new challenge addresses two of the InstMC Strategy objectives – ‘Improving and strengthening relations with academia and students’ and ‘Raising the profile of the Institute and growing its influence’. We hope this will give participants the opportunity to solve real engineering and data-driven challenges, develop practical skills in measurement and control, collaborate with industry professionals, peers and mentors, and strengthen their CV with a respected engineering challenge.

WHAT DO YOU DO IN YOUR FREE TIME TO RELAX?

I enjoy hobbies that still allow for a high degree of precision, tech engagement and focus. I am an enthusiast of aerial cinematography and love to fly my drone, capturing interesting and unique perspectives wherever I go. If I’m not doing that, I can be found cross-country running and mountain biking. I also enjoy spending time with my family, dogs and horses as well as working as a volunteer Trustee Board member of a local charity helping young people with their mental health.

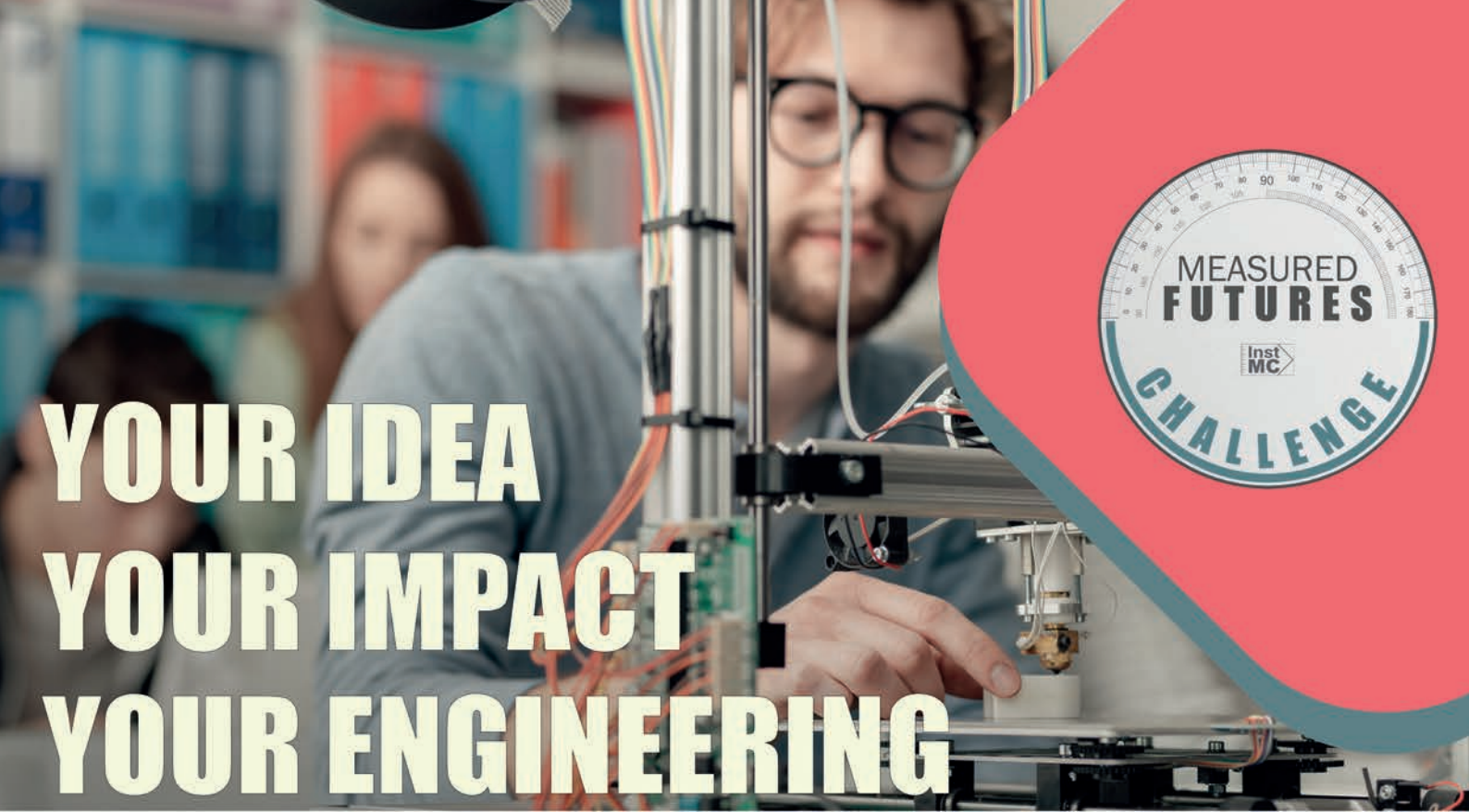
GIVEN ONE WISH WHAT WOULD THAT BE?

My professional wish would be for a renewed, nationwide commitment to ‘precision and quality first’ across all tiers of UK manufacturing and infrastructure development. In a rapidly accelerating technological landscape, shortcuts are often tempting, but lasting success is built on robust frameworks, meticulous standards and engineering integrity. Developing a culture where premium quality is non-negotiable will ensure British engineering remains a global benchmark for generations to come.



First, we must reform and modernise technical education. The government should incentivise deep, multi-year apprenticeships and graduate pathways that mirror the fast-evolving demands of modern industry – particularly in high-growth fields.





YOUR IDEA YOUR IMPACT YOUR ENGINEERING



What's Involved?

- Take on the **Measured Futures Challenge** and create an innovative solution to a real problem
- Think smart systems, better measurement, and practical engineering with purpose
- Whether you're working solo or as a team, this is your chance to build something original, evidence-based and future-focused

What's in it for you?

- £500 cash prize
- Boost your CV
- Stand out to employers
- Build real-world skills

Scan QR Code for
full details



www.instmc.org

For further details and to download the Challenge pack, please visit:
https://www.instmc.org/measured_futures/challenge.aspx

INSTMC LAUNCHES MEASURED FUTURES CHALLENGE

InstMC is delighted to announce the launch of a national creative challenge aimed at engineering students and apprentices.

We are inviting participants to design an innovative idea, system or prototype using measurement, sensing, data or control to solve a real-world problem.

Using Lord Kelvin's famously paraphrased quote "If you cannot measure it, you cannot improve it" as inspiration, students should explore how better measurement can lead to better outcomes.

Getting involved

Registration will open on 26 September 2026 for entrants to download the pack containing the guidelines, rules and regulations. Ideas and prototypes, in the form of a PDF (max. 3000 words) or MP4 video (max. 5 minutes) can be submitted from 26 October until closing on 25 January 2027.

The Measured Futures Challenge is open to either individuals or a team with a maximum of three participants. Entrants must be 18+ and in either further or higher education, an apprenticeship or an equivalent technical role.

Ideas for inspiration

- It's 40 years since the



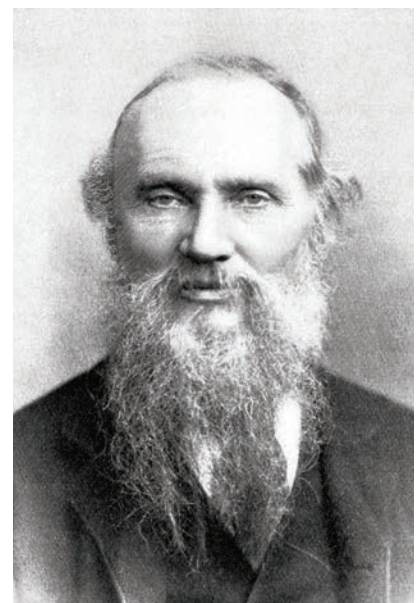
Chernobyl disaster. InstMC Fellow David Stupples helped design the sarcophagus. If Chernobyl happened today with our emerging technologies, what would you do?

- We are one solar storm away from technology meltdown. Design an early warning system that can measure the intensity of solar flares.
- The world has significant unused computing power sitting idle on most desks, consuming vast amounts of electricity every day. Design a way to leverage that power for the benefit of humanity.
- Energy prices in the UK are dictated by the most expensive energy on stream at any given point in time (typically hydrocarbon-derived energy). Define an alternative measurement approach to cost energy based on the most environmentally beneficial source.
- AI consumes significant single-use water to cool the hardware that powers it. Design a new approach to save the maximum amount of freshwater usage.

For further information and full details on how to enter the Measured Futures Challenge, visit the InstMC website at www.instmc.org/measured_futures/challenge.aspx

"I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind."

Lord Kelvin



BY BILLY MILLIGAN FINSTMC, DIRECTOR OF INSTRUMENTATION AND CONTROL, CHART INDUSTRIES

MY JOURNEY TO INSTMC FELLOWSHIP

When I first joined the Institute of Measurement and Control, fellowship felt like something that belonged to people much further down the road than me. It was a designation I associated with senior engineers, technical authorities, academics, committee chairs and people who had made a sustained contribution to the profession.

I did not necessarily see it as a destination for someone whose journey had started on the tools, serving an electrical apprenticeship in Ayrshire, building motor control centres, testing panels, and learning the practical realities of instrumentation,



control and automation from the workshop floor upwards. Looking back now, that starting point has probably been one of the most important parts of the journey.

My route into engineering was not a single leap into a graduate role. It was a gradual progression through craft, design, commissioning, site engineering, project delivery, research, technical leadership and ultimately strategic responsibility for instrumentation and control across a global engineering organisation. I began my career at Aird Walker & Ralston, building and commissioning low voltage motor control switchgear, before moving into a design role producing schematics and PLC and

HMI code. That early exposure to both the physical build and the design intent gave me a grounding that I still rely on today. It taught me that good engineering is not just about producing drawings or writing documents. It is about understanding how something will be built, tested, maintained and operated by real people in real conditions.

From there, my career moved through site engineering and industrial automation roles in sectors including refractory manufacturing, water and wastewater infrastructure, oil and gas, bulk solids handling, rotating equipment and cryogenic applications. Each step brought a wider appreciation of how measurement and control sits at the heart of safe, reliable and efficient industrial operations. Whether it was renewing SCADA systems, designing plant modifications at Grangemouth, or developing control systems for compressor packages destined for hazardous and remote environments, the common thread was always the same: instrumentation and control is where theory, plant behaviour, safety and operational judgement all meet.

Alongside work, I followed the part-time academic route through HNCs, a BEng (Hons), an MSc in Applied Instrumentation and Control and eventually a PhD at Glasgow Caledonian University. My doctoral work focused on the design of a control system for the mitigation of vibration in

variable speed screw compressor systems. It was not an abstract academic exercise. The system was intended for demanding industrial service, including natural gas compression in the Sahara Desert, where robustness and practical application mattered every bit as much as the underlying control theory. That combination of applied research and industrial reality has shaped much of my professional outlook. I have always been most interested in engineering that can survive contact with the real world.

Over the years, I have had the opportunity to publish and present work on variable speed compressors, machine health monitoring, lubrication oil pressure control, and the integration of control systems into critical rotating equipment. One of the papers produced during my PhD, on machine health monitoring for upstream oil and gas dry screw compressor drive trains, went on to be downloaded more than 3,000 times. For me, that was an important reminder that sharing engineering knowledge matters. We often solve difficult problems inside companies and project teams, but the profession only moves forward when some of that learning is captured, tested, challenged and made available to others.

My time at Howden has been central to my development. I joined as Lead Electrical and Control Engineer, working across the full lifecycle of compressor package design, from P&IDs and detailed electrical schematics through to component selection, procurement, factory acceptance testing and international commissioning. Later, I moved into digitalisation and led the technical development of Howden Uptime, an industrial internet of things platform designed to remotely monitor the health and performance of fans and compressors around the world.

That work grew from early pilots into a global platform, supported by teams covering data analytics, software development and hardware connectivity. It also showed me that instrumentation and control is no longer limited to the field device, the PLC or the HMI. Increasingly, it extends into secure connectivity, cloud platforms, digital twins, analytics and predictive maintenance.

In my current role as Director of Instrumentation and Control, my focus has shifted again. The challenge now is not only to solve individual technical problems, but to build capability across a global community of electrical, control and instrumentation engineers. That includes harmonising EC&I project documentation, developing automation tools, setting standards for PLC coding and HMI graphics, and ensuring teams across the organisation continue to deliver safe, reliable and robust control systems in some of the most onerous applications on the planet. It is a role that carries technical responsibility, but also a responsibility to set the tone for professionalism, competence, continuous development and engineering judgement.

The Institute has been a constant presence throughout that journey. I have valued the InstMC not just as a professional body, but as a community of people who understand the particular importance of measurement, control and automation. The Institute describes fellowship as recognition for those who have demonstrated significant professional experience at senior level, leadership, decision making, individual judgement, structured CPD, active engagement in developing others, and a significant contribution to measurement, control, automation or associated technologies. That description resonated with me because it captures the breadth

of what our profession requires. Technical ability matters, but so do judgement, leadership, service and the willingness to help others develop.

Serving the Institute also helped me understand that professional recognition is not only about personal achievement. My involvement with InstMC governance, professional development activities and wider engagement with academic and industry partners has reinforced the importance of giving something back. I have been fortunate to work with Glasgow Caledonian University, City St George's, University of London, and the Royal Academy of Engineering, including a long-running academic and industrial partnership that was recognised through The Cornish Award. Those experiences have reminded me that the health of our profession depends on strong links between industry, academia, professional bodies and the next generation of engineers.

Achieving fellowship is therefore not something I see as a finish line. It is a marker along the way, and a prompt to continue contributing. It recognises a journey from apprenticeship to technical leadership, but it also brings an obligation to remain active, useful and visible within the profession. For me, fellowship is about continuing to support high standards in instrumentation and control, encouraging engineers to pursue professional registration, sharing lessons learned from industry, and helping ensure measurement and control remains properly recognised as a vital engineering discipline.

If you are interested in pursuing fellowship through the InstMC, visit the website to find out if you meet the qualifying conditions and for information on how to begin the process <https://www.instmc.org/membership/fellow.aspx>.

CONGRATULATIONS TO OUR 2026 INSTMC AWARD WINNERS



We had a fantastic night on Wednesday 1 July, honouring our 2026 InstMC Award winners. Despite the balmy evening and lure of a key England World Cup match taking place simultaneously, around 45 members and guests attended The Royal Institution to celebrate their achievements. Awards were presented by InstMC President Professor Andy Augousti and Prizes & Awards Committee Chair Professor Ken Grattan.

Winner of the Sir George Thomson Award, Professor Dame Julia King, Baroness Brown of Cambridge, delivered the guest lecture 'The Challenges of Climate Change'. It was a fascinating look at how daily life is set to be affected by changing weather and how necessary adaptations, along with cutting emissions, depend

on stronger monitoring and evaluation – which in turn create new challenges for measurement and control.



Professor Dame Julia King, Baroness Brown of Cambridge receiving the Sir George Thomson Award from InstMC President, Andy Augousti

We rounded off the evening with a wine and canapé reception, catching up with friends and colleagues. Huge thanks to all who attended the event and congratulations to our award winners:

Professor Dame Julia King, Baroness Brown of Cambridge, Professor Simon Tait, Dr Jack-James Marlow, Dr Tongyu Liu, Dr Ya Nong Ning, Professor Sheila Smith, Mr Duncan Hutton and Mr Christopher Smeeth.



Dr Jack-James Marlow, winner of the Honeywell International Award



Dr Ya Nong Ning, winner of the Cornish Award



Professor Sheila Smith receiving the InstMC Honorary Fellowship

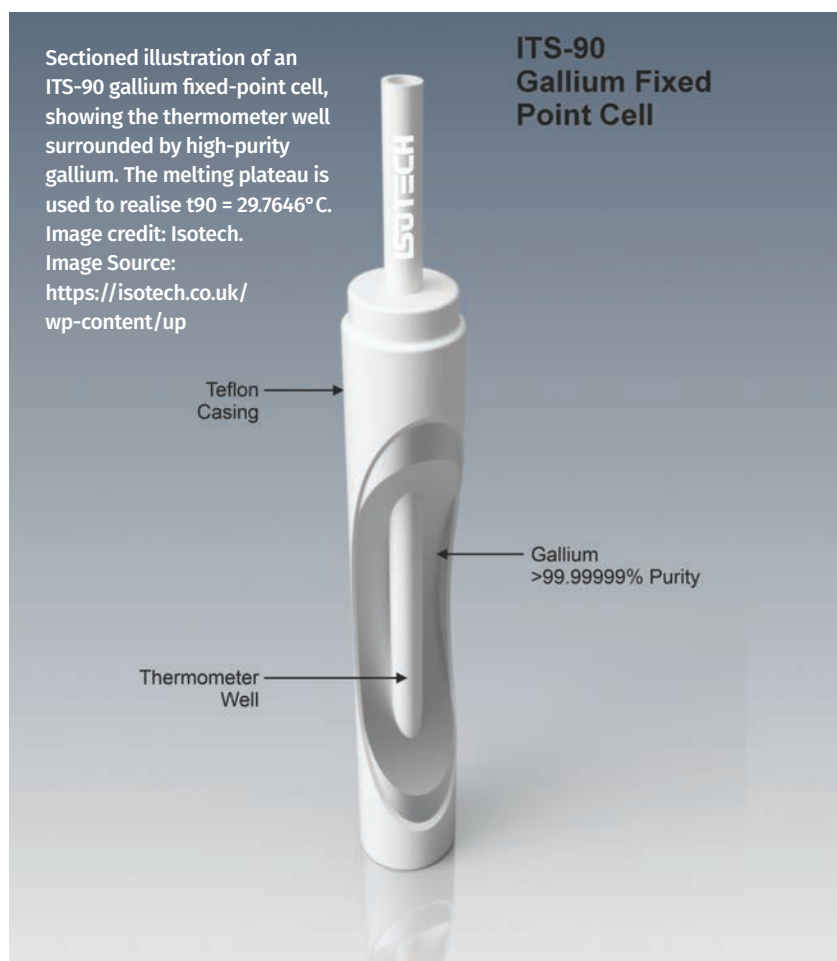
We look forward to seeing you next year!



BY DAVID SOUTHWORTH, TEMPERATURE SPECIALIST, ISOTHERMAL TECHNOLOGY LTD (ISOTECH)

ITS-90 AFTER THE 2019 KELVIN: WHY TEMPERATURE CALIBRATION STILL RUNS ON A 1990 SCALE

A gallium cell in a calibration laboratory melts at 29.7646 °C. That number is fixed by ITS-90. The cell doesn't know it. It reproduces one physical state – pure gallium passing between solid and liquid – and it will go on reproducing that same state whatever number we write against it.



For 36 years, that convention – the International Temperature Scale of 1990 – has stayed close enough to the underlying physics that most users have never had to tell the two apart. ITS-90 gives laboratories a common, repeatable way to realise and pass on temperature, and it does the job well.

But two things have shifted. The kelvin was redefined in 2019, and measurement has improved to the point where we can now see, clearly, where ITS-90 differs from the quantity it was built to approximate. The question now is not whether ITS-90 is right. It is whether a scale based on what we knew in 1990 should be revised in light of what we can measure now, and whether the gain would be worth the disruption.

A practical scale, not the real thing

Thermodynamic temperature – written T – is the real physical quantity, the temperature of the gas laws and of Planck's law. ITS-90 does not give us T directly. It gives a close practical stand-in, written T_{90} , realised through a set of fixed points and defined equations, using whichever instrument suits the range: gas and vapour-pressure thermometry at the lowest temperatures, a platinum resistance thermometer through the middle, and radiation thermometry above the silver point. Each fixed point was assigned its value from the best data available at that time.

The purpose of such a scale was not to be 'perfect', but repeatable. A laboratory in one country and a laboratory in another, following the same procedure, get the same answer. This has worked well, and it is why ITS-90 has lasted. Much of the current debate turns on the gap between a scale that is repeatable and one that keeps pace with current knowledge.

What T , t , T_{90} and t_{90} mean

T is thermodynamic temperature, the true physical quantity, in kelvin (K).

t is the same temperature in degrees Celsius: $t = T - 273.15$.

T_{90} is the temperature given by the ITS-90 scale, in kelvin – a practical approximation to T .

t_{90} is the ITS-90 temperature in degrees Celsius: $t_{90} = T_{90} - 273.15$.

In short: T is the temperature physics defines; T_{90} is the temperature the ITS-90 delivers. Close, but not identical.

The kelvin changed; the scale did not

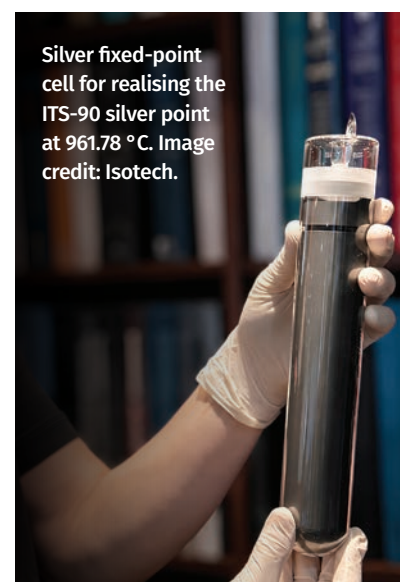


A water triple-point cell. Before the 2019 revision of the SI, the kelvin was defined through the triple point of water. It remains a defining fixed point of ITS-90, with $T_{90} = 273.16$ K and $t_{90} = 0.01$ °C. Image credit: Isotech.

Until 2019, the kelvin was tied to a single state: the triple point of water. That served well, but it was not a perfect foundation for a unit that has to cover everything from below 1 K to thousands of degrees. The 2019 revision of the SI cut that tie and fixed the kelvin to the Boltzmann constant instead – the constant that links temperature to energy.

The change was deliberately made invisible. As one light-hearted remark at the time had it, the job had been done so well that nobody would notice. The value of the constant was chosen for continuity, the ITS-90 fixed points kept their assigned numbers, and no thermometer needed recalibrating because of it. But it took a decade of careful experiment to pin the Boltzmann constant down well enough to fix it. Acoustic gas thermometry in argon was one of the routes that did so, supporting a value of the constant good to about a part in a million.

The difference is real, and mostly tiny



Silver fixed-point cell for realising the ITS-90 silver point at 961.78 °C. Image credit: Isotech.

For almost all measurements, the gap between T and T_{90} doesn't matter. It's far smaller than sensor drift, poor immersion, thermal gradients and other ordinary sources of uncertainty. But it isn't zero, and modern primary thermometry has now mapped it in fine detail. The difference is no more than a few millikelvins through the everyday range, and essentially very small, but not zero at the triple point of water. But it grows towards the extremes: by the silver and copper points, used in high-temperature work, it reaches approximately millikelvins, or 0.05 °C. It is real, it

has structure, and it reflects the fact that ITS-90 rests on pre-1990 data. The international consensus values for that difference were revised as recently as 2022.

None of this means the scale has failed. It is doing exactly what a 36-year-old approximation should be expected to do.

A second route to the kelvin

What makes this more than history is that there is now a second way to reach the kelvin. Primary thermometry measures temperature straight from physics, rather than by comparison, with a thermometer calibrated on the ITS-90 scale. Acoustic gas thermometry, Johnson noise thermometry and primary radiation thermometry are all examples. With the kelvin now defined through a constant, these methods can in principle deliver thermodynamic temperature directly. The official framework for the unit, its *mise en pratique*, now recognises both ways of realising the kelvin: directly by primary thermometry, or through the defined scales such as ITS-90. Coexistence is not an accident; it is built into the system.

The people doing this work are realistic about the pace. For the next few years, routine traceability stays with ITS-90. Over the coming decade, primary methods may take over parts of the job inside national measurement institutes, particularly at very high and very low temperatures. Wider use is a prospect for the 2030s, and further out, self-validating sensors that carry their own traceability may begin to bypass the calibration chain altogether. This is a slow, layered shift, not an imminent one.

What your certificate actually reports

It helps to be clear about something often blurred. A standard platinum resistance thermometer is calibrated at ITS-90 fixed points using the ITS-90

equations. Its certificate usually reports t_{90} . There is no separate thermodynamic calibration hiding alongside it, because the SPRT is the instrument that realises the practical scale. If you hold an SPRT certificate, you hold t_{90} , and for the foreseeable future you always will.

The radiation thermometer shows the real issue more clearly, because the same instrument can be calibrated two ways. Calibrated on ITS-90, it reports t_{90} . Calibrated instead against high-temperature fixed points whose thermodynamic temperatures have been measured directly, it reports T . One thermometer, two certificates, two different quantities, both correctly traceable to the SI. And this is the range where it matters, because the difference between T and T_{90} grows with temperature. Near the top of the radiation range it is no longer negligible. A high-temperature certificate that does not say which route was used can carry a difference comparable to, or larger than, the calibration uncertainty printed on it. The problem is not that one route is wrong. It's that the distinction can go unstated.

Is anyone actually asking for it?

These questions were aired directly at the Royal Society Theo Murphy meeting The redefined kelvin: progress and prospects, held 24 to 25 February 2025, which brought the measurement institutes and the wider community together. Two points from that discussion are worth keeping in view.

The first is demand. It's one thing for thermodynamic temperature to be available; it's another for customers to want it. A fair question raised was whether anyone has asked the institutes for certificates in thermodynamic temperature, or whether the push is coming from what the science can now do rather than from what

users need. If the demand is not there, the case for disturbing a working scale is weak.

The second is whether calibration away from the ITS-90 fixed points will ever be routine. An assessment presented at the meeting concluded that direct realisation makes most sense in a narrow set of cases, such as long missions or measurements in remote or hazardous places the normal calibration chain cannot reach. It earns its place where ITS-90 cannot follow, not as a general replacement. Running through it all was a recognition that change here moves, as one participant put it, at a glacial pace. This means there is time to get the decision right rather than rush it.

What a change would really cost

The obvious response to the known differences would be to revise the assigned values of the ITS-90 fixed points. It sounds like housekeeping. It isn't. The cells would still realise the same physical states; only the numbers attached to them would change, and that change would ripple through everything built on the old numbers: written standards, instrument firmware and software, existing certificates, and the historical records that let a measurement made today be compared with one made years ago. We have seen this before. The move from the previous scale to ITS-90 was justified, and it still took years to work through. A scale change is a documentary and commercial undertaking as much as a scientific one, and the disruption is real whether the numbers move by much or little.

A short history of temperature scales

1927

International Temperature Scale (ITS-27) – the first

1948

International Temperature Scale (ITS-48) – text revised in 1960 as IPTS-48

1968

International Practical Temperature Scale (IPTS-68)

1990

International Temperature Scale of 1990 (ITS-90), in force today

2000

Provisional Low Temperature Scale (PLTS-2000), for temperatures below 1 K

2019

The kelvin redefined through the Boltzmann constant – a new definition of the unit, not a new scale

Good enough, and who pays for better?

There is a plainer view that deserves stating. ITS-90 has been the working scale for more than three decades, and for the great majority of measurement it is already far better than the process around it requires. The limiting error in industrial work is almost never the gap between T and T_{90} ; it is drift, immersion, installation and the process itself. By the only test most users care about, the scale is good enough and has been for a generation.

The earlier change of scale went ahead because the science was compelling and the benefit reached the people who needed it. The honest question is whether both still hold. Who is asking for the improvement, and would the benefit to them justify the cost to everyone else – a cost that falls on the whole community and not only on the specialists who would gain? Better science, on its own, is

not reason enough to spend it.

Where this leaves us

The likely future is not a clean replacement but a quiet coexistence. ITS-90 stays the working basis for routine calibration. Primary thermometry spreads first through the measurement institutes and special cases, then slowly outward. The two already run side by side.

That is why the real risk is not error but confusion. Most users will never need to consider the difference between T and T_{90} , and most will never need to understand it. Where reliable published values of $T - T_{90}$ are available, the two quantities can be interconverted, allowing a thermodynamic temperature to be obtained from a reported ITS-90 temperature, or vice versa. The danger is therefore not that the two systems are incompatible, but that two numbers, both correct and both traceable, may quietly disagree while everyone assumes they mean the same thing.

The way to prevent that is not to teach every user thermodynamic temperature. It is to put the responsibility for clarity on whoever issues the number. A certificate should say, in plain words, which quantity it reports. A manufacturer should say which scale an instrument works to. A laboratory should be clear about what it measured and, where a conversion has been applied, how that conversion was made.

The clarity is what matters. If the system can stay clear enough that someone who has never heard of thermodynamic temperature is never misled by it, the present coexistence will serve us well for years yet. If it can't, the case for a single new scale – one number with one meaning – becomes harder to resist. Which is the real question now: not is the ITS-90 wrong – because it isn't – but do we need a new scale?

Further reading

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Acknowledgement

AI tools were used to assist with research and language refinement. All technical statements, interpretations and conclusions were reviewed by the author, who remains responsible for the final content.

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Precision is a coffee-table style quarterly magazine exploring the world of engineering, with a focus on measurement, control and automation.

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We are always on the lookout for fresh exciting content, so if you would like to contribute an article, please email us with your ideas or finished article of approximately 1000 words.

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PRECISION MAGAZINE

FOCUS ON A SIG MEASUREMENT

The Measurement Special Interest Group brings together those who believe in the importance of measurement to UK and international trade and commerce. The Group aims to raise awareness in both industrial settings and in individual careers.

The past year has been a tough one in terms of making a difference, with time available from Group members dropping to a low. A huge thank you to those who responded to our plea for help. We had a fantastic response, and many of you formed the core team to prepare a series of four interconnected webinars aimed at promoting the intrinsic role of reliable measurement within the oil and gas industry. To anyone who was unable to join this team, thank you, too, for your enthusiasm. We hope to create an activity you can get involved in after the webinars are delivered.

The webinar series is titled 'Measurement in the Real World:

“The webinar series will feature plenty of discussion time, and take-home reading for the audience to look deeper at things that matter most to them. It will run on Wednesdays, 2–3pm, from 7 October. If you would like to know more, to share the details with your local universities, or to support the discussion in the breakout rooms, please get in touch.”

What Happens When Things Go Wrong?’ The intended audience is university students who have an interest in the sciences/engineering and will be soon looking for jobs or graduate schemes. The series will take them through a journey from

choosing the right tool to how that tool can operate at its best and what happens when things go wrong, to how measurement has featured in the careers of distinguished and mid-career individuals. (I hold back from calling them metrologists, as measurement is not often the focus of a career.)

The webinar series will feature plenty of discussion time, and take-home reading for the audience to look deeper at things that matter most to them. It will run on Wednesdays, 2–3pm, from 7 October. If you would like to know more, to share the details with your local universities, or to support the discussion in the breakout rooms, please do get in touch.

Lastly, a note that other activities are developing in the background too. Information cascades with the launch of updated international standards and overcoming the missed opportunities surrounding technology development (which might meet high-demand industrial applications but miss the mark for application into highly regulated industries) where the benefits of implementation would also be crucial. If you would like to support any of these activities, or have experience you could add to the Group, it would be great to hear from you.

**Claire Elliott, Deputy Chair and
Jeremy Stern, Chair**

[measurement.sig@members-
instmc.org](mailto:measurement.sig@members-instmc.org)



INSTMC SPONSORS AND ATTENDS DRIVES + CONTROLS 2026

InstMC was pleased to be invited to the 2026 Drives + Controls Exhibition as a new show partner and exhibitor. InstMC staff hosted a stand at the exhibition, which formed part of Smart Manufacturing Week at the NEC Birmingham on 3 and 4 June, a standout event in the UK's industrial calendar,

bringing together innovation, collaboration and cutting-edge technology under one roof.

It was a great opportunity to meet members and explore how we can continue to support their evolving needs. We also enjoyed meeting many new contacts, sharing insight and talking all things InstMC.

The event itself was buzzing with innovation. From advanced automation solutions and robotics to smart data systems and Industry 4.0 technologies,

there was no shortage of inspiration. It was fascinating to see how rapidly the manufacturing landscape is developing and how businesses are embracing smarter, more efficient processes.

A highlight for us was coming face to face with a true icon: Sir Killalot from Robot Wars! For anyone who grew up watching the show, Sir Killalot is towering, imposing, and every bit as impressive as on screen. It was a surreal moment, which brought a wave of nostalgia.

A huge thank you to everyone who took the time to visit our stand – whether you're a long-standing member or a brand-new contact.

We're already looking forward to next year's event!

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DRIVES+CONTROLS
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**Inst
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MANUFACTURER



SPOTLIGHT ON STAFF: RUTH HENDERSON

How long have you been with the InstMC?

I am writing this on my one-year anniversary – and what a year it's been!

What is your background?

My background is in computing. I have a BSc in Computer Science from Bournemouth University, and most of my career has been in this field.

My first role in membership was for Nominet – the company responsible for .co.uk. My first venture outside of the computing sector was a membership role supporting chiropractors. In my younger years, I trained as a massage therapist, so it was interesting how it overlapped.

Working with engineers feels familiar in some ways, as there are plenty of similarities with the computing profession. That said, it has also been a steep learning curve, which I've thoroughly enjoyed.

What is your role at the InstMC?

Membership & Registration Manager

Can you describe a typical working day?

My typical working day starts at around 8:45am, after the school drop-offs are completed. Finally, I get to sit down!

The first task of the day is logging in, checking emails, catching up with colleagues and making sure everything is in place for the day ahead.

10am is coffee time. This may be my favourite part of the day!

Refuelled and freshly caffeinated,

I check the progress of our professional registration applications. This might involve following up with applicants or assessors, reviewing returned paperwork, or moving applications through the next stage of the process.

I usually take lunch around midday and go for a run or tackle jobs around the house that are much easier to do without two children in tow!

The afternoon is spent making sure registrations are up to date and, once that's under control, progressing my project work.

At 3pm, it's time for a well-earned cup of tea and a custard cream. There isn't a better biscuit. They certainly helped me through the lockdown years with newborns!

I finish work at around 4:45pm, collect my daughters from school, and then my second, unpaid, job begins.

What do you bring to the team?

Suggestions on where to have lunch on office days in London. Growing up in the Cotswolds, I didn't have quite the same choice of cuisine on my doorstep. I love the fact that almost every type of food imaginable is just a short walk away. I take my lunchtime research responsibilities very seriously!

What do you like best about working for the InstMC?

The flexibility of the role is fantastic and allows me to maintain a genuine work-life balance.

I've also really enjoyed getting to know our volunteers over the



past year. They are incredibly dedicated, and the Institute simply wouldn't be where it is today without their commitment and support.

What do you do to unwind, once your working day is over?

Unwinding with a four and a six year old happens after they are in bed!

I enjoy running (the further the better), gardening, crocheting toys for my daughters that they never play with, and cross-stitching projects that end up taking up space in my house and gathering dust.

Honestly, if it's something your grandma enjoys, chances are I'll enjoy it too.

Can you tell us a fun fact about yourself?

I have two Guinness World Records.

The first is for the largest gathering of people on space hoppers in one location.

The second, and the one I'm the most proud of, is being one of the 59,830 finishers of the 2026 London Marathon, which set a new world record for the largest number of marathon finishers.

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