

PRESS RELEASE

1 August 2026

Supporting Emerging Technologies and European Institutes in Primary Temperature Metrology

An International Consortium will work on the development of new standards and guidelines to expand access to accurate temperature measurements

Accurate temperature measurements are vital across modern life, from industrial thermometry to environmental monitoring. Since 2019, the unit for temperature in the SI (International System of Units), the kelvin, has been defined in terms of the fundamental Boltzmann constant. This redefinition has driven the development of new, ground-breaking approaches to realize and disseminate **thermodynamic temperature**.

Projects in the framework of the European Association of National Metrology Institutes (EURAMET, NMIs) have led significant research into primary thermometry techniques and expanded Europe's temperature metrology infrastructure over wider temperature ranges. Primary thermometry in the 4 K to 300 K (-269 °C to 27 °C) range, directly relevant to key fields including **quantum technology**, **health** and **energy**, has been addressed by projects like SIB01 InK, 18SIB02 Real-K, 22IEM02 DireK-T and 23FUN01 PhoQuS-T to gradually **implement, realize** and **disseminate** the new kelvin. However, traceable dissemination of the kelvin also requires robust secondary thermometry in this range, which is not yet well supported, e.g., through adequate transfer standards.

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The project 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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Addressing this main issue, a total of 13 research institutes (11 NMIs and 2 Universities) from 11 different countries joined forces to form the **Setup-T Consortium** (*Supporting emerging technology uptake for thermodynamic temperature dissemination*) in a new project coordinated by INRiM, the National Metrology Institute of Italy. The project 25RPT02 Setup-T 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. This project will improve the dissemination of the kelvin by **improving thermometry expertise at emerging NMIs**. A selection of thermometers (including capsule-type resistance thermometers and thin-film sensors) will be evaluated to determine their suitability as transfer standards in the 4 K to 300 K range. Time and cost-effective calibration procedures for these thermometers will also be defined. The selected thermometers and new calibrations will then be evaluated by inter-laboratory comparisons between participants, and protocols and guidelines for the dissemination of thermodynamic temperature will be produced and made available to end-users.

The project's work will improve access to accurate, traceable temperature measurements across Europe which in turn will improve thermometry applications, reducing waste from industry, improving healthcare and enabling vital climate monitoring.

THE PROJECT

Full name	Supporting emerging technology uptake for thermodynamic temperature dissemination
Start date	1st August 2026
Duration	3 years

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Budget 0,887 M €

Project number 25RPT02

Coordinator Dr. Dario Imbraguglio – INRiM

Website setup-t.inrim.it

PROJECT PARTNERS

Belgium

- Federale Overheidsdienst Economie, KMO, Middenstand en Energie – SMD

Czechia

- Český Metrologický Institut – CMI

Germany

- Physikalisch-Technische Bundesanstalt – PTB
- Humboldt-Universität zu Berlin – UBER

Italy

- Istituto Nazionale di Ricerca Metrologica – INRiM

Poland

- Instytut Niskich Temperatur i Badań Strukturalnych im. Włodzimierza Trzebiatowskiego Polskiej Akademii Nauk – INTiBS

Slovakia

- Slovenský Metrologický Ústav – SMU

South Korea

- Korea Research Institute of Standards and Science – KRISS

Spain

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- Centro Español de Metrología – CEM

Türkiye

- Türkiye Bilimsel ve Teknolojik Araştırma Kurumu – TÜBİTAK

United Kingdom

- National Physical Laboratory – NPL
- The University of Manchester – UoM

China

- National Institute of Metrology – NIM

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