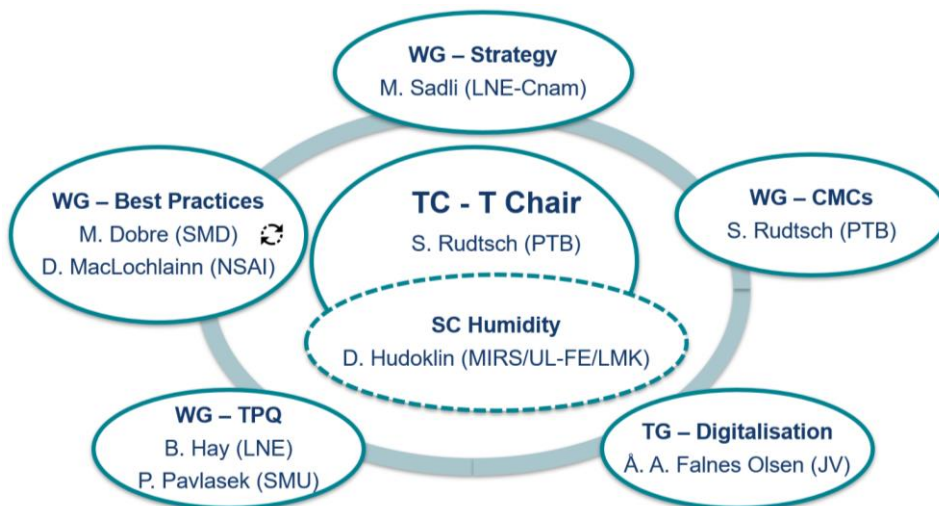


General Aspects

The Technical Committee for Thermometry (TC-T) is structured in one Sub-Committee for Humidity (SC-H), four Working Groups (WG) and one task group (TG). The SC, the WGs and the TC-T chair develop and coordinate the activities of the TC-T between plenary meetings. The Sub-Committee Humidity is concerned with all issues of measurement of humidity and moisture, as well as with standards and references necessary for developing the metrology in the field.

The working groups are dealing with the TC general strategy (Strategy WG), capacity building and knowledge transfer (Best Practice WG), CMC evaluation (CMC Review WG) and Thermophysical Quantities of Materials (TPQ WG). After many years of successful work Miruna Dobre (SMD) stepped down as the chair of the Best Practice WG. Dubhaltach MacLochlainn (NSAI NML) was elected as the new Chair of the BP-WG. The Task Group Digitalisation (TG-DIG) was founded in 2021 and is responsible for all issues of digitalisation in the areas of thermometry, moisture, humidity and the measurement of thermophysical properties. The TG-DIG is chaired by Åge Andreas Falnes Olsen (JV, Norway). The chair of the TC-T is also the chair of the CMC Review WG. Due to the many responsibilities of a TC Chair, it has proven successful in the TC-T that future candidates for the succession of the TC-T Chair first lead the Strategy WG in order to become more familiar with the processes and to facilitate the subsequent practice. During the TC-T meeting in 2022 the WG-Strategy appointed a new chair, Mohamed Sadli (LNE-CNAM, France), to replace Steffen Rudtsch, TC-T chair from May 2022. The new chair of the Strategy WG was approved by the TC-T plenary.

The figure below summarises the structure of the TC-T.



2. Projects

Currently there are 22 active EURAMET TC-T projects. Seventeen of them are comparison projects, five are research activities.

3. Comparisons

During April 2023 the final report of CCT-K9 was issued. This is a very important basis for the finalisation of the EURAMET.T-K9 (project no. 1318) and no. 1145.

Furthermore, Draft B of EURAMET.T-K8 (EURAMET project no. 717) was submitted to the CCT-WG-KC on 17th of April 2023.

Although the measurements were carried out some time ago and were to be repeated in the near future, it was decided to complete the evaluation and prepare the final report. This has the advantage that there is now a generally accepted template for further key comparisons of this kind, which makes future comparisons much easier.

In the future, it is expected that the number of EURAMET projects (comparisons) will increase. Since, due to the large number of candidates/participants, key comparisons in the EURAMET TC-T can only be organised with great difficulty and take a very long time (5-10 years), additional, more efficient ways must be used. This can be solved by smaller comparisons with 2-5, both conventional comparisons and hybrid comparisons. During the meeting of the CCT-WG-KC the EURAMET TC-T chair requested a formal statement on the acceptance of hybrid comparisons, i.e. the appropriate combination of calibrations with comparison measurements. CCT-WG-KC agreed that hybrid comparisons following the principles (e.g. blindness) of international guides for comparisons (e.g. CIPM MRA-G-11, EURAMET Guide No. 4) are accepted. Furthermore, it should be noted that there is a great interest in different types of comparisons from new member states, observers and further states from the COOMET region, which currently cannot be fully met. Every effort is being made to support these, with particular priority being given to Ukraine.

4. CMCs

The CMCs are reviewed by the members of the WG-CMCs that is currently chaired by Steffen Rudtsch. The members are appointed by the TC-T plenary based on their different expertise. Currently there are 3 members (1 MIRS/UL-FE/LMK and 2 NPL) to review the CMCs for SPRTs and fixed points, 2 (PTB and RISE) to review the CMCs for industrial thermometers, 2 (CEM and PTB) to review the CMCs for thermocouples, 2 (PTB and LNE-CNAM) to review the CMCs in radiation thermometry and 2 (INRiM and MIRS/UL-FE/LMK) to review the CMCs in humidity.

In 2023 a batch of 46 new CMCs from 6 EURAMET countries was submitted and distributed to the reviewers. From previous years the following number of unfinished CMC submissions are still open due to different reasons, but mostly because of missing response from submitting NMIs.

5 submissions from 2022, 14 submissions from 2021 and 24 submissions from 2020.

The missing response from other RMOs are in most cases caused by unfinished comparisons. Currently within EURAMET TC-T there are 1751 CMC entries on thermometry humidity and thermophysical properties. Considering the slow progress in the review of new CMCs a review of each CMC entry once in five years seems to be unrealistic.

5. Activities of the Subcommittees

The TC-T has only one sub-committee regarding Humidity and Moisture. The Sub-Committee Humidity (SC-H) is concerned with all issues of measurement of humidity and moisture, as well as with standards and references necessary for developing the metrology in the field.

On 15th of February 2023 the EURAMET BoD decided that the SC-H will be continued until 2028. The chair of the SC-H is Domen Hudoklin (MIRS/UL-FE/LMK). The SC-H met on 20th of April 2023 where the different comparisons in which the SC-H is involved were discussed as well as the participation in research and EURAMET projects.

6. Participation in EMRP/ EMPIR

The TC-T very successfully participated in the 2022 call of the European Metrology Partnership. All four submissions with TC-T contributions within the IEM-Call are funded (Direct-K, PriSpecTemp, MQB-Pascal and InFOTherm) as well as the submissions to the RPT-Call (MultiFixRad) and the DIT-Call (FunSNM).

7. Capacity Building: Activities of the last year and future needs

The TC-T is engaged with various capacity building activities organised by EURAMET and it is one of the main objectives of the WG-BP. During the annual TC-T meetings there is a standing slot within the agenda for the EURAMET CB Officer to give a presentation.

Between 11th and 15th of September 2023 MIRS/UL-FE/LMK at Ljubljana will host the 2. Summer School on Temperature and Humidity Measurements. This will be a combined activity with theory lectures by world leading experts and experimental trainings with top-level equipment for about 60 participants from NMIs and DI of EURAMET and other RMOs.

8. Meetings

The 2023 EURAMET TC-T meeting was hosted by SMU at Bratislava from 18th to 21st of April according to the following schedule:

- 18th of April 2023: ILC Meeting on Air Temperature Metrology
- 19th of April 2023: Technical Workshop “Real-K: Turning the *MeP*-K into reality”
Meetings of the WGs: BP, CMC-Review, Strategy and TG-Digitalisation
- 20th of April 2023: SC-H and WG -TPQ-Meetings
TC-T Plenary Meeting Part 1
- 21st of April 2023: TC-T Plenary Meeting Part 2

The next EURAMET TC-T meeting will take place from 16th to 19th of April 2024 and will be hosted by INTiBS (Instytut Niskich Temperatur i Badań Strukturalnych) at Wrocław (Poland).

9. Issues

The TC-T is strengthening the interactions with the EMNs. This is coordinated by the WG-Strategy and mutual presentations scheduled during the 2023 meetings.

During the meeting of the Strategy WG, the rules for WGs were discussed and a general agreement on useful modifications was achieved. Based on the results the chair of the Strategy WG will modify the existing rules.

10. Strategic Planning

During the meeting of the Strategy WG the need for strategic documents was discussed. Since the recent update of the CCT-Strategy was mainly done by CCT-delegates of EURAMET the question arose whether a separate EURAMET TC-T strategy is needed. It was agreed that the CCT-strategy covers all important strategic elements relevant for the EURAMET TC-T and currently doesn't need supplements. In light of recent challenges and increased efforts of our community during the Corona-crisis, the war at Ukraine, the EUROPEAN Green Deal and the associated transformation of our energy system and activities related to digitalization it was decided to postpone further work on strategic documents.

11. Outlook for 2023/2024

Apart from the routine activities like CMC review in 2023/2024 TC-T activities will include:

- Organisation of the EURAMET Summer School on Temperature and Humidity Measurements between 11th and 15th of September 2023 at Ljubljana
- Organisation of the next TC-T meeting between 16th and 19th of April 2024 at Wrocław (Poland)
- Organisation of an EURAMET Summer School on Thermophysical Properties in 2024 at LNE

