

CCT member and observer Activity Report

Period: January to December 2021

Institute: VSL

State economy:

Number of persons involved in thermometry of the institute: 6

Short summary of research and development:

The thermometry laboratory is involved in two European research projects:

1. The EMPIR project SRT-i02 “Trace Water in Ultrapure Gasses” where the enhancement factors of water in N₂ and Ar gas will be measured. Preparations and modifications of the existing High-Pressure Dewpoint Generator are well under way.
2. The EMPIR project JRT-v09 “Metrology for the Hydrogen Supply Chain” in which the existing High-Pressure Dewpoint Generator will be modified to perform dewpoint measurements with H₂ as carrier gas.

Additionally, the laboratory will be contributing towards the activities of the task group “TG ENV airT” of the working group “CCT Env”. Specifically, VSL will contribute towards the subgroup 3 which will work towards setting up guidelines for the calibration of air temperature measurements.

Short summary of recent comparison activity:

The thermometry laboratory at VSL has recently taken part in two key comparisons:

1. CCT-K9: SPRT calibration Ar to Zn.
2. EURAMET.T-K9 (2015 – 2016, of which VSL is co-pilot): SPRT calibration Ar to Zn. The preliminary Draft A of the KC is disseminated among the participants and is being revised.
3. CCT-K7.2021: Water triple point cell return measurements are being performed and the results of the before measurements have been shared with the pilot.
4. A bilateral comparison was conducted with Czech Metrology Institute (CMI) in 2020. SPRT calibration on the fixed points Hg to Zn.

Short summary of other activities:

The thermometry laboratory is fully operational and has re-acquired much of the originally accredited scope. This following the cessation of activities from 2018 – 2020 due to changes in location of the laboratory and subsequent health concerns in the new working environment.

The renewal of obsolete equipment is prioritized and the following steps have been made:

1. VSL has acquired a new Fluke argon triple-point cell system. The validation of the system is underway.
2. A new Guildline thermometry bridge and scanner system have been and soon will be integrated into the measurement infrastructure of the laboratory.
3. The ICT infrastructure and multiple fixed-point ovens and annealing ovens either have been renewed or are in the process of being renewed.

Link to bibliography or list of bibliography (last 5 years):

2017:

1. <https://doi.org/10.1007/s10765-016-2171-9>
2. <https://doi.org/10.1007/s10765-017-2297-4>
3. <https://doi.org/10.1007/s10765-017-2291-x>
4. <https://doi.org/10.1051/metrology/201706002>

2018:

1. <https://doi.org/10.1088/1681-7575/aacecc>
2. <https://doi.org/10.1007/s10765-018-2379-y>
3. <https://doi.org/10.1007/s10765-017-2342-3>