Report of the CCM Working Group on Pressure and Vacuum (CCM WG PV)

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17th CCM meeting, 16 May 2019

Bureau International des Poids et Mesures

Proposed changes to membership

Membership WG PV (20 NMI)

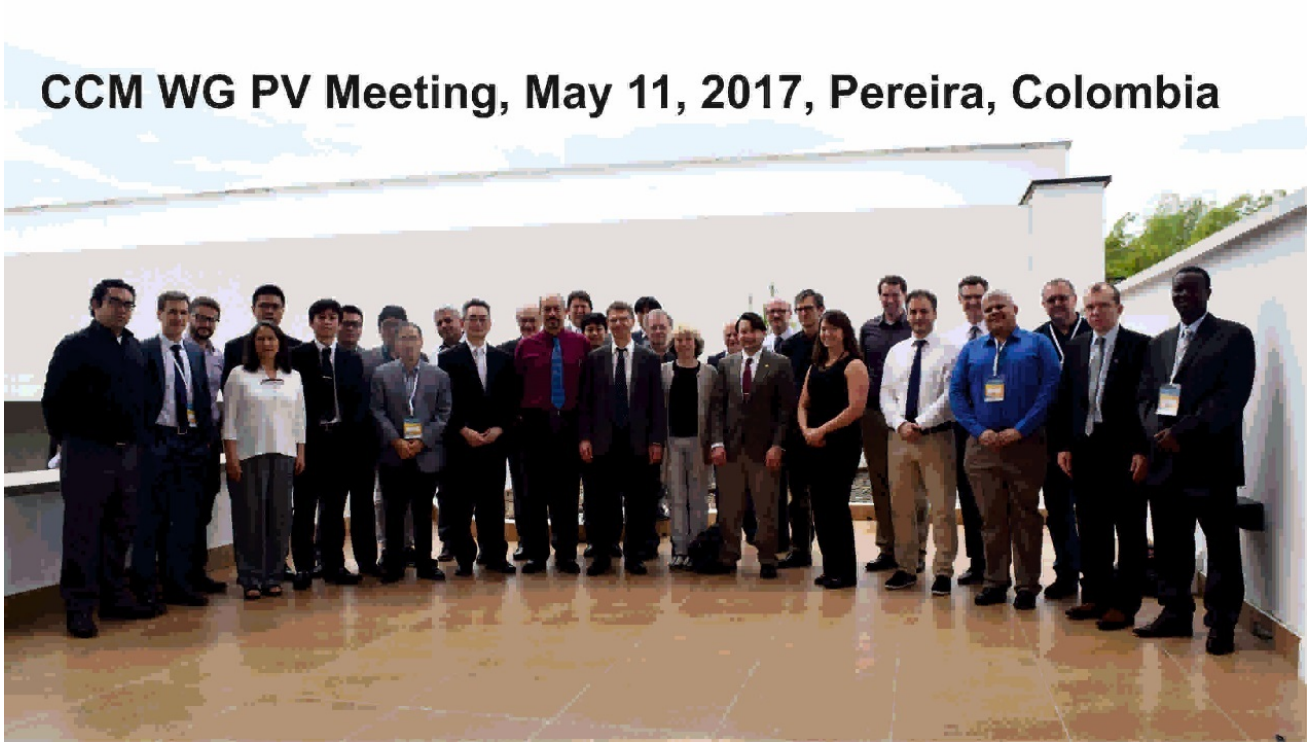
- AStar (Singapore), CENAM (Mexiko), CEM (Spain), CMI (Czech Republic), INMS-NRC (Canada), INRIM (Italy), KRISS (Korea), LNE (France), METAS (Switzerland), MSL-NZ (New Zealand), NIM (China), NIS (Egypt), NIST (USA), NMIA (Australia), NMIJ (Japan), NMISA (South Africa), NPL-I (India), PTB (Germany), UME (Turkey), VNIIM (Russia)
- Personal member: Dr. Janez Setina (MIRS, Slovenia)
- Observer: CMS/ITRI (Taiwan), INMETRO (Brasil), IPQ (Portugal), SMU (Slowakia),
- In total 40 individuals.

Proposed changes to membership

- Membership/observer status under review: INMS-NRC (Canada), INRIM (Italy), NMIA (Australia), NPL-I (India), and SMU (Slowakia): Reports about their capabilities, future activities and their will of still being a member expected at next meeting 2020.
- Decision 2017: No activity, no participation at next meeting -> cancellation of membership/observer status.

WG Meetings held since last CCM

- None



WG Meetings planned

- May or June 2020: Probably in the premises of PTB in Berlin
- Combined with workshops with two EU projects 16NRM05 “Ion gauge” and 18SIB04 “Quantum pascal”

Main actions taken and main achievements

Task group established to

A) Define the most accurate device as unit under calibration (UUC), each for a part of the pressure range covered by the WG. The total pressure range must cover 1E-9 Pa to 1E9 Pa.

B) Identify whether overlapping pressure ranges are necessary in the light of UUCs chosen

C) Agree on the uncertainty of each of the selected UUCs

D) Give an opinion, if a change of the "Statement 2 of the CCM WG PV on the content of CMC entries " (May 2017) is deemed necessary. Clearly, item 6 will have to be changed according to the results from A-C.

E) Identify problems, if any, which cannot be solved by the task group due to unclear guidelines of the CIPM/BIPM, JCRB, or CCM. Relevant guidelines are mentioned in our Statement 2.

Deadline was end of 2018 (overdue to NIST shut down, new deadline May 31, 2019)

Progressing the state of the art

- optical methods for total pressure (possibly a new realization of the Pascal) and partial pressure measurement
- traceable partial pressure measurement
- traceable outgassing rate measurement
- dynamic pressures (vacuum and pressures higher 100 kPa)
- research activity in EURAMET towards a standardized ionization gauge
- oil micromanometer with integrated density measurement

Liaison & stakeholders

- Support work of ISO TC 112 Vacuum technology related to vacuum metrology (i.e. research for standardized ionization gauge).
- Act as advisory group for project in the European Union EMPIR 18SIB04 " Towards quantum-based realisations of the pascal" (short: "Quantum Pascal").
- Collaboration with EMPIR 16NRM05 „Ion gauge“

KCs completed and underway

- None.

KCs planed

- CCM.P-K4.2012.1 NIST(UIM/optical)-PTB(SE2/SE3) shall start July 2019, should be completed 2020; Please, confirm.
- start first C-ATL (pilot LNE);
- start K3 (pilot NMIJ, overdue);
- start K1b/K1c/K2 (pilot CENAM, overdue)

Program of work for the next 5 years

- Complete task group to define best UUCs and their uncertainties to be used in CMC entries
- Promote and perform KCs as planned (see last slide).
- Support work of ISO TC 112 Vacuum technology related to vacuum metrology (i.e. research for standardized ionization gauge).
- Further investigate optical methods for partial and total pressure measurement.
- Act as advisory group for project in the European Union EMPIR 18SIB04 " Towards quantum-based realisations of the pascal" (short: "Quantum Pascal").

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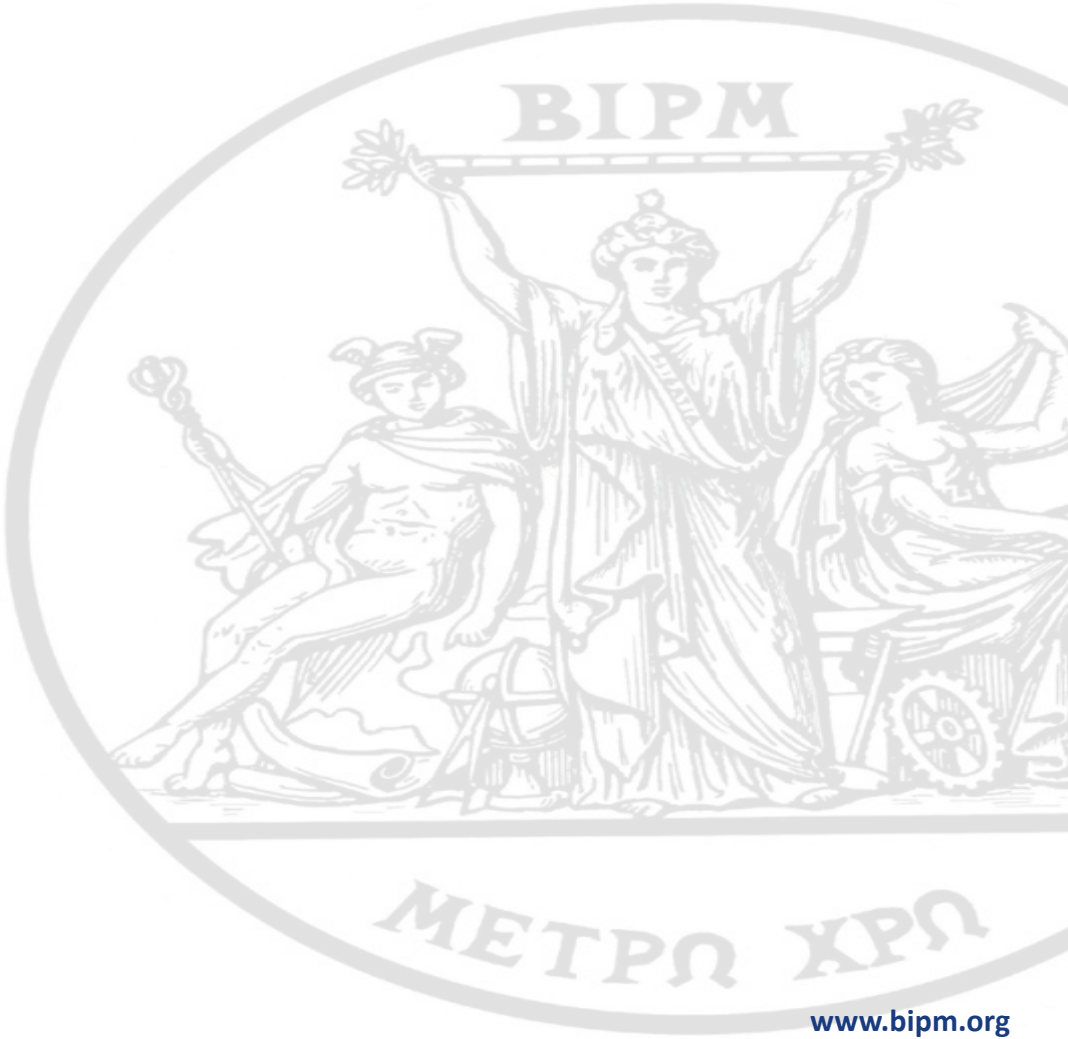

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