

# Activities in EURAMET Technical Committee for Mass and Related Quantities (MRQ)

Zoltan Zelenka  
TC-M Chair (BEV, AT)  
May 2023



# TC-M - Structure

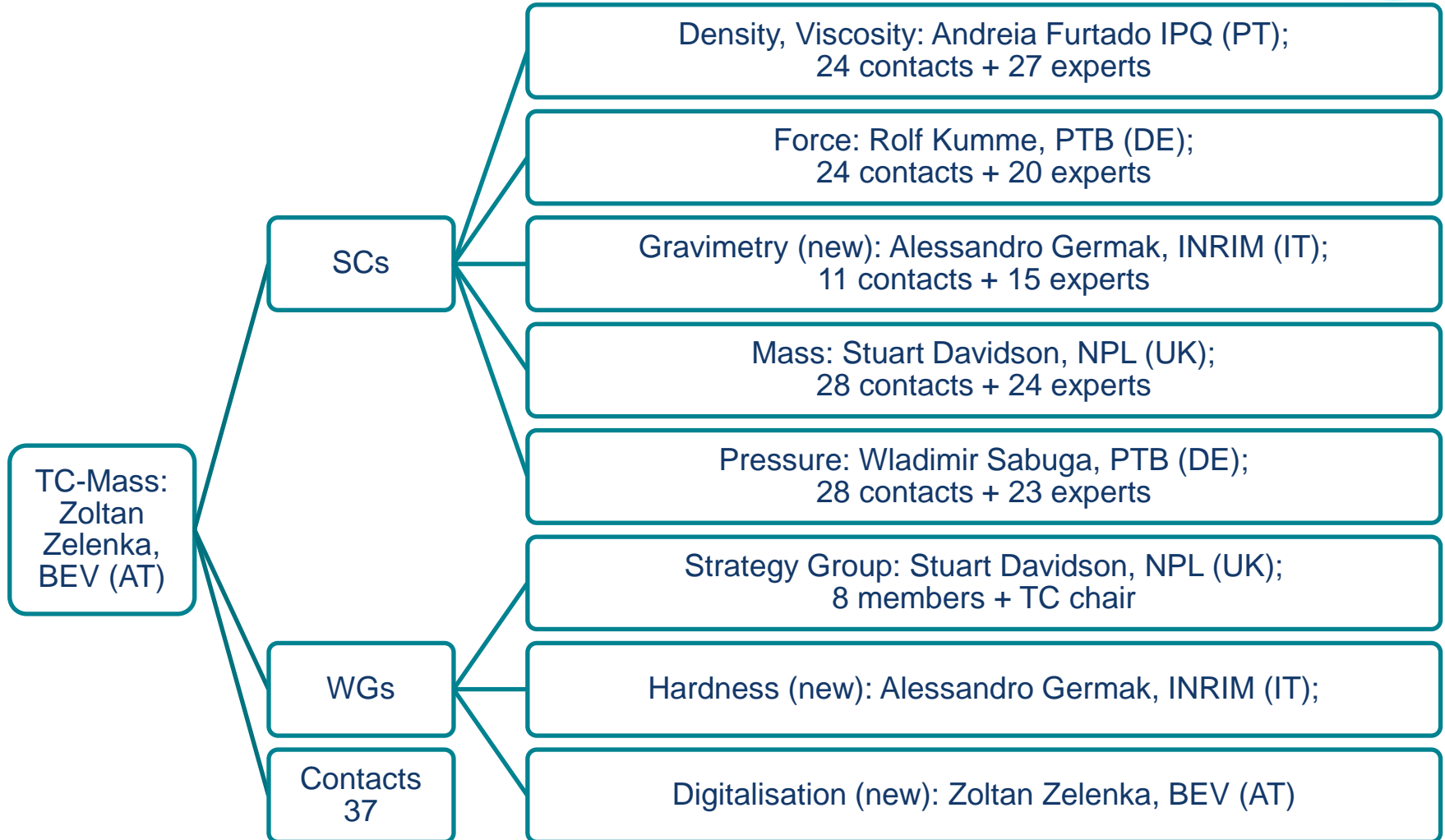


- TC Chair is elected for two years and can be re-elected once. The Chair is supported by the previous TC Chair.
- Subcommittees (SC) within the TC for the corresponding Sub-Fields are established
  - by the Board of Directors with the approval of the General Assembly.
  - A new SC for Gravimetry was established in 2022.
  - A review of all SCs takes place every five years. Based on TC Chair report the Board of Directors approved and renewed the SCs' activities for the next 5 years in 2023.
- Working groups are established by the TC or its SCs.



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# TC-MRQ - Structure



# TC-M - Structure



- 29/06/2021: New TC-Chair Zoltán Zelenka (BEV, AT)
- Supported by the previous Chair Fredrik Arrhén (RISE, SE) and
- Members of the Working Group on Strategy
  - Fredrik Arrhén (RISE, SE)
  - Stuart Davidson (NPL, UK)
  - Matej Grum (MIRS, SI)
  - Rolf Kumme (PTB, DE)
  - Isabel Spohr (IPQ, PT)
  - Wladimir Sabuga (PTB, DE)
  - Alessandro Germak (INRIM, IT)
  - Andreia Furtado (IPQ, PT)



# TC-M Annual Meetings, 2021

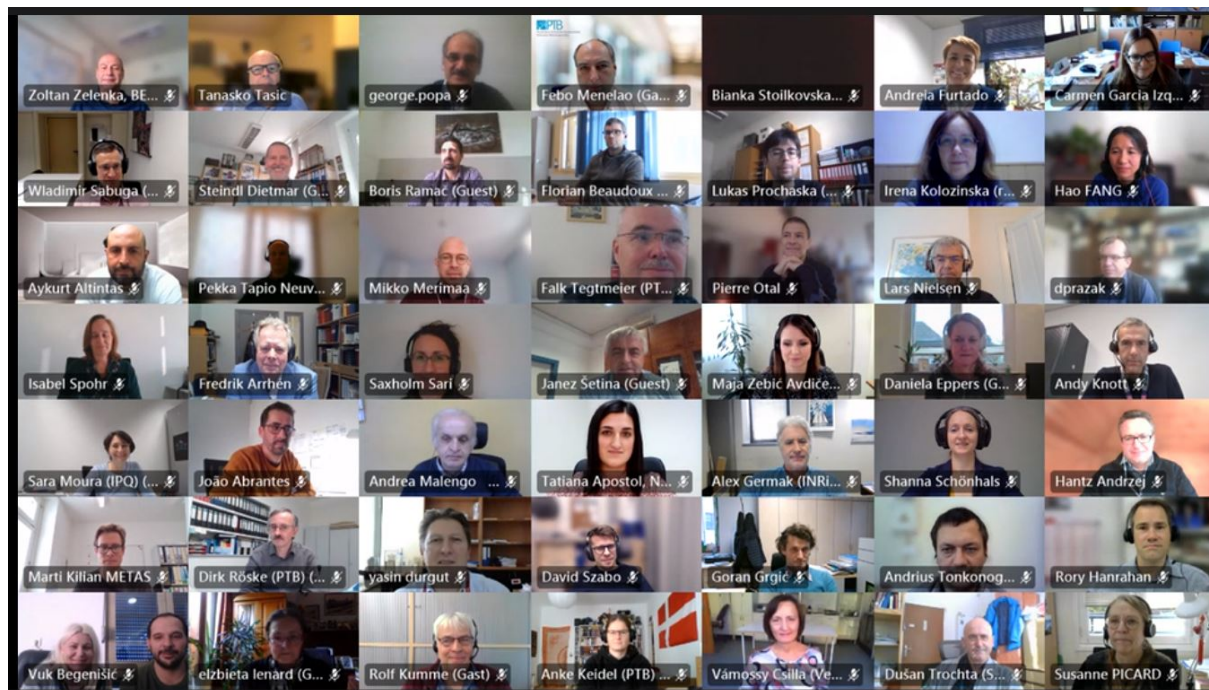


- Online meeting, 97 participants
  - With Subcommittee and Working Group meetings
  - Project meetings

**Time** Wednesday 27<sup>th</sup> October 2021 9h00 to 16h15 CEST  
**Place** Online via MS Teams Meeting  
**Responsibility** TC-M Chair, Zoltan Zelenka (BEV, AT)  
**Participants** Contact Persons  
 Subcommittee contacts, Invitees

Time	Ref	Item	Document	By
8:50	0	Opening the room		EURAMET
9h00	1	Opening of the meeting		TC-Chair
	1.1	Welcome to the participants		
	1.2	Adoption of the agenda		
9h10	2	EURAMET Information		
	2.1	EURAMET Strategy and more, Jörn Stenger		EURAMET Chair
	2.2	EURAMET new, inclusive Capacity Building, Tanasko Tasic		Capacity Building Officer
10h45		Short Break		
11h00	3	BIPM information		
	3.1	CCM news and BIPM technical work, Hao Fang		CCM Secretary
	3.2	Exchange and progress with KCDB 2.0, Susanne Picard		KCDB Coordinator
11h45	4	TC-M reports		
		Adoption of the previous minutes		TC-Chair
		WG-Strategy, Stuart Davidson		WG Coordinator
		SC Density and Viscosity, Andreia Furtado		SC Convener
		SC Force, Rolf Kumme		SC Convener
		SC Pressure, Wladimir Sabuga		SC Convener
		SC Mass; Stuart Davidson		SC Convener
		Gravity, Alessandro Germak		-
12h45		Lunch Break		
13h45	5	Digital Transformation		
		Digital transformation and Digital Calibration Certificates, Anke Keidel		Chair of 1448
		Discussion DCC and the task of our TC in the progress		All
14h15	6	Project reports		
		Any project that has interest to broader public (no SC specific ones)		Chair of 1448
14h30	7	Collaboration, communication		
		News from COOMET, Iryna Kolozinskaya		COOMET TC-Chair
		Cooperation with EMNs, Advanced Manufacturing (How TC-M can help them); Harald Bosse		EMN Coordinator
		Communication, collaboration within our TC		TC-Chair
15h00		Other Business, next meeting		
15h15		End of the meeting or Short Break		
		Reserved for any delay		
16h15		End of the meeting		

**Notes:** Documents may be submitted later.



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# TC-M Annual Meetings, 2022



- Hybrid meeting in Borås
  - With Subcommittee and Working Group meetings
  - Project meetings and EMN workshop

**Time** Thursday, 8<sup>th</sup> September 2022, 9h00 to 12h00 CEST  
**Place** Borås, Sweden + Online  
**Responsibility** TC-M Chair, Zoltan Zelenka (BEV, AT)  
**Participants** Contact Persons, Subcommittee contacts, Invitees

Time	Item	By
9h00	Opening of the meeting	TC-Chair
	Adoption of the agenda	
	<b>TC-M reports</b>	
	TC-Chair	TC-Chair
	WG-Strategy, Stuart Davidson	WG Coordinator
	SC Density and Viscosity, Andreia Furtado	SC Convenor
	SC Force, Rolf Kümme	SC Convenor
	SC Pressure, Vladimir Sabuga	SC Convenor
	SC Mass; Stuart Davidson	SC Convenor
	SC Gravity, Alessandro Germak	SC Convenor
	Hardness, Alessandro Germak	WG Convenor
	CCM news	CCM
10h30	Break	
11h00	EURAMET Information	EURAMET
	Digital Transformation	
	Collaboration, communication	
	<ul style="list-style-type: none"> <li>• EMNs summary</li> <li>• Any project that has interest to broader public (no SC specific ones)</li> <li>• Information from other RMOS (if any)</li> <li>• ...</li> </ul>	
	Other Business, next meeting	
12h30	End of the meeting	

Day/time	Monday 2022-09-05	Tuesday 2022-09-06	Wednesday 2022-09-07	Thursday 2022-09-08
9:00		SC Pressure I	SC Gravity	EMN Work-shop I
10:30	FIKA			
11:00		SC Pressure II	Hardness	EMN Work-shop II
12:30	Lunch			
13:30	WG Strategy I closed session	SC Force & Torque	SC Density	Digitalisation
15:00	FIKA			
15:30	WG Strategy II closed session	SC Mass	Guides on liquid density (HW, OD and CRM)	WG Strategy open session
17:00	Lab tour RISE			
17:30	Guided tour in Borås			
18:00	Welcome reception			
19:00	Social dinner			



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# TC-M Annual Meetings, 2022



- Participation

Session	Day	Members	In person	Virtually	Comment
WG Strategy closed session	Monday	9	8	0	Closed session
SC Gravity	Tuesday	10	10	15	
SC Pressure	Tuesday	28	30	22	
SC Force & Torque	Tuesday	23	30	24	
SC Mass	Tuesday	27	35	36	
SC Density	Tuesday	23	20	30	
Hardness	Tuesday	-	10	9	Not an official SC or WG (yet)
WG Strategy open session	Wednesday	-	60	33	Open session
EMP Workshop	Wednesday	-	60	37	Open session
Digitalization	Wednesday	-	60	40	Open session
Contact Person Meeting	Thursday	35	49	37	Officially closed session



Zoltan Zelenka, EURAMET TC-M Chair, BEV (AT), BIPM-CCM Meeting, 2023



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# TC-M Research – EMPIR (1)



- The EMPIR project 17RPT02 “Establishing traceability for liquid density measurements (RhoLiq)” started in May 2018 and finished in April 2022. (Extended)
- The EMPIR project 17IND07 “Development of measurement and calibration techniques for dynamic pressures and temperatures” is completed.
- The EMPIR project 18SIB04 “Towards quantum-based realisations of the pascal” is in progress. (Delayed)





## TC-M Research – EMPIR (2)



- The EMPIR project 18SIB08 “Comprehensive traceability for force metrology services” is completed. Final report is in progress.
- The EMPIR project 19ENG08 “Traceable mechanical and electrical power measurement for efficiency determination of wind turbines” is in progress. (Delayed)
- The EMPIR project 19RPT02 “Improvement of the realisation of the mass scale” is in progress.
- The EMPIR project 20SIP01 “Developing an ISO Technical Specification ‘Characteristics for a stable ionisation vacuum gauge’” is in progress.



# Calibration Guides - updated

- Guidelines on the Uncertainty of Force Measurements  
Version 3.0 (02/2022)
- Guidelines on the Calibration of Electromechanical and Mechanical Manometers  
Version 4.1 (09/2022)
- Guidelines on the Calibration of Automatic Catchweighing Instruments  
Under approval

Guidelines on the Uncertainty  
of Force Measurements  
EURAMET Calibration Guide No. 4  
Version 3.0 (02/2022)



Guidelines on the Calibration  
of Electromechanical and  
Mechanical Manometers  
EURAMET Calibration Guide No. 17  
Version 4.1 (09/2022)



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# Calibration Guides – in progress, plans



- No. 3 | Calibration of Pressure Balances, Version 1.0, 03/2011
- No. 14 | Guidelines on the Calibration of Static Torque Measuring Devices  
Version 2.0, 03/2011
- No. 16 | Guidelines on the Estimation of Uncertainty in Hardness Measurements  
Version 2.0, 03/2011
- Under the RhoLiq Project, three new draft guides are planned as EURAMET Guidelines.
- Some other guides planned by EMPIR projects



# TC projects



- TC-M is running several projects. Please visit the websites via the links below for detailed information
- <https://www.euramet.org/technical-committees/tc-m/projects>

