

**EUROMET PROJECT
FINAL REPORT**

1. Ref. No.: 422	2. Subject Field: METCHEM	
3. Type of collaboration: comparison		
4A. Partners: LNE, PTB, OFMET, IMG (institutions)		4B. CEC funded? no
5. Participating countries: FR, DE, CH, IT		
6. Title: Comparison of primary flow standards for calibration of mass flow controllers and similar systems.		
<p>7. Progress:</p> <p>This project has been carried out as a series of bi-lateral comparisons between LNE and four EUROMET laboratories (OFMET, PTB, IMG and CMI) and two outside Europe (NRLM and NIST). Some results have already been published at various conferences, the report of the two comparisons between PTB and LNE has been published in Metrologia (2001, 38. n.3, 197-202).</p> <p>Gas mass flows can be measured most accurately using continuously measuring dynamic-gravimetric systems.</p> <p>Two systems of this type, the mass flow calibration system at the Bureau National de Métrologie-Laboratoire National d'Essais (BNM-LNE, France) and the mass flow calibration system at the Physikalisch-Technische Bundesanstalt (PTB, Germany), were compared twice using a commercial gas flow measuring instrument as a transfer standard. Mass flow rates of nitrogen between 0.5 mg/s and 20 mg/s (approximately 25 ml/min to 1000 ml/min) and mass flow rates of carbon monoxide between 0.5 mg/s and 10 mg/s (approximately 25 ml/min to 500 ml/min) were used to check the agreement of the two calibration systems. The results of the comparison show that the two systems do not deviate by more than 0.23 % for flow rates higher than 2 mg/s. For lower flows, down to 0.5 mg/s, the differences increased to as much as 0.37 %.</p> <p>Project was brought to an end of 2000, but pilot laboratory was ready to continue the comparisons on bi-lateral basis.</p>		
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9. Completion date: 31.12.2000	10. Coordinator's signature:	11. Date: 20.02.2002

*) Delete as appropriate