



Mercury Measurement Workshop

Overview of Continuous Mercury Monitors

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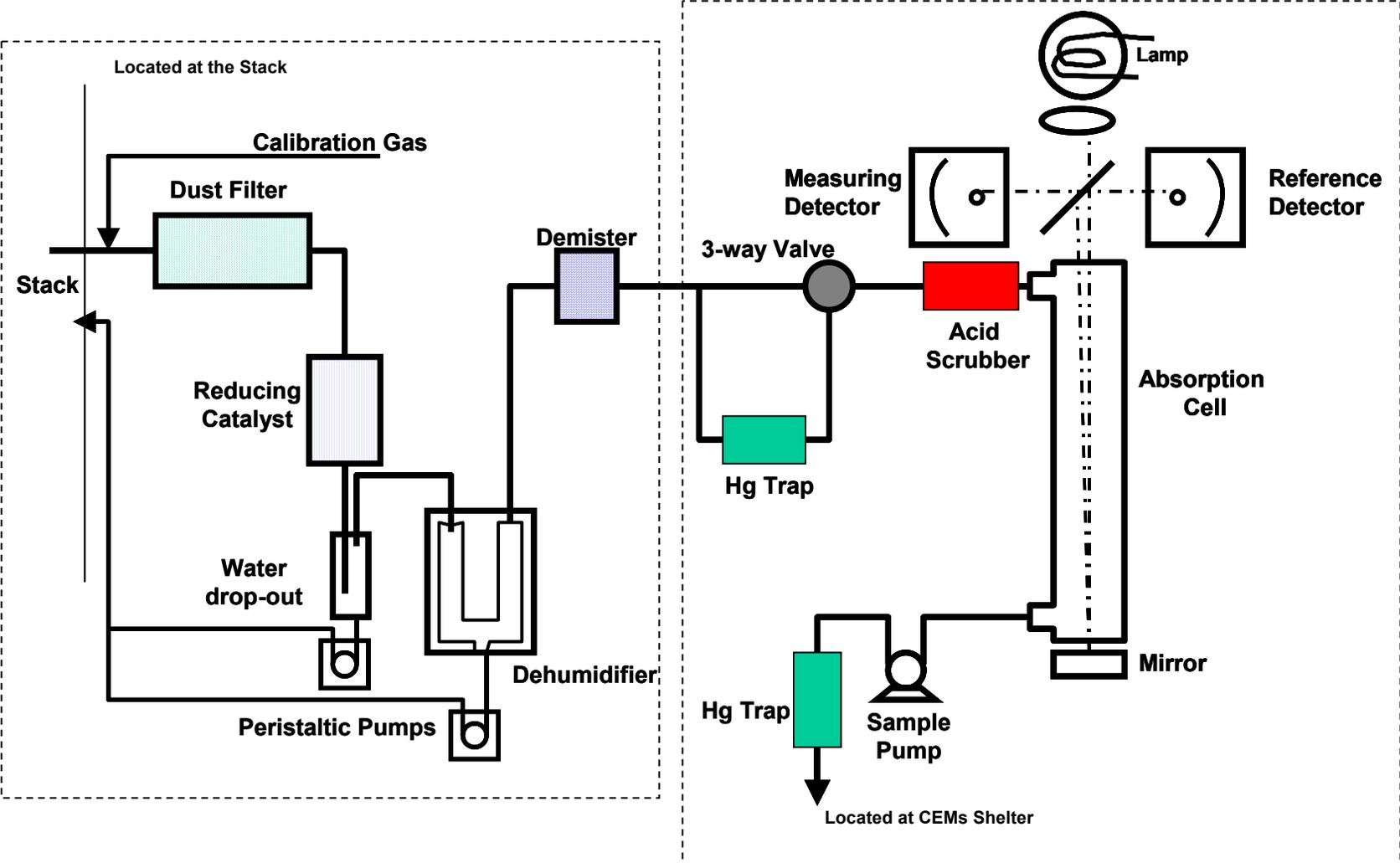
Mercury CEMs Technology Summary

- **13 Commercially Offered Monitors Identified**
 - CVAA / UV Absorption (8)
 - AFS (3)
 - X-ray Fluorescence (1)
 - Plasma Emission Spectroscopy (1)

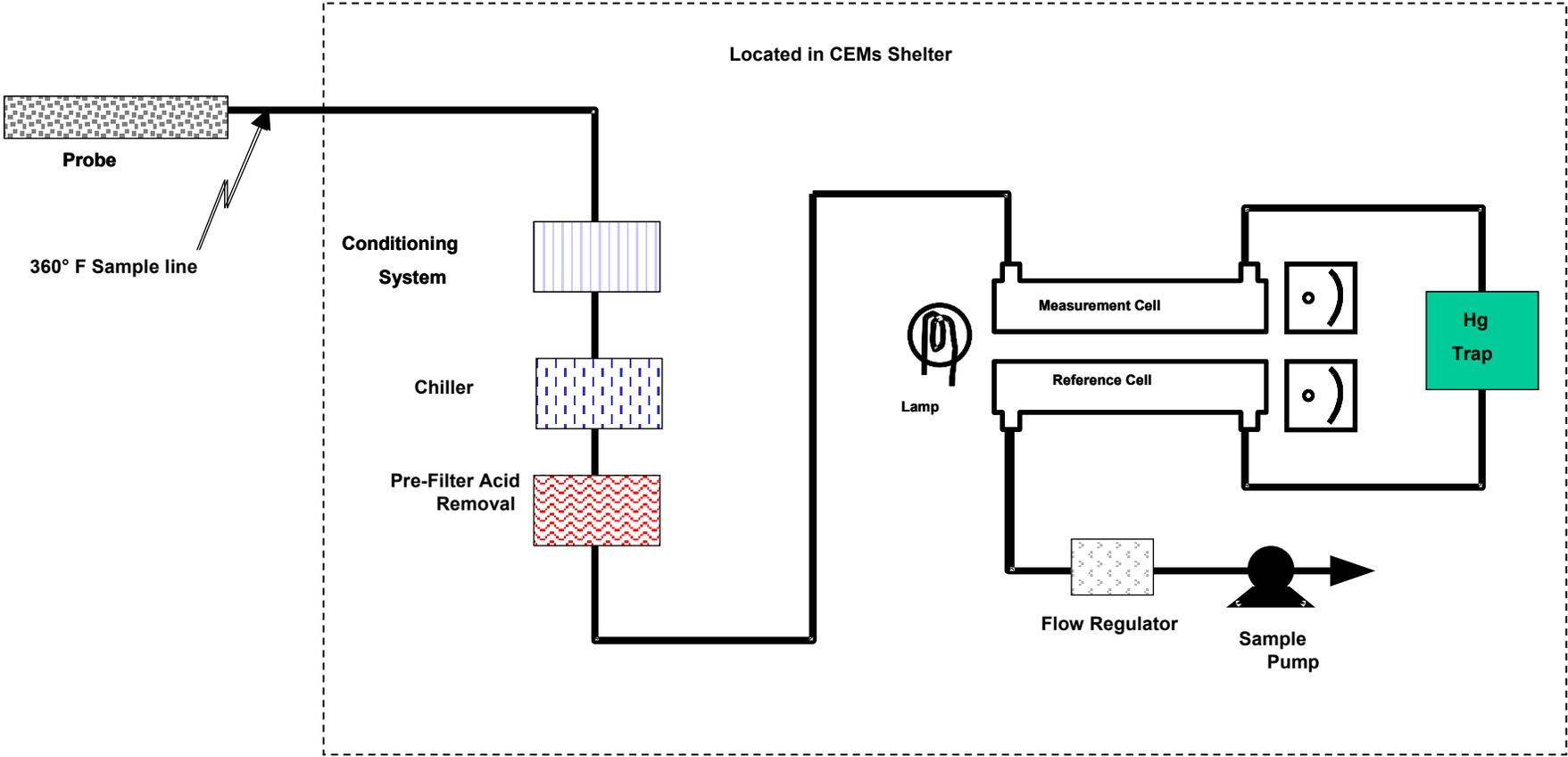
Commercial CMMs

Supplier	Description	Evaluation Status
EcoChem	CVAA (gold amalgam)	EPA-EMC Phase 1&2
Cooper	Filter tape with XRF	EPA-EMC Phase 3
Durag	CVAA (dual beam)	EPA-EMC Phase 1, 2&3
Envimetrics	Plasma Emission	PSEG, ETV-Phase 2, EMC Phase 2
Genesis	CVAA (dual beam)	ETV Phase 2, EMC Phase 2,3&4
Nippon Instruments	CVAA (dual beam)	ETV Phase 1&2, EMC Phase 3&4
Ohio Lumex	Zeeman Shift CVAA	ETV Phase 1,
OP SIS	CVAA (gold amalgam)	ETV Phase 2, EMC Phase 2&3
PS Analytical	AFS (gold amalgam)	EPA-EMC 1&2, ETV Phase 2
Sick Maihak, Inc	CVAA (gold amalgam)	No US experience
ST2	CVAA (dual beam)	EPA-EMC Phase 2
Tekran	AFS (gold amalgam)	Field Tests; No EPA Demo
Thermo Env. Instru.	AFS	Prototype in Field Evaluations

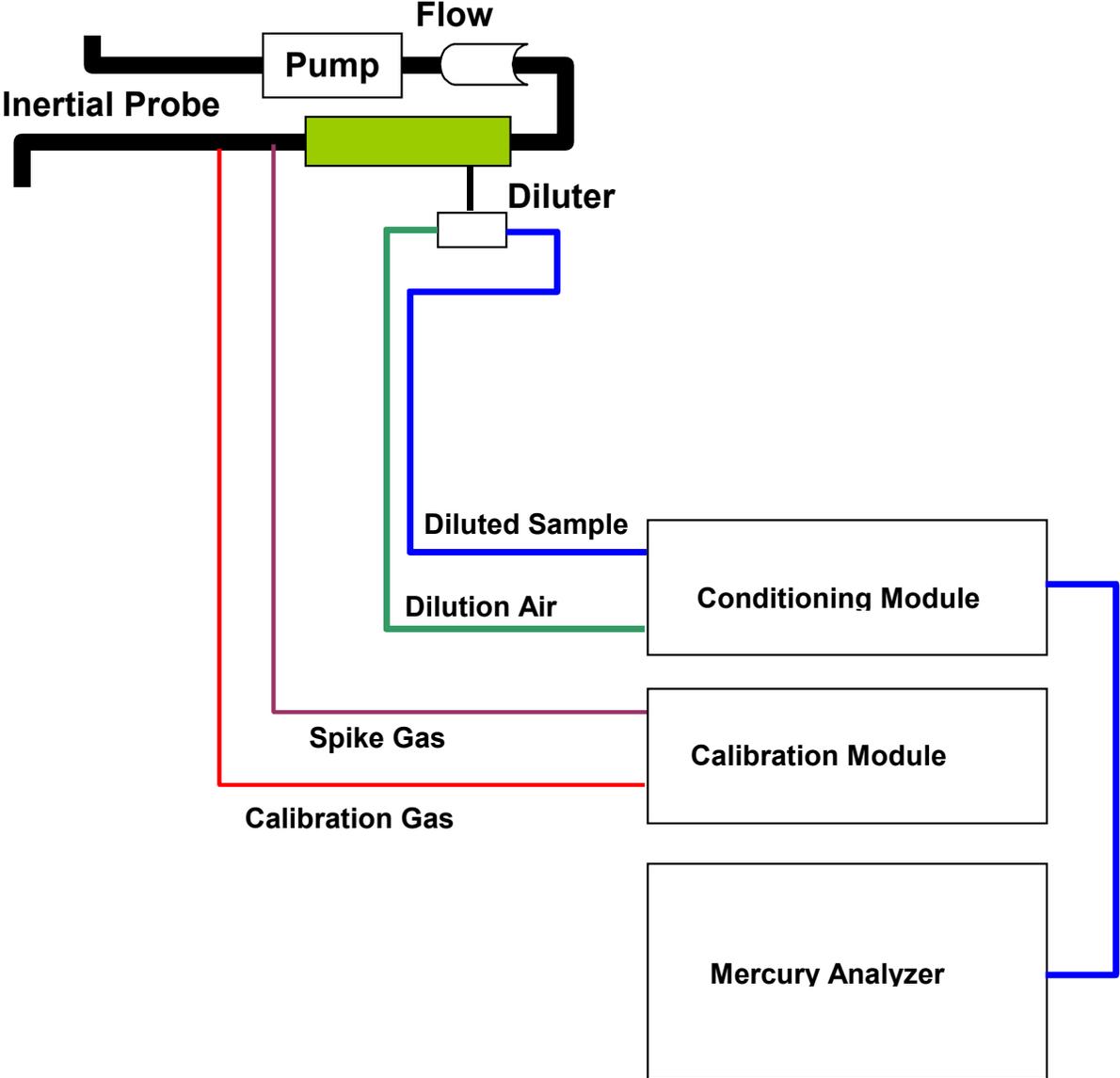
Single Cell of CVAA



Dual Cell CVAA



Simplified Tekran Schematic



Developmental Issues

- Calibration techniques for both Hg⁰ and Hg⁺².
- Converter performance
 - Verification
 - Frequency
- QA/QC Requirements
 - Linearity
 - Availability and range of gas standards
 - RATA
 - Timeliness of results – Instrumental Reference Method?
- Quantification of performance & lower measurements limits for CMM, OH, M-324
- Demonstration of performance, reliability and operability