

MINIMIZE RISKS AND COSTS FOR MERCURY EMISSIONS REDUCTION

To reduce operational uncertainties, compliance risks, and costs, now is the time to answer questions about your new full-scale sorbent mercury removal systems.

Some of these questions include:

- Are my compliance objectives being achieved?
- Am I minimizing costs?
- Have alternatives been adequately assessed?
- Is my full-scale system cost effective?
- Have balance of plant issues been adequately addressed?

What Apogee can do for you . . .

Sorbent Injection Demonstrations and Support Services

If you already have a PAC system in place, Apogee can characterize and optimize your system. The following list covers a number of relevant third-party services:

- **Make Sure You Got What You Paid For** – Obtain a thorough evaluation of your installed PAC system and verify its operation according to your specifications (load following, feed rate ranges, etc). Also obtain a better understanding about balance of plant issues associated with PAC systems.
- **Establish the Most Cost-effective Sorbents** – Conduct parametric and long-term tests on all commercially available sorbents at your sites. You will be provided with the most complete sorbent performance curves and information to gain the required reduction at the least cost with respect to both vapor-phase **mercury capture** and **impact on fly ash sales**.

Apogee can interface our mobile PAC system into your permanent PAC system which will enable quick sorbent evaluations utilizing 1000 lb super sacks of prospective sorbents without need to empty hard PAC silos and ordering tanker quantities of test sorbents.

- **Confirm Optimal Injection Locations** – Quantify the benefits or effectiveness of PAC injection upstream and/or downstream of air heaters (hot and cold-side injection) as well as across electrostatic precipitators and baghouses.
- **Evaluate Sorbent Distribution Efficiency** – Confirm the sorbent distribution efficiency throughout the duct and its impact on mercury removal rates.
- **Confirm Operations of Plant Mercury Monitors** – Temporarily install a redundant CMM to confirm mercury data from current plant monitors and to establish mercury concentrations upstream of PAC mercury control systems.

If you are planning on installing a PAC system and would like to evaluate various options before committing to a permanently-installed system, we can economically provide and operate our Continuous Mercury Monitoring (CMM) systems and our portable PAC injection system for parametric tests.

Apogee Qualifications

- We have over ten years experience in mercury monitoring and controls and have made over 30,000 hours of mercury measurements at a wide variety of plants burning bituminous, subbituminous, and lignite coals throughout the country.
- We own and maintain four field-ruggedized and portable CMMs that are each capable of measuring from two distinct sampling channels or locations.
- We own and operate a portable injection system that features real-time loss-of-weight load cells to accurately establish sorbent feed rates.
- We developed the original mercury sampling hardware from which were developed the manual mercury sorbent trap Appendix K and Method 30B procedures.
- We designed and developed full-scale manifold and sorbent injection lances for permanent PAC systems at over twenty power plants.
- We revolutionized the way vapor-phase mercury is measured by developing the patented Quick Silver Inertial Separation (QSITM) Filter. This technology is utilized by the major commercially available CMM systems.
- We also developed a patent-pending Dry Sample Conditioning System that converts total vapor-phase mercury to vapor-phase elemental mercury for measurement purposes and can operate in high selenium flue gas streams.

Our philosophy says it all – *We base our business values on communication, trust, and respect between Apogee and our customers*

- **Experience:** Take advantage of Apogee's unique experience in the mercury field that no other group can match,
- **Professionalism:** Apogee respects our colleagues and competitors and will provide you with an honest assessment of any potential product or system.
- **Quality:** We promise quality, accurate mercury measurements that provide insight and answers to your mercury questions,
- **Scheduling:** We use flexible scheduling to meet your timing and requirements.

For more information, please contact:

Tim Ebner, P.E. 303-522-8350 (cell) tebner@apogee-sci.com

Trevor Ley 303-783-9599 x25 tley@apogee-sci.com

Apogee Scientific, Inc.
2895 W. Oxford Ave., Suite 1
Englewood, Colorado 80110-4397
303-783-9599 Fax 303-783-9607