

The Value of SEA™ Technology

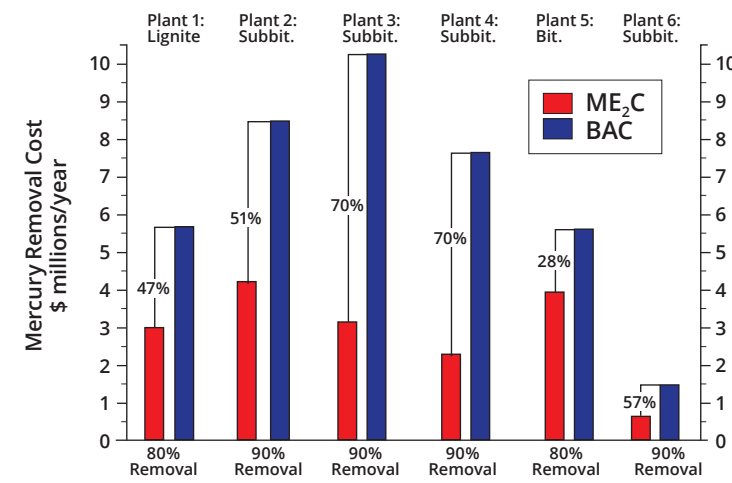
THE MOST COST-EFFECTIVE SOLUTION FOR MERCURY CONTROL

Midwest Energy Emissions Corp delivers patented, cost-effective mercury control solutions to coal-fired power plants and other large industrial coal-burning units. The Company's proprietary technology delivers a flexible, tunable solution that allows the global coal power industry to comply with new, highly restrictive regulations on mercury air emissions.

COST COMPARISON: ME₂C VS. BAC

ME₂C has demonstrated that the SEA™ Technology outperforms brominated activated carbon (BAC), achieving the highest mercury capture rates at a significantly lower cost.

As the level of mercury capture escalates, so does the difficulty of capture, as mercury emissions are measured in parts per trillion. Across numerous demonstrations and installations of the SEA™ technology, ME₂C's cost advantage at 80% and 90% capture rates shows a 30% lower cost, and in many cases, over 50% lower cost.



ME₂C's SEA™ Technology provides maximum efficiency in use of materials, lower operation and maintenance costs, and lower balance-of-plant impacts.

Customized Emissions Services

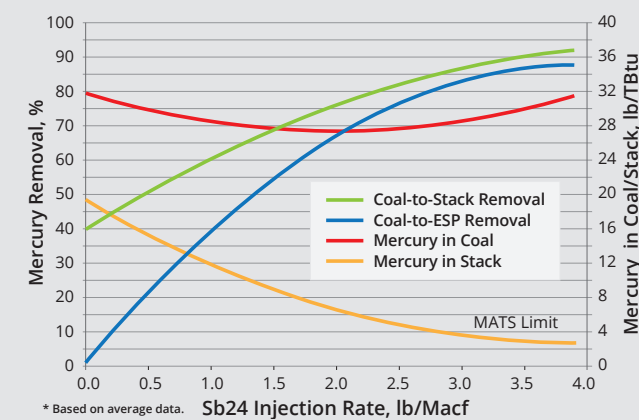
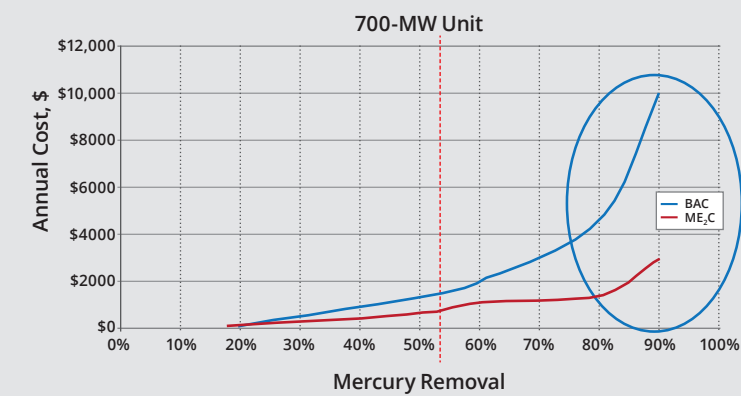
ME₂C is constantly innovating and rigorously testing materials/products to condition complex flue gases to most efficiently capture mercury. Through innovation, our products adapt to a myriad of complicated flue gas environments, providing guaranteed savings.

ARMED WITH CUTTING-EDGE EXPERTISE AND TECHNOLOGY, WE OFFER CUSTOMERS:

- Assessment of existing systems and suggested improvements.
- Assessment and guidance of mercury capture and emissions by our industry-leading team of experts in material handling and mercury control science and technology.
- Optimal design of the injection strategy and appropriate equipment layout and installation.
- Sorbent optimization using flow modeling for a customized, low-cost plan for each unit.
- Emission testing for mercury and other trace metals with our mobile laboratory.
- Ongoing research toward improved technology for mercury capture and rapid-response scientific support for emission or combustion issues as operations and regulations change.

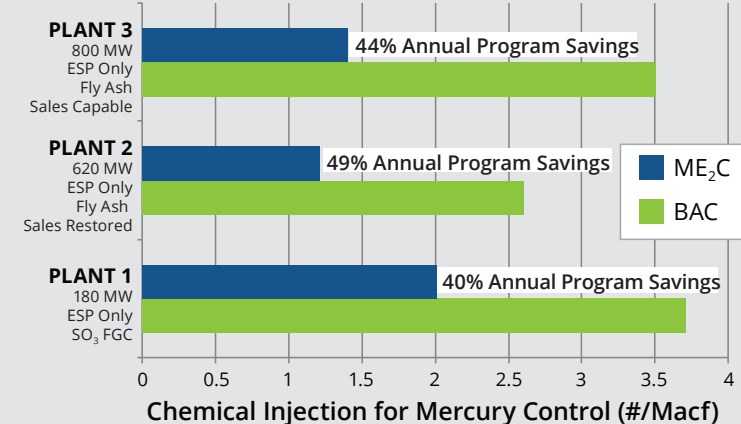


ME₂C Portable Sorbent Injection System – trailer-mounted (left) or stationary (right).



Minimize scrubber reemissions through ME₂C's patented two-part technology.

Mercury Control Program Chemical Dosing Rates (ME₂C vs. BAC)



© Midwest Energy Emissions Corp. All rights reserved.

Contact Us

Corporate Office
Midwest Energy Emissions Corp.
(OTCQB: MEEC)
670 D Enterprise Drive
Lewis Center, OH 43035

Research and Development
311 S. 4th Street, STE 118
Grand Forks, ND 58201

Phone: (614) 505-6115
Fax: (614) 505-7377
info@midwestemissions.com

www.midwestemissions.com



Total Mercury Control

Proprietary Technology
That Delivers Flexible,
Tunable Solutions for the
Global Coal Power Industry

Midwest Energy Emissions Corp delivers patented, cost-effective, proprietary solutions to the global coal power industry to remove mercury from power plant emissions.



www.midwestemissions.com

Cost-Effective, Flexible, Performance-Guaranteed Compliance with ME₂C's Sorbent Enhancement Additive (SEA™) Technology

ME₂C offers the highest mercury capture rates in the industry at a significantly lower cost than other traditional programs.

ME₂C provides customer-focused mercury capture solutions driven by its patented SEA™ Technology using a powerful combination of science and engineering. We offer designed systems and materials tailored and formulated specifically to each customer's unique application.

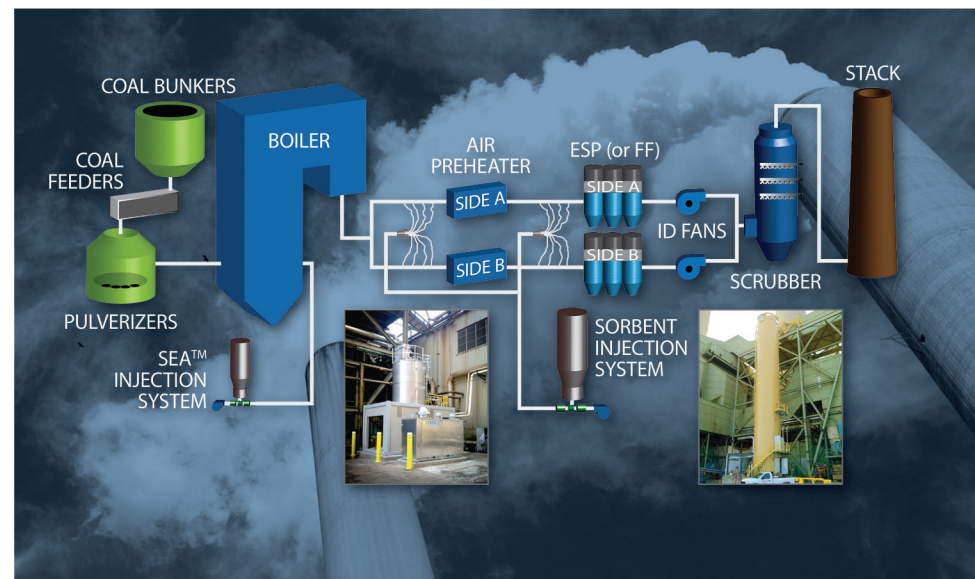
With more than 20 years of successful demonstration and testing at more than 60 full-scale locations, our superior, cost-effective strategy will meet or exceed U.S. Environmental Protection Agency (EPA) Mercury and Air Toxics Standards (MATS) compliance for all coal-burning power plants. Backed by 42 patents granted across multiple solutions, ME₂C's program is proving successful at electric generation plants throughout North America and worldwide.

The Competitive Advantage: A Complete Science and Engineering Approach

High-grade sorbent enhancement additives— injected into the boiler furnace or added to the coal in minimal amounts—work in conjunction with proprietary, uniquely formulated sorbent products to ensure maximum mercury capture.

TECHNOLOGY FEATURES

- Proven program economics
- No balance-of-plant issues
- Cost-effective capture technology
- Guaranteed results
- Maintain/restore fly ash sales
- High-sulfur-tolerant and SO₃-tolerant sorbents



SEA™ Technology

ME₂C's SEA™ Sorbent Technology provides total mercury control, yielding solutions that are based on a thorough scientific understanding of actual and probable interactions in mercury capture processes from coal-fired flue gas.

A complete understanding of the complexity of mercury sorbent flue gas interactions and chemisorption mechanisms allows for optimal control strategy and product formulation, resulting in the most effective mercury capture achievable.

Combined with a thorough proprietary audit of the plant and its configuration and instrumentation, ME₂C's complete science and engineering approach for mercury sorbent flue gas interactions is well understood, highly predictive, and critical to delivering "Total Mercury Control."

SB SORBENTS

SORBENT ENHANCEMENT ADDITIVE TECHNOLOGY

PRODUCT DESCRIPTION

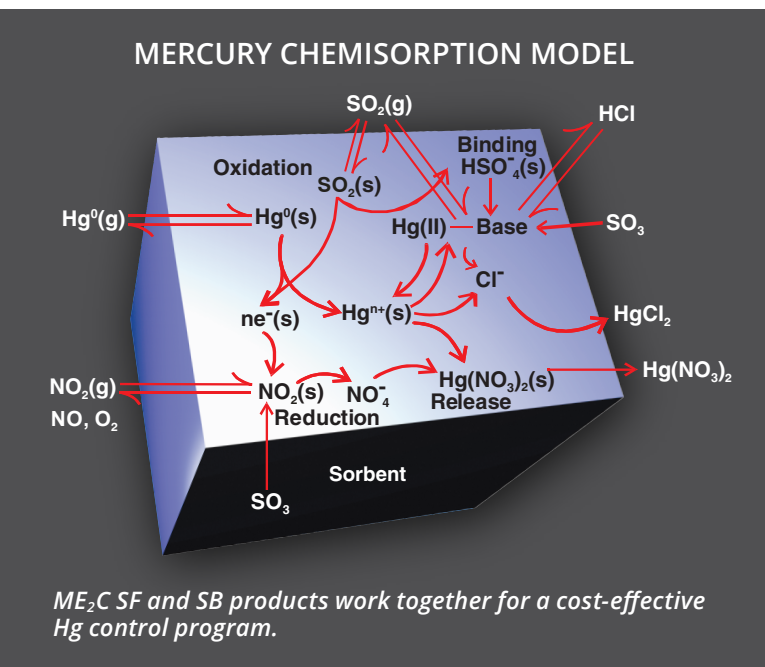
The SB line of sorbent enhancement additive (SEA) sorbents promotes mercury oxidation and capture as a part of the ME₂C "Total Mercury Control" Program. This solid, often carbon-based, material synergistically reacts with SF products, impedes sorption of flue gas constituents, and captures Hg as soon as it is injected into the flue gas (up to 96+% Hg capture).

BENEFITS

- Enhanced mercury control at low dosage rates.
- Designed to work with SF products for effective oxidation and capture of Hg.
- Minimal-to-no impact on balance-of-plant equipment.
- Improved (lower) opacity.
- Maintains gypsum and fly ash quality.
- Superior material-handling characteristics.
- Simple to operate, low-cost, and easily maintained application equipment.
- Nonhalogen sorbents stored in unlined silos.

PROPERTIES

- Solid fine-powder sorbents
- Carbon and noncarbon
- Sorbent surfaces optimized for Hg capture
- Easily handled and stored
- Low moisture
- Consistent particle size



APPLICATION

- Carbon- and noncarbon-based sorbents for the capture of oxidized and elemental mercury.
- Coal-fired plants with any type of emissions control configuration or fuel type.
- Typically injected at air heater inlet or air heater outlet locations upstream of particulate collection devices.
- Can be used with and without SF product oxidizers.

PRODUCTS

- SB24: Sorbent for most typical applications
- SB31: Sorbent for flue gases with low-to-mid levels of SO₃ or other interferents
- SB33: Sorbent for flue gases with high levels of SO₃ and opacity challenges
- SB**: Other specialized sorbents available for difficult or unique applications

RELATED PRODUCTS

- SF10: SEA Solid Oxidizer (powder-based)
- SF20: SEA Liquid Oxidizer (solution-based)

SF (OXIDIZER)

SORBENT ENHANCEMENT ADDITIVE TECHNOLOGY

PRODUCT DESCRIPTION

The SF line of SEAs promotes gas-phase and catalytic mercury oxidation and enhances capture of mercury on the sorbent as a part of the ME₂C "Total Mercury Control" Program. This solid or liquid-based reagent quickly reacts with Hg in the boiler and flue gas to oxidize and capture Hg (up to 99+% Hg oxidation).

BENEFITS

- Very low dosage rates.
- Designed to work with SB sorbents for effective oxidation and capture of Hg.
- Designed to work with scrubber reemission additives for effective oxidation and capture of Hg.
- Maintains gypsum and fly ash quality.
- Simple to operate, low-cost, and easily maintained application equipment.

PROPERTIES

- Solid powder or aqueous solution
- Easily handled and stored

APPLICATION

- Used to promote oxidation of elemental mercury.
- Coal-fired plants with any type of emissions control configuration and fuel type.
- SF SEAs can be added directly to the coal belt or injected directly into the furnace or flue gas at multiple locations.

PRODUCTS

- SF10: SEA Solid Oxidizer (powder-based)
- SF20: SEA Liquid Oxidizer (solution-based)

RELATED PRODUCTS

- SB Sorbents: Sorbents for Hg Capture
- SA2: Scrubber Reemission Additive

SA2

SCRUBBER REEMISSION ADDITIVE TECHNOLOGY

PRODUCT DESCRIPTION

Scrubber additive SA2 prevents scrubber reemission of mercury and provides heavy metals remediation as part of the ME₂C "Total Mercury Control" Program. This sulfur-based reagent quickly precipitates dissolved mercury from the absorber solution efficiently preventing reemission (up to 99% Hg precipitation).

BENEFITS

- Low dosage rates: ~1–4 gallons/hour.
- Provides multiple bonding sites that tightly secure Hg molecules.
- Large formation of polysulfide particles that are easily removed with absorber solids.
- Maintains gypsum quality.
- Captures additional soluble ionic metals: lead, copper, thallium, cobalt, cadmium, nickel, zinc, iron, silver, and tin.
- Lowers effluent metals, aids in addressing TCLP requirements.
- Simple to operate, low cost, and easily maintained application equipment.

PROPERTIES

- Aqueous solution
- Noncorrosive, nonhazardous
- Freeze point: 30°F
- Boiling point: 212°F

APPLICATION

- Coal-fired plants equipped with wet scrubbers for SO₂ control.
- Mercury in flue gas must be highly oxidized, over 90% (see "Related Products" for Hg oxidation).
- SA2 can be added directly to scrubber slurry at multiple locations.

RELATED PRODUCTS

- Additive Technology Product Family:
 - SF10: Solid Additive for Hg Oxidation
 - SF20: Liquid Additive for Hg Oxidation