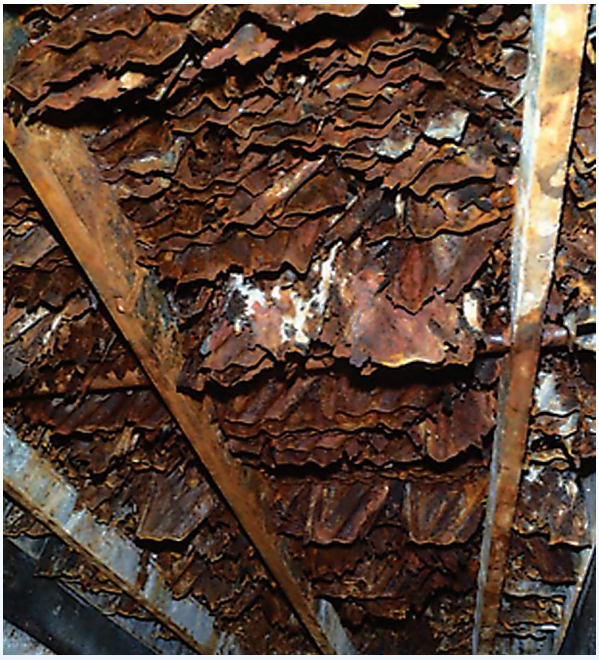
MERCURY OXIDATION
Without Corrosive Halides

Mercury Oxidation Challenges

To improve the mercury capture co-benefit of air quality control devices and activated carbon, power plants often first treat the flue gas with halides ($CaBr_2$ or $CaCl_2$) in order to oxidize the Hg and improve overall mercury capture in wet scrubbers or with PAC products.

While the addition of these halides to the coal feed does indeed augment the mercury oxidation, there are inherent issues and limitations to these systems:

- Adding the halides, chloride & bromide, at typical furnace temperatures (upwards of 2000° F) generates trace acid gases that corrode the balance of the plant.
- Plants using halides often have to replace their Air Heater baskets in just 12–24 months (in typical use AH Baskets can last up to 5 years!).
- Replacing corroded AH baskets results in expensive, unscheduled and unplanned downtime for a plant.



Plant corrosion typical of halide use.

Avoid Unscheduled Outages at Your Power Plant and Save Money in the Process

How It Works

Novinda's AS-Ox product augments the oxidation of mercury and improves the co-benefit of the plant's air quality control devices, but without the corrosive gases and damage to the balance of the plant.

- ✔ Novinda's AS-Ox product ***promotes oxidation*** of Hg via chemistry on the particle surface.
- ✔ AS-Ox is ***injected downstream*** of the boiler at much cooler flue gas temperatures (just 300–600 degrees F) than halides via a typical dry sorbent injection system.
- ✔ AS-Ox is ideal for those plants now utilizing $CaBr_2$ or $CaCl_2$ coal treatments that are
  - Equipped with SO_2 Scrubbers (with or without ACI Injection); and/or
  - Burn PRB or bituminous coal with a brominated PAC injection system.
- ✔ Like Novinda's highly successful AS-HgX, AS-Ox is built on the company's proprietary and proven bentonite substrate platform.

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Novinda's AS-Ox

Corrosion Free Hg Oxidation

The Clear AS-Ox Advantage

- AS-Ox does not generate the damaging halogen gases, which also means:
  - There is no change in the flue gas environment;
  - There are no highly corrosive gases (HBr and HCl);
  - There is no increased concentration of existing trace acid gases (HCl); and,
  - Ultimately, no corrosive damage to the plant, putting an end to expensive, unscheduled outages.
- AS-Ox is just as effective as the typical halogens in oxidation performance while costing the same as $CaBr_2$, and even less than $CaCl_2$.

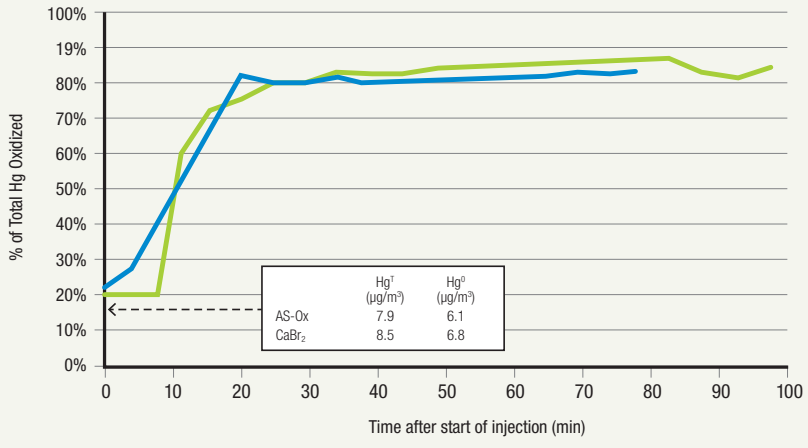
Steps for Evaluation

Let us prove it to you.

Novinda is currently seeking full-scale trial opportunities at a wet-scrubbed plant to demonstrate what its initial AS-Ox tests have shown: ***AS-Ox is as effective as other Hg-oxidation methods, while costing less and eliminating the highly corrosive effects of halides.***

Be smart, contact Novinda today.

Full Scale Power Plant Test Results



- 75 MW CS-ESP
- PRB Coal
- Stack Measurements
- Injection Rates:
  - $CaBr_2$, 112 lbs/hr
  - Novinda, 120 lbs/hr

Note: Injection of AS-Ox or $CaBr_2$ started at 0 min.

AS-Ox Injection — Calcium Bromide Injection

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