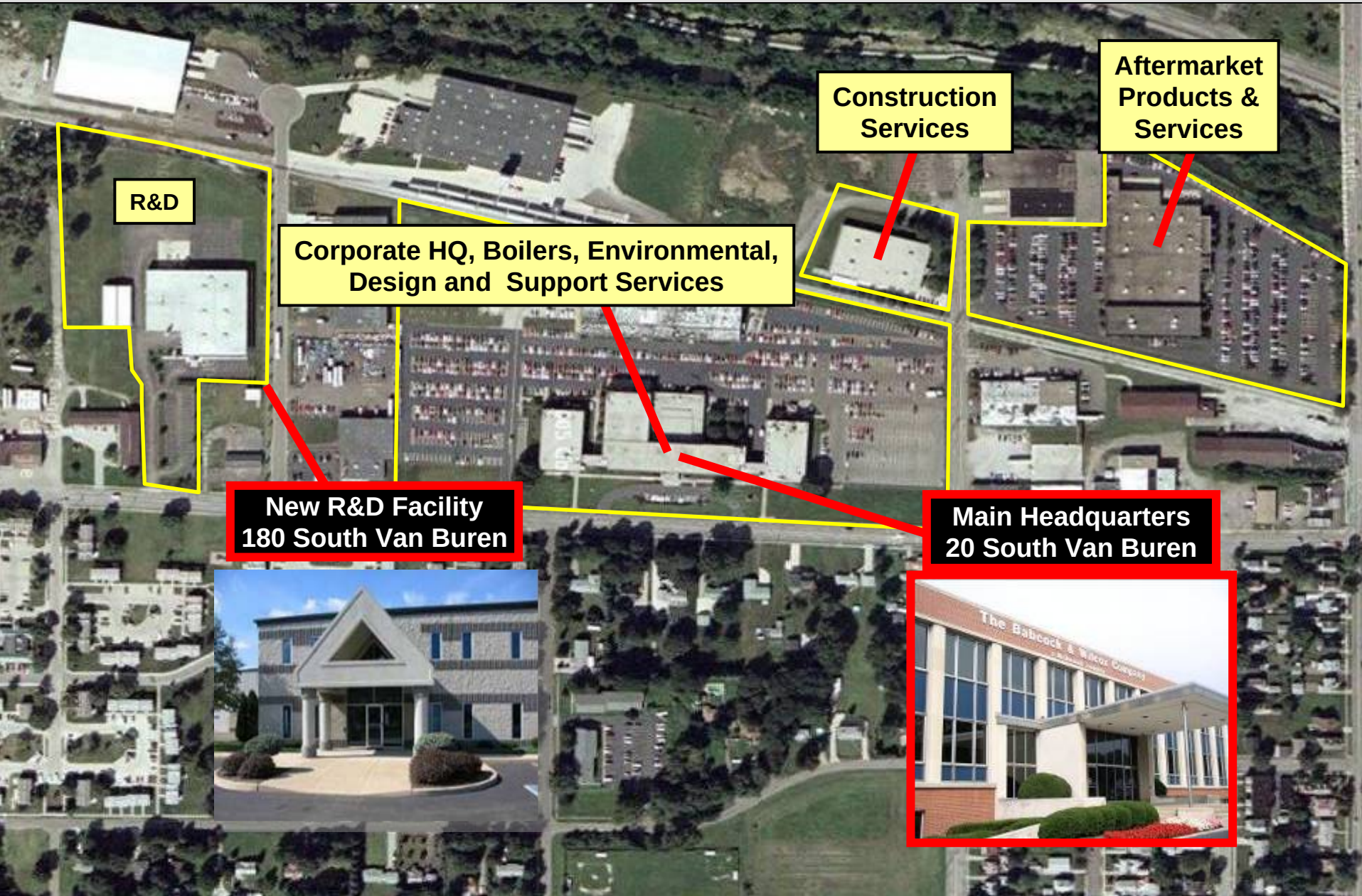
Full-Scale WFGD Hg Removal Additive Field Tests

The Babcock and Wilcox Company Power Generation Group
Barberton Ohio

December 13th 2007

B&W Power Generation Group; located in Barberton Ohio



Overview of B&W's WFGD Field Tests for Mercury Removal and Inhibiting Mercury Re-emission

WFGD Additive Absorption Plus(Hg)™

US006503470B1

(12) **United States Patent**
Nolan et al.

(10) **Patent No.: US 6,503,470 B1**
(45) **Date of Patent: Jan. 7, 2003**

(54) **USE OF SULFIDE-CONTAINING LIQUORS FOR REMOVING MERCURY FROM FLUE GASES**

(75) Inventors: **Paul S. Nolan**, North Canton, OH (US); **William Downs**, Alliance, OH (US); **Ralph T. Bailey**, Uniontown, OH (US); **Stanley J. Vecci**, Alliance, OH (US)

(73) Assignees: **The Babcock & Wilcox Company**, New Orleans, LA (US); **McDermott Technology, Inc.**, New Orleans, LA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/464,806**

Filed: **Dec. 17, 1999**

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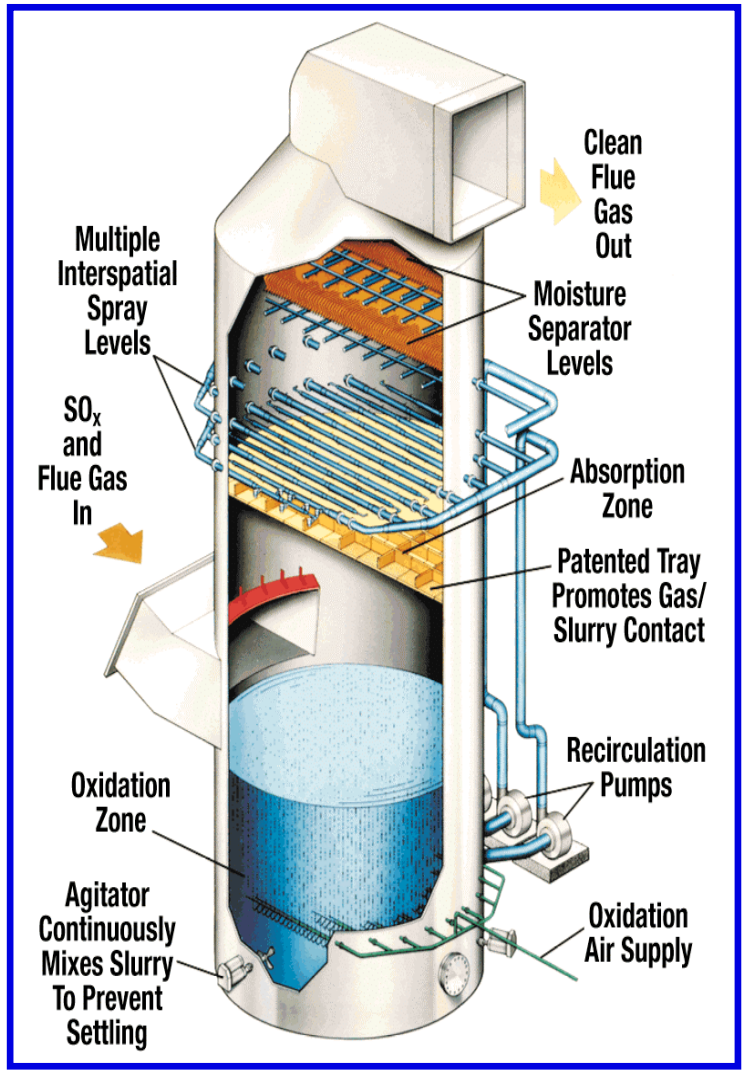
B&W's WFGD Enhanced Mercury Removal Method

–Absorption Plus(Hg)^{TM} - NaHS



B&W's WFGD Enhanced Mercury Removal Method

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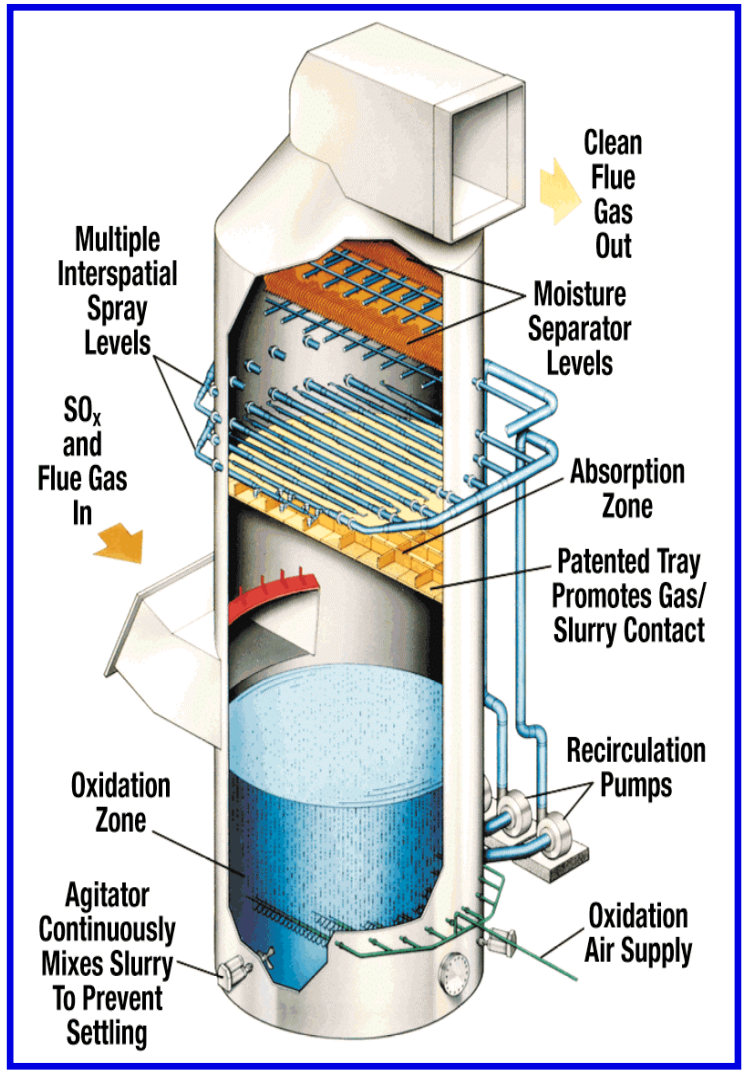
- **Commercially available from B&W**



B&W's WFGD Enhanced Mercury Removal Method

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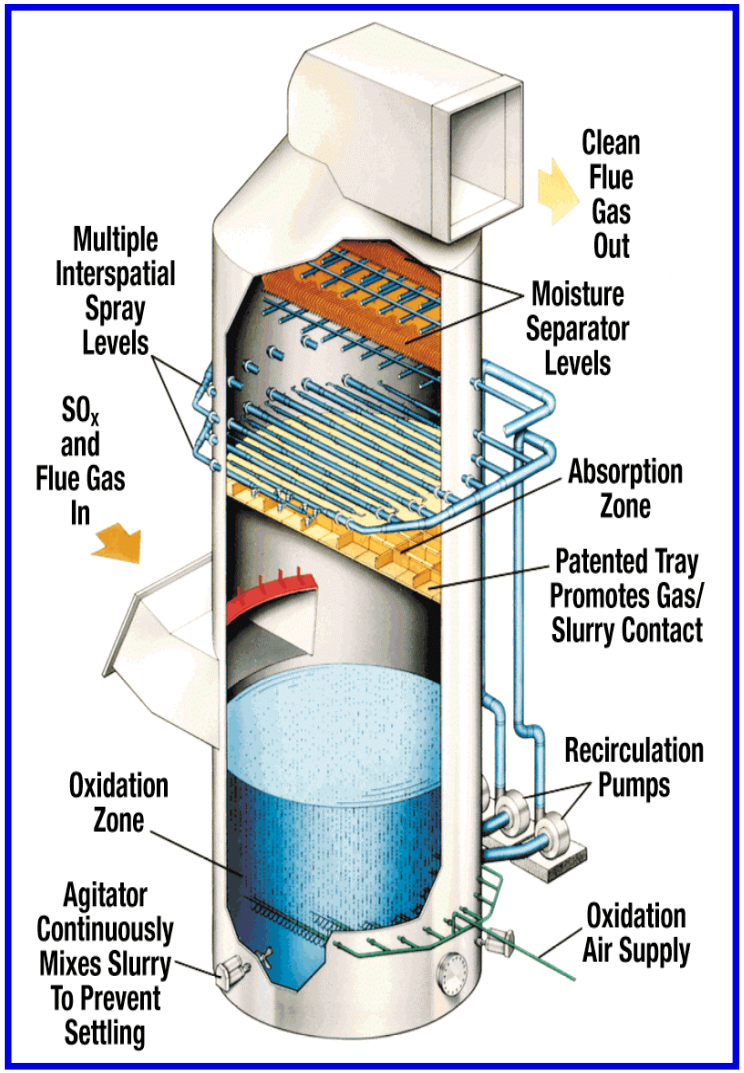
- **Captures primarily oxidized forms of Hg**



B&W's WFGD Enhanced Mercury Removal Method

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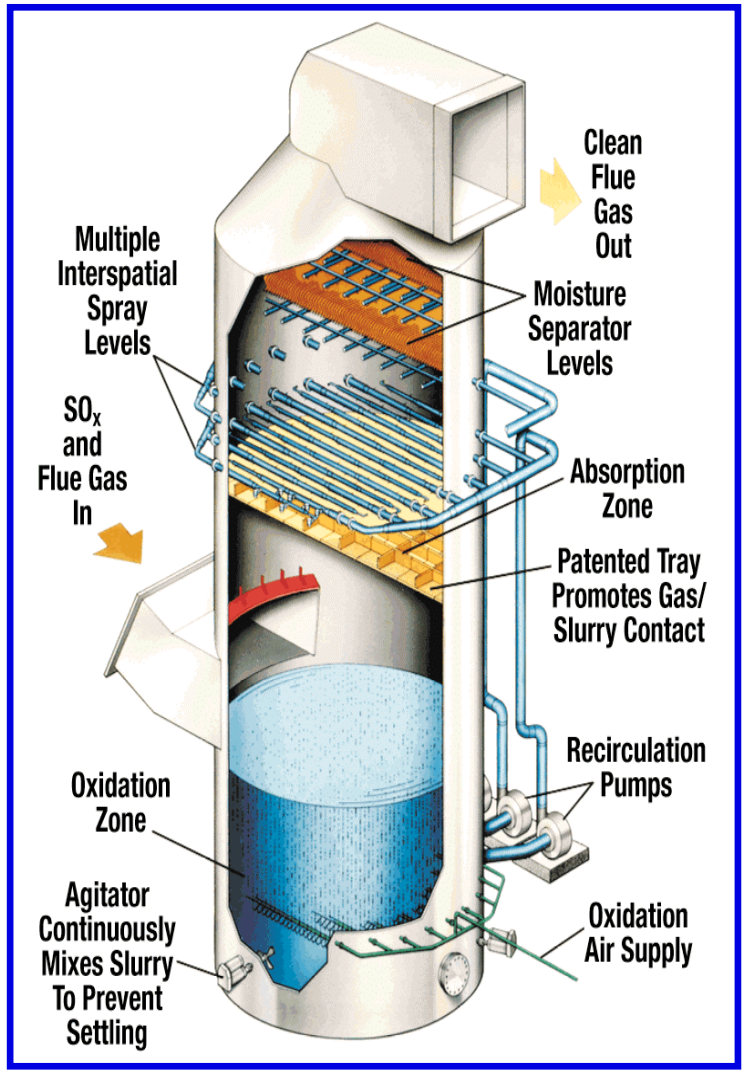
- Commercially available from B&W
- Captures primarily oxidized forms of Hg
- Prevents mercury re-emission



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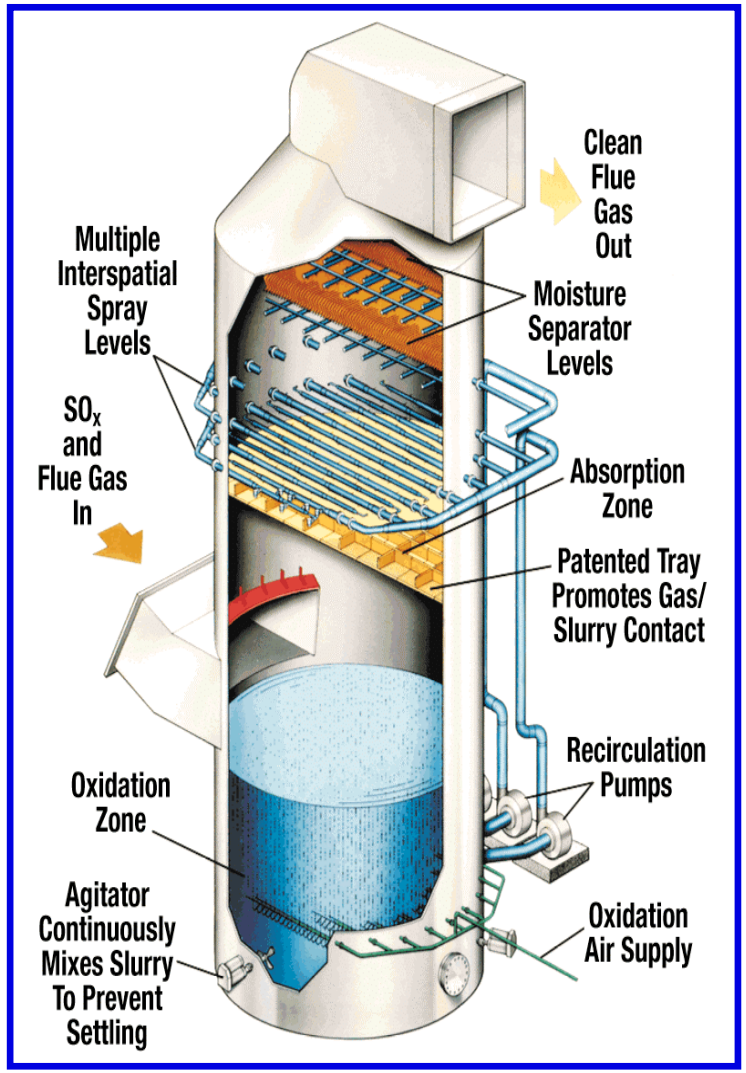
- Prevents mercury re-emission
- Results in an overall 10-25% increase in total mercury capture



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- Captures primarily oxidized forms of Hg
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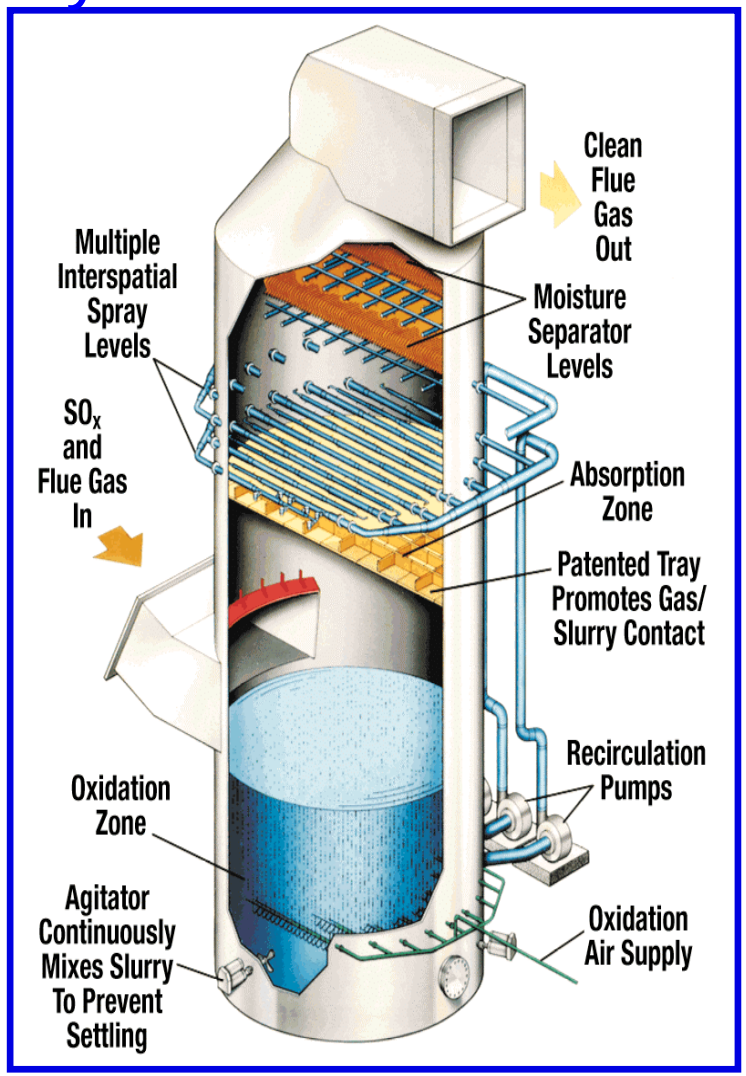
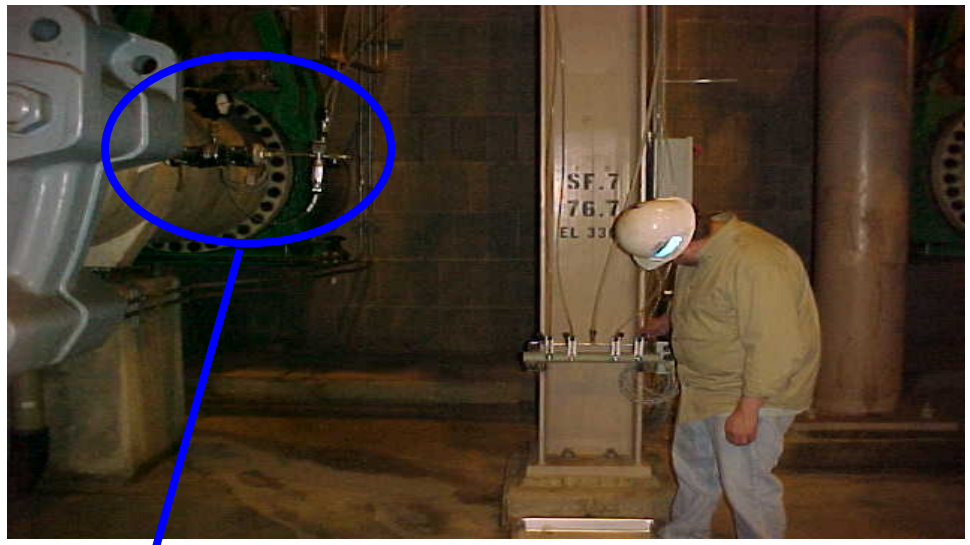
- Results in an overall 10-25% increase in total mercury capture
- NaHS is Readily available and inexpensive



B&W WFGD Reagent Feed System

NaHS Injection Skid



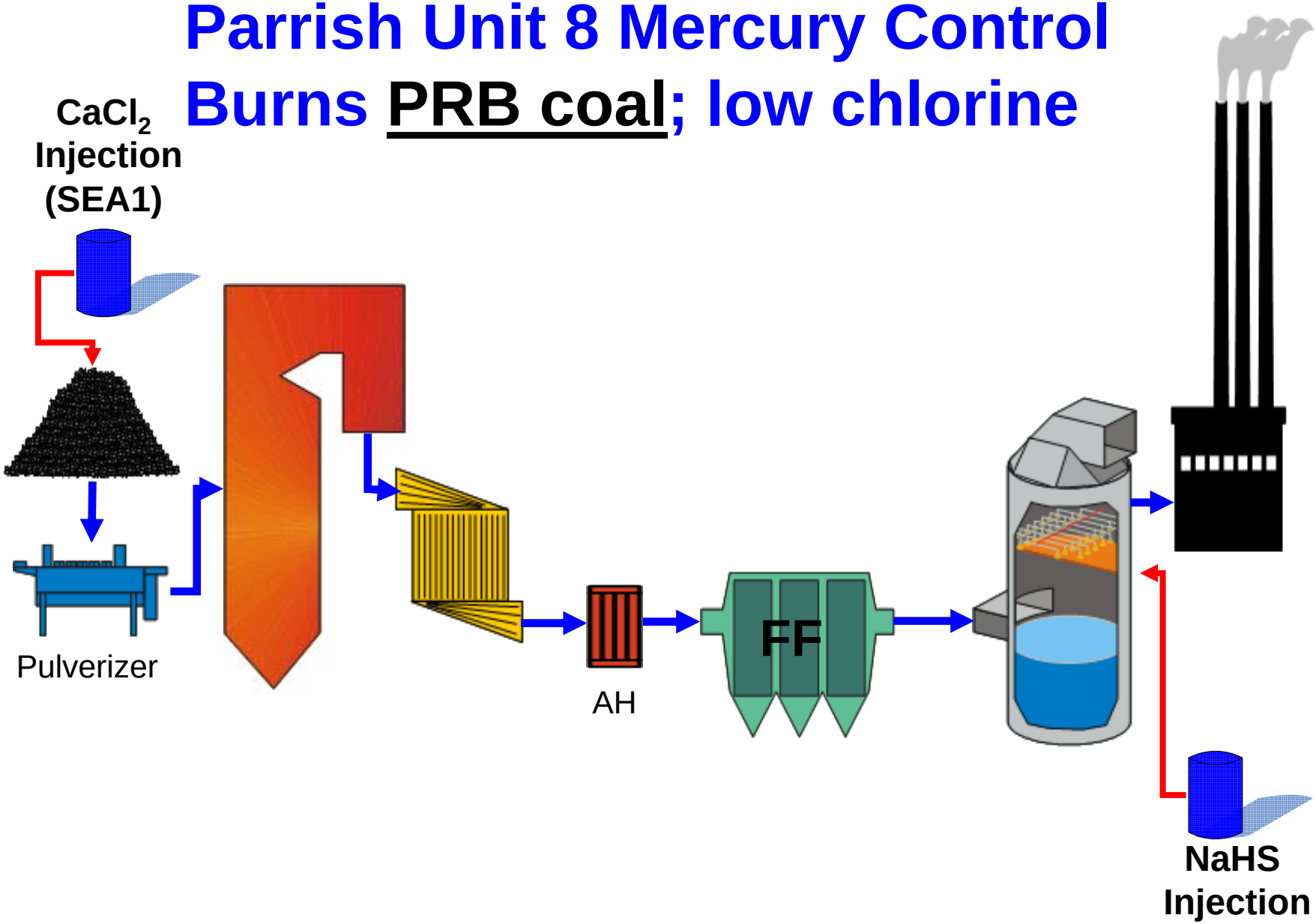
NaHS Feed

Field Test Results: Absorption Plus(Hg)™

- Parrish
  Sub-bituminous Coal - 2005
- Mill Creek
  Bituminous Coal - 2005
- Mount Storm
  Bituminous Coal - 2004

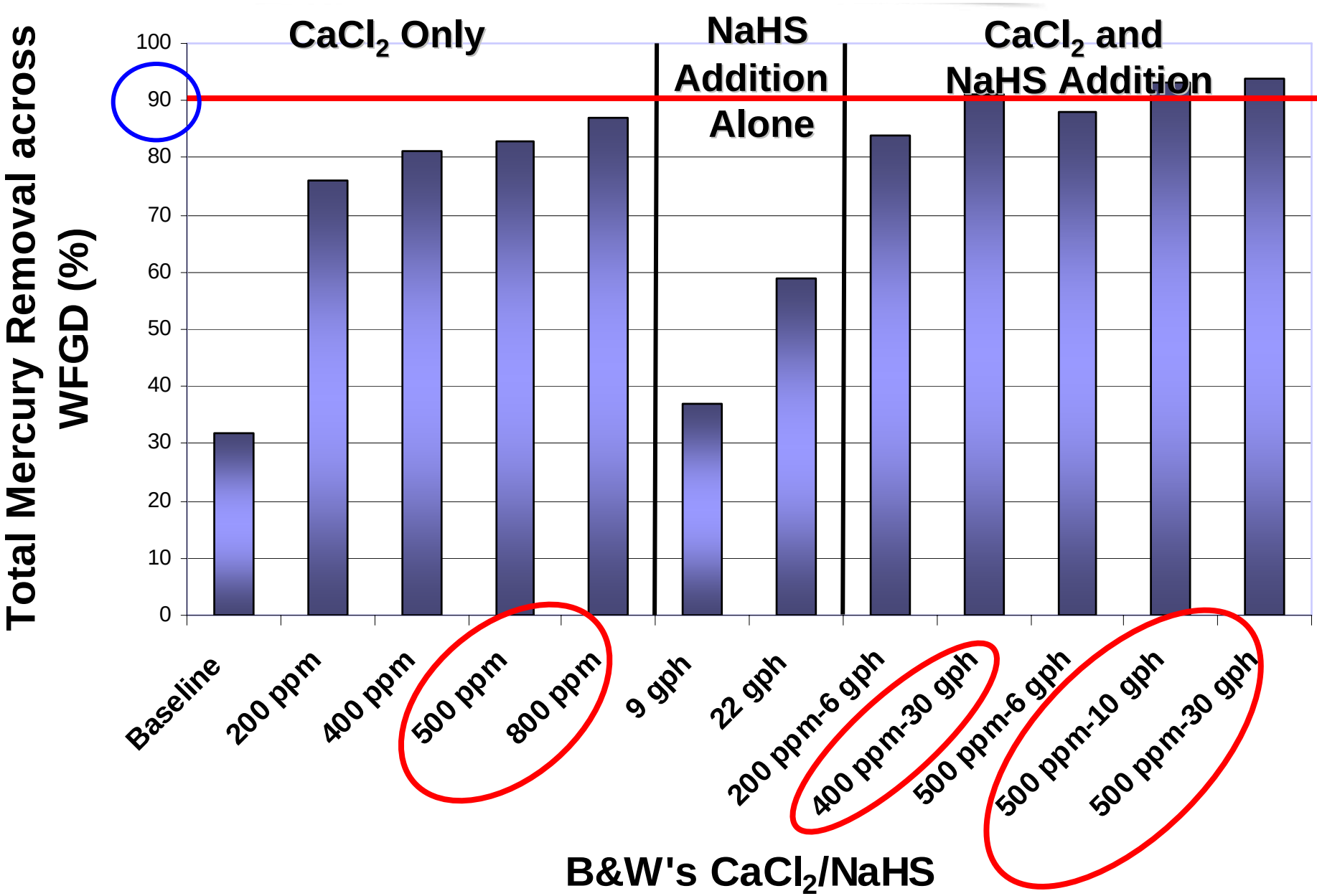
Texas Genco's Parrish Plant
Subbituminous Coal

Parrish Unit 8 Mercury Control
Burns PRB coal; low chlorine



Calcium Chloride Injection Skid & Tank

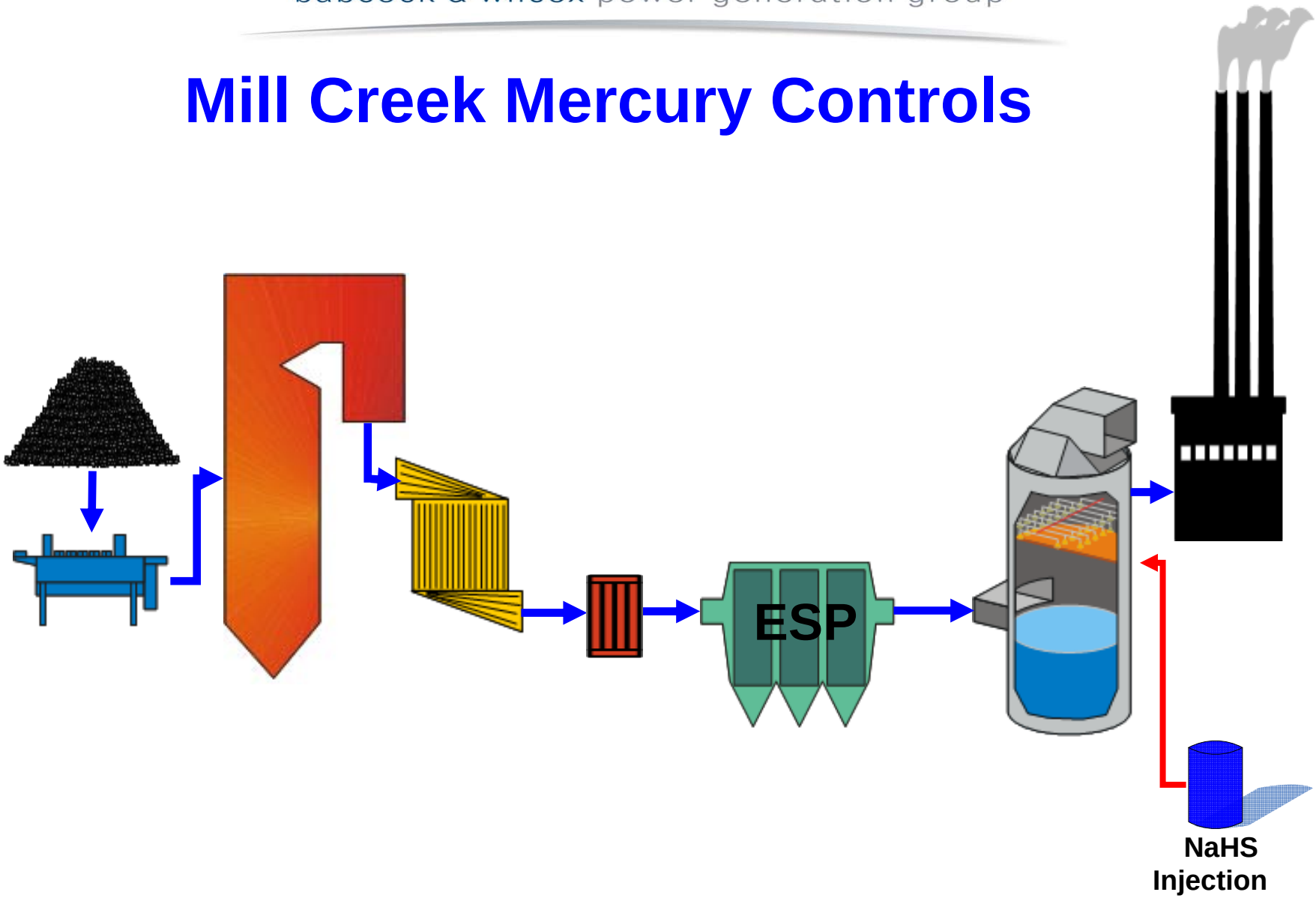
Total Mercury Removal across the WFGD Scrubber



E.ON America's Mill Creek Plant

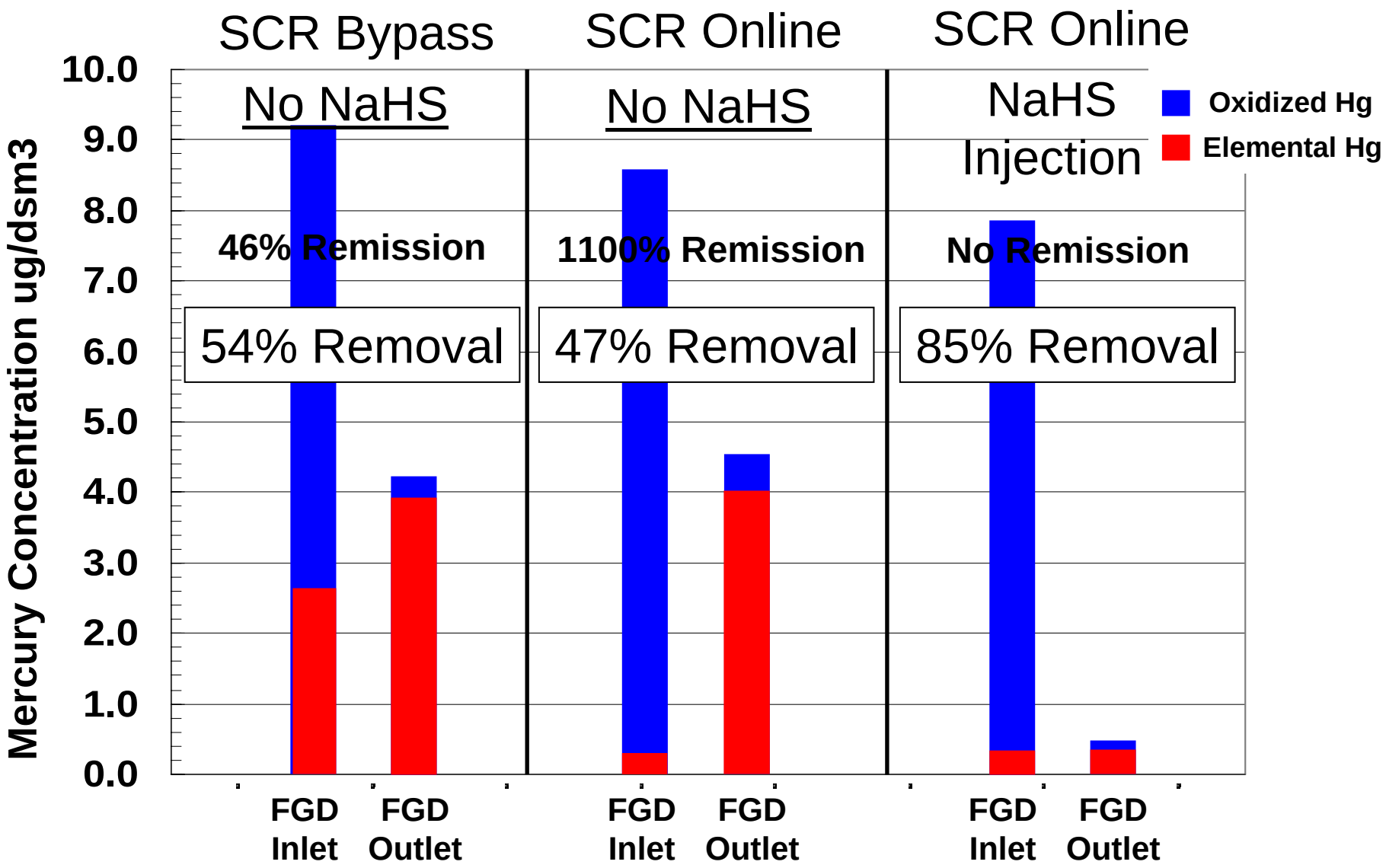
- Unit 4– 530 MW
- Burns High-sulfur (3.3%) bituminous coal
- SCR / ESP / Wet FGD
- SCR Catalyst is Hitachi's plate design
- ESP has SCA of ~230
- FGD system is limestone forced-oxidation

Mill Creek Mercury Controls

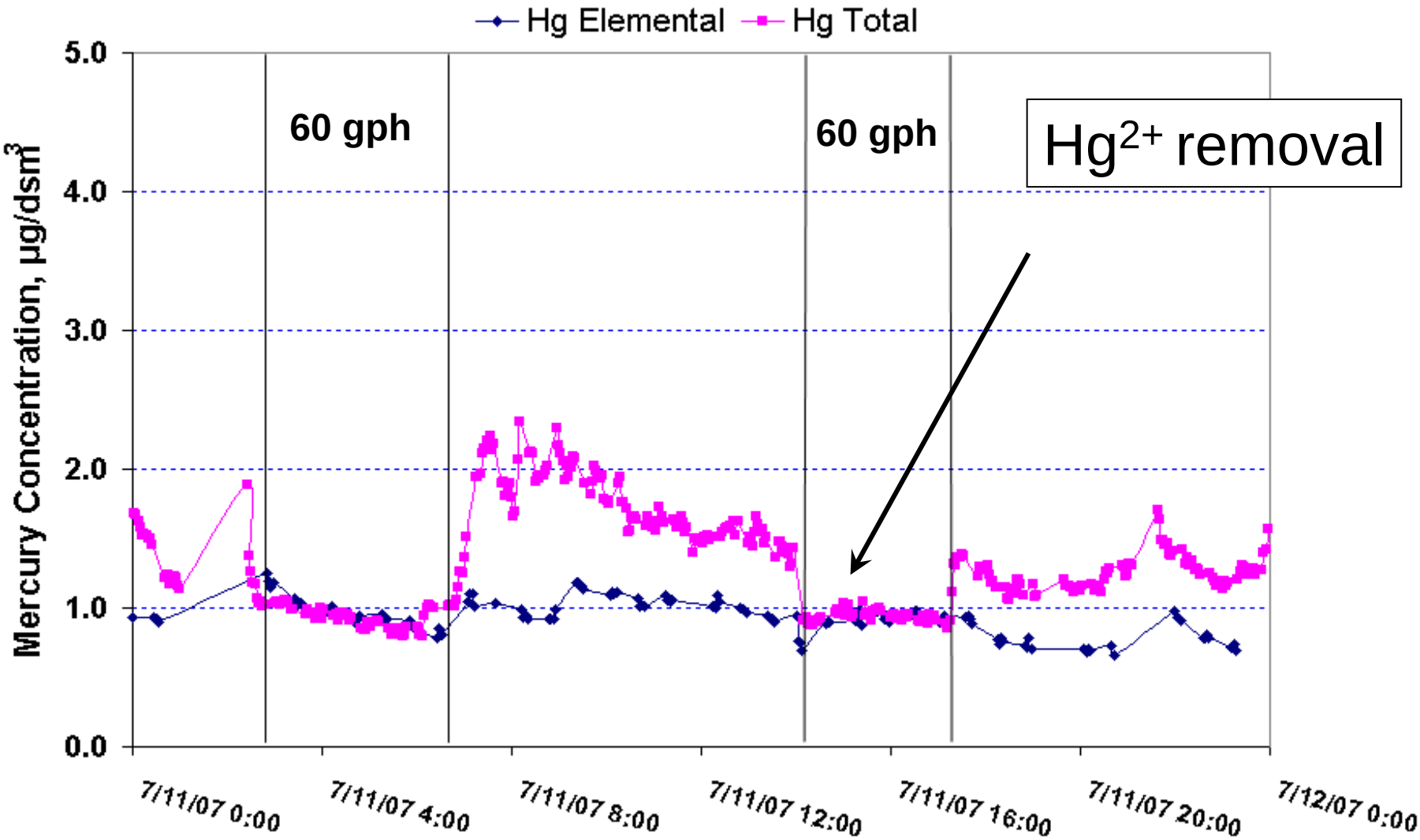


Mercury Test Data from Mill Creek

Bituminous Coal ● SCR + ESP + Wet FGD



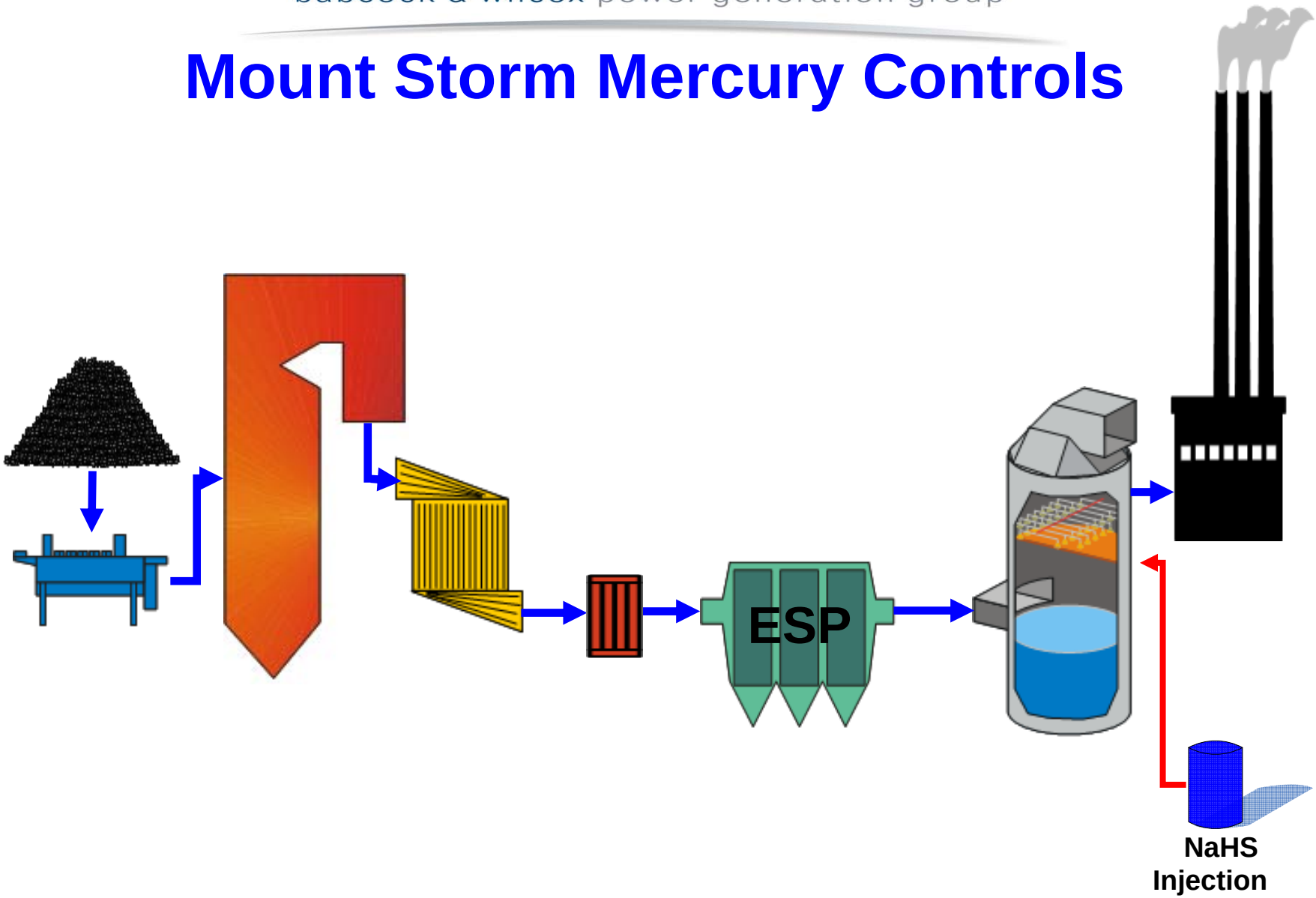
E.ON Mill Creek WFGD Outlet B&W WFGD Additive (Raw Data, 07/11/07)



Dominion
Mount Storm Site Description

- *3 Units -1662 Megawatts combined*
- *Burns over 4000 tons/day of medium sulfur Eastern bituminous coal*
- *Air Quality Control System consisting of*
- *SCR/ESP/WFGD*
- *SCR Catalyst is installed in 2 layers*
- *Cormatech's honeycomb design*
- *ESP has a SCA of ~320*
- *FGD system is limestone forced-oxidation*

Mount Storm Mercury Controls



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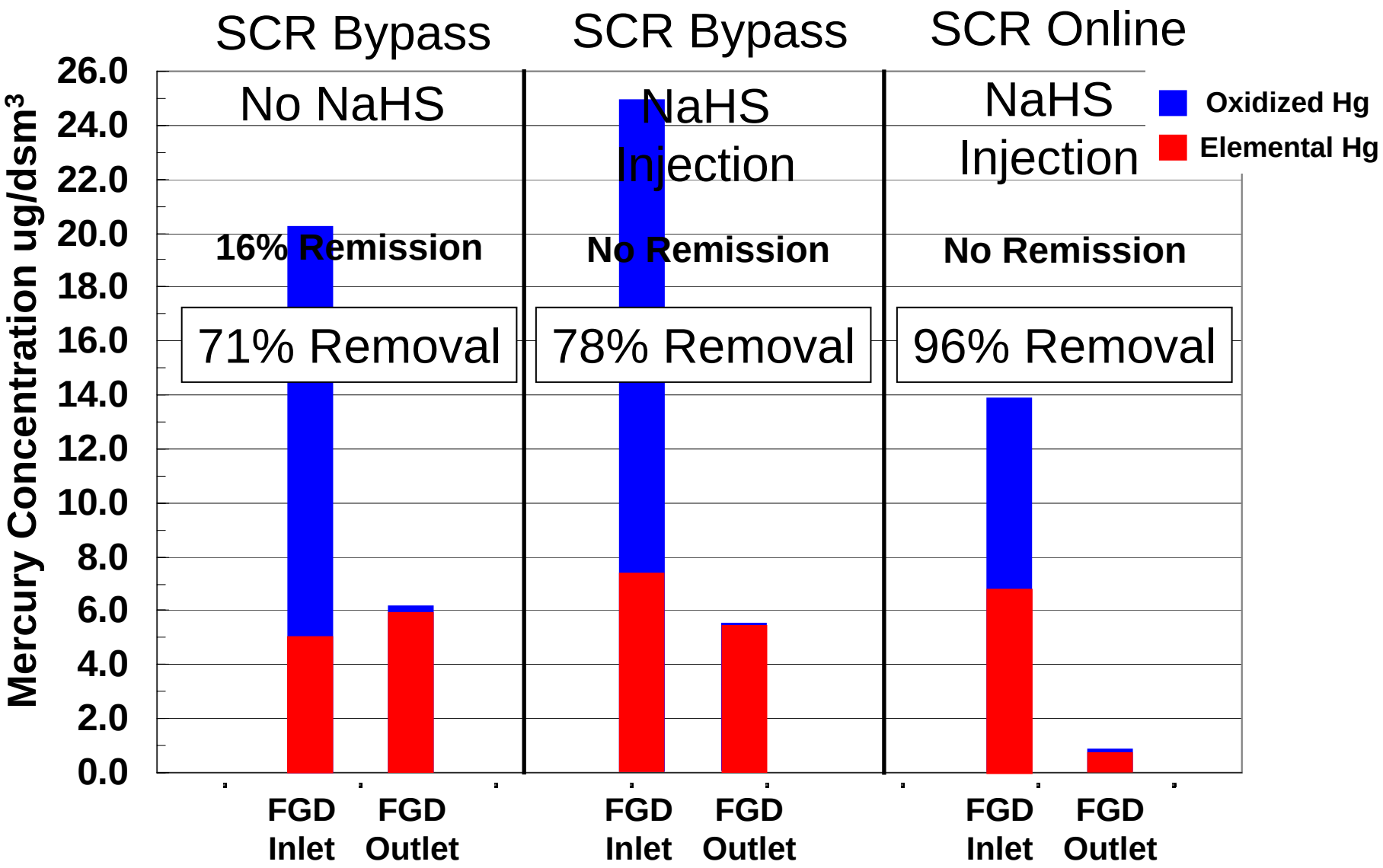

Conclusions for B&W Absorption Plus(Hg)™ Field Test

- Past Field Tests at Parish, Endicott, Mount Strom, Mill Creek

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- Tests show NO effect on gypsum purity or SO_2 Removal
- Commercial Injection Units Available from B&W

THANK YOU !