Bromine Based Wet Mercury Abatement - Progress achieved with Scrubber Additives

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MEC 6 - Mercury Emissions from Coal
6th International Experts Workshop
April 22-24, 2009, City Hotel, Ljubljana (Slovenia),
Agenda

• $\text{CaBr}_2$ to Coal and PRAVO to Scrubber

• $\text{CaBr}_2$ to Coal and PAC to Scrubber
**KNX™**

is a registered trade mark of ALSTOM Power – ECS, standing for the bromine based mercury oxidation technology of Vosteen Consulting

**PRAVO®**

is a registered trade mark of Vosteen Consulting, standing for the inorganic precipitation agent containing polysulfide, thiosulfate and bromide

Patents on the combined application of KNX and PRAVO are pending
Enhanced Mercury Abatement
CaBr$_2$ to Coal and PRAVO to Scrubber
(Boiler N230, 100 MW$_{\text{therm}}$, CURRENTA, Tests in 2008)
Mercury emissions with CaBr$_2$ addition to coal only (no PRAVO$^\circledR$ added)

50 % German bituminous
50 % Columbian
both 0.8 weight % S

30 % German bituminous
70 % Columbian
both 0.8 weight % S

13.5 t/h coal
90 % load
160 t/h steam
140,000 dscm/h
Mercury emissions with CaBr₂ addition to coal and PRAVO® addition to WFGD

50 % German bituminous
50 % Columbian
both 0.8 weight % S

- no CaBr₂ and no PRAVO® added
- 160 ml/h PRAVO® diluted 1:5 continuously

- 13.5 t/h coal
- 90 % load
- 160 t/h steam
- 140,000 dscm/h
Agenda

- \( \text{CaBr}_2 \) to Coal and PRAVO to Scrubber
- \( \text{CaBr}_2 \) to Coal and PAC to Scrubber
Co-operation to combine two established technologies

„CaBr₂ to Coal and PAC to WFGD with Selective Mercury Precipitation in WWT”

Large scale demonstrations in 2009

at two Evonik power plants of different design
Enhanced Mercury Abatement
CaBr₂ to Coal and PAC to WFGD
with Selective Mercury Precipitation in WWT
Enhanced Mercury Abatement
CaBr₂ to Coal and PAC to WFGD
with Selective Mercury Precipitation in WWT

Bituminous Coal (mixture)

CaBr₂

Boiler B

DeNOx

ESP

PAC

1st Hydro-cyclone

2nd Hydro-cyclone

WFGD

Stack

Hg-rich Sludge Fraction

Hg-free Gypsum

Low-Hg Sludge Fraction