

Reinhold Environmental Ltd.



***2007 APC Round Table & Expo
Presentation***

***July 8-10, 2007
Chattanooga, TN
Hosted by TVA***

PCUG Hg and SO₃ Panel Discussion

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Key Drivers



- **SO₃ – plume visibility, downwash ground effects**
 - **SCR exacerbates; may be resolved by new catalysts?**
 - **FGD, \$-driver to use higher S coal**
- **NSR due to sorbent injection for Hg, SO₃, or trim/low-cost SO₂**

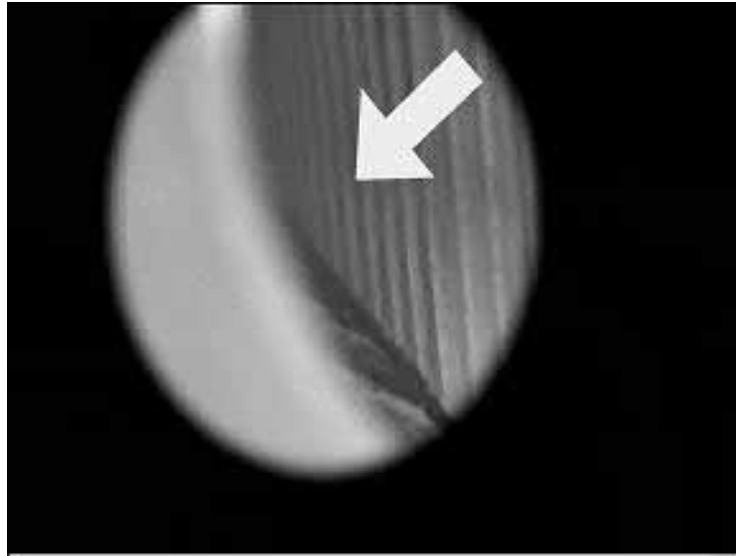
Overall Goals for Research



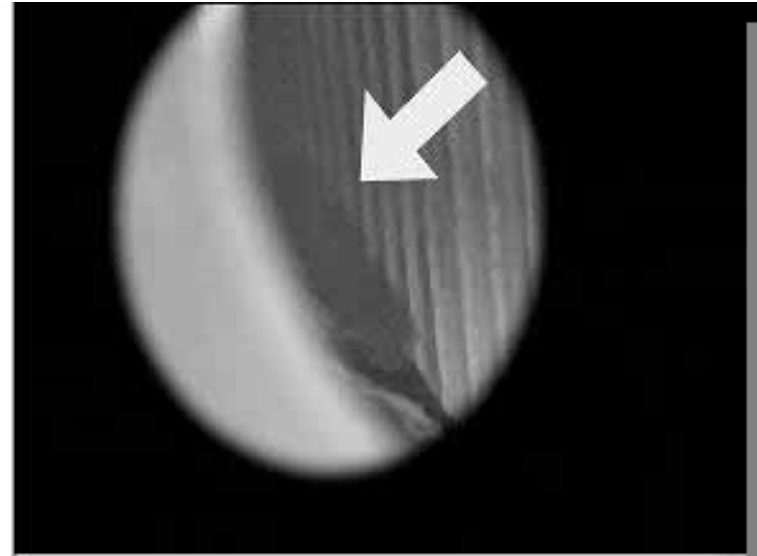
Avoid derates &/or added field or COHPAC

- **Maintain PM levels despite NO_x, Hg, SO₃, SO₂ trim controls**
 - Hopper baffles, Advanced power supplies, ROPE, etc.
 - Ability to predict and what-if with confidence allows selection of optimum solution for given site
- **Hg/SO₃ controls**
 - Mitigation guideline reduces risk of non-optimum technology selection

Increased PM Emissions w/High Carbon Ash Due To Hopper Re-entrainment?



Just Prior to Rapping



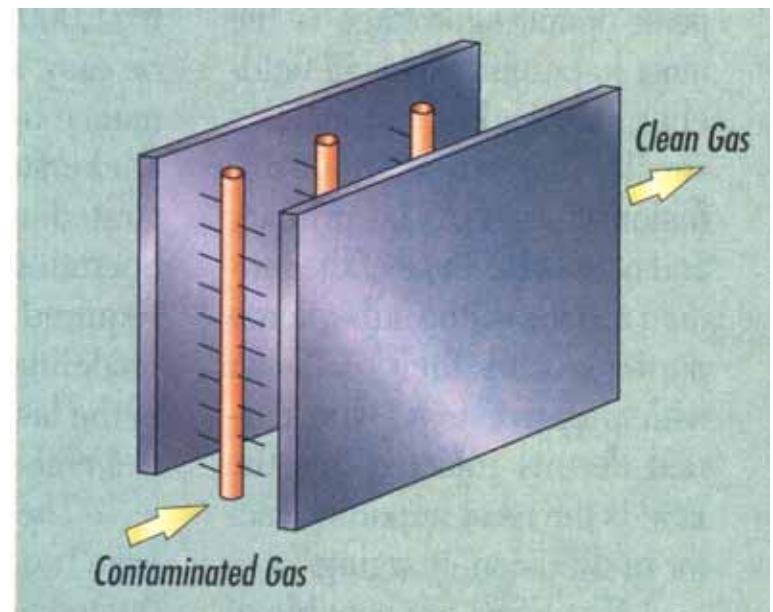
During Rapping Event

- **Visual observations indicate carbon particle “bounce” from hopper during rapping**
 - Carbon density < ash
 - Dispel main flow re-entrainment from plates hypothesis?
- **Flow modeling of mechanisms and counter measures**

Particulate Control – Key Areas Related to Sorbent Injection

Manage alkali sorbents impacts

- Conducting field tests to gather data on properties of ash generated by sorbents added for SO₃ control
- Incorporate into ESPM; use to what-if potential solutions
- Test countermeasures – Advanced power supplies, ROPE, SEP, Agglomerator, additives, ...



Opacity Due to Boiler Generated SO₃

- **Focus on modeling**
 - If we understand mechanisms, can we minimize formation?
 - Lehigh & SoRI models
- **Update SO₃ mitigation Guide**
 - Find, evaluate new approaches
- **Related effort = continuous, spatially-resolved, in situ SO₃ measurement**
 - Manage alkali injection for SO₃ control or SO₃ injection for ESP

