

REINHOLD ENVIRONMENTAL Ltd.



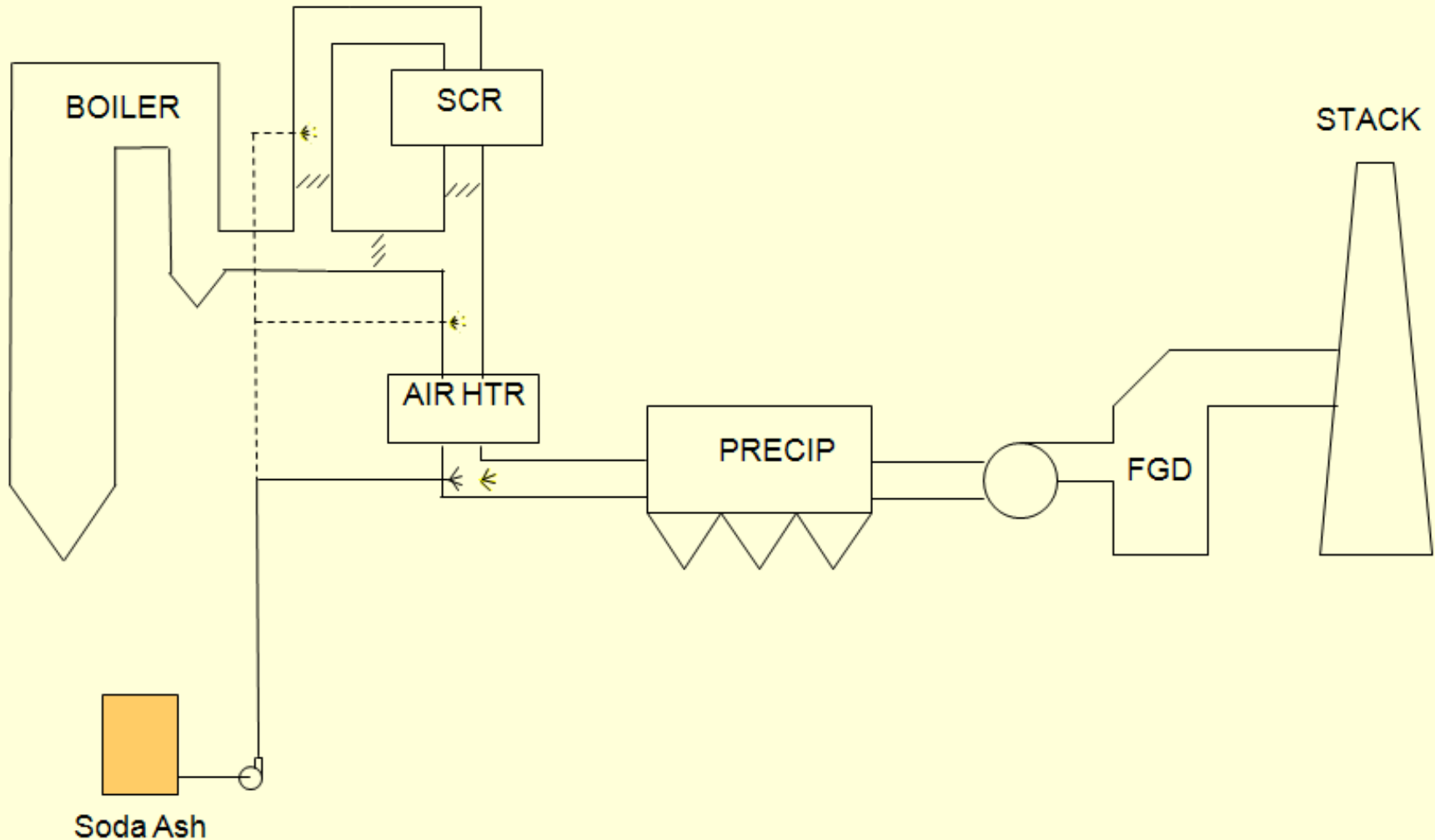
**2013 NO<sub>x</sub>-Combustion Round Table  
& Expo Presentations**

February 18 & 19, 2013, in Salt Lake City, UT / Hosted by PacifiCorp

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# SO<sub>3</sub> MITIGATION LOCATIONS





# SO<sub>3</sub> MITIGATION UPSTREAM OF SCR



- Benefits:
  - Removes SO<sub>3</sub> prior to Air Heater. Minimizes risk of ABS and H<sub>2</sub>SO<sub>4</sub> issues.
  - May allow operation with reduced AH Exit Gas Temperature
  - Lowers SCR required operating temperature and allows Units without economizer bypass to achieve lower operating loads
  - SO<sub>3</sub> removal has Hg<sup>-</sup> removal benefits with ACI and in precip from native unburned carbon.



# SO<sub>3</sub> MITIGATION UPSTREAM OF SCR



- Risks:
  - Sodium may poison catalysts.
  - Does Lower Halogen concentrations means less Hg oxidation across SCR?
  - Higher molar ratio may be required for SO<sub>3</sub> removal



# SO<sub>3</sub> MITIGATION BETWEEN SCR AND AIR HEATER



- Benefits:
  - Removes SO<sub>3</sub> prior to Air Heater. Minimizes risk of ABS and H<sub>2</sub>SO<sub>4</sub> issues.
  - May allow operation with reduced AH Exit Gas Temperature
  - SO<sub>3</sub> removed has Hg<sup>-</sup> removal benefits with ACI and in precip from native unburned carbon
- Risks:
  - Some Units have IDHX installed in this location



# Noteworthy Observations



- Upstream Mitigation has been successful in meeting  $\text{SO}_3$  removal targets and allowing reduced operating loads.
- No sodium catalyst deactivation issues to date.
- All units running below 700 degree range operating below MATS Hg limit per stack CEMS.
- Preliminary testing indicates higher mercury removal at precip outlet with  $\text{SO}_3$  mitigation in service.
- Testing in 2013 to quantify this and other issues.