



# DSI for MATS ---- (and CSAPR)



January 29, 2015 – hot topic



# Emission Levels Needed for Compliance

- MATS
  - ✓ HCl – 0.002 lb/MM Btu -- (<2 ppm)
  - ✓ Hg – DSI does not remove Hg – but removing SO<sub>3</sub> increases Activated Carbon performance
- CSAPR
  - ✓ SO<sub>2</sub> – performance level varies with unit in order to meet the allotted emissions





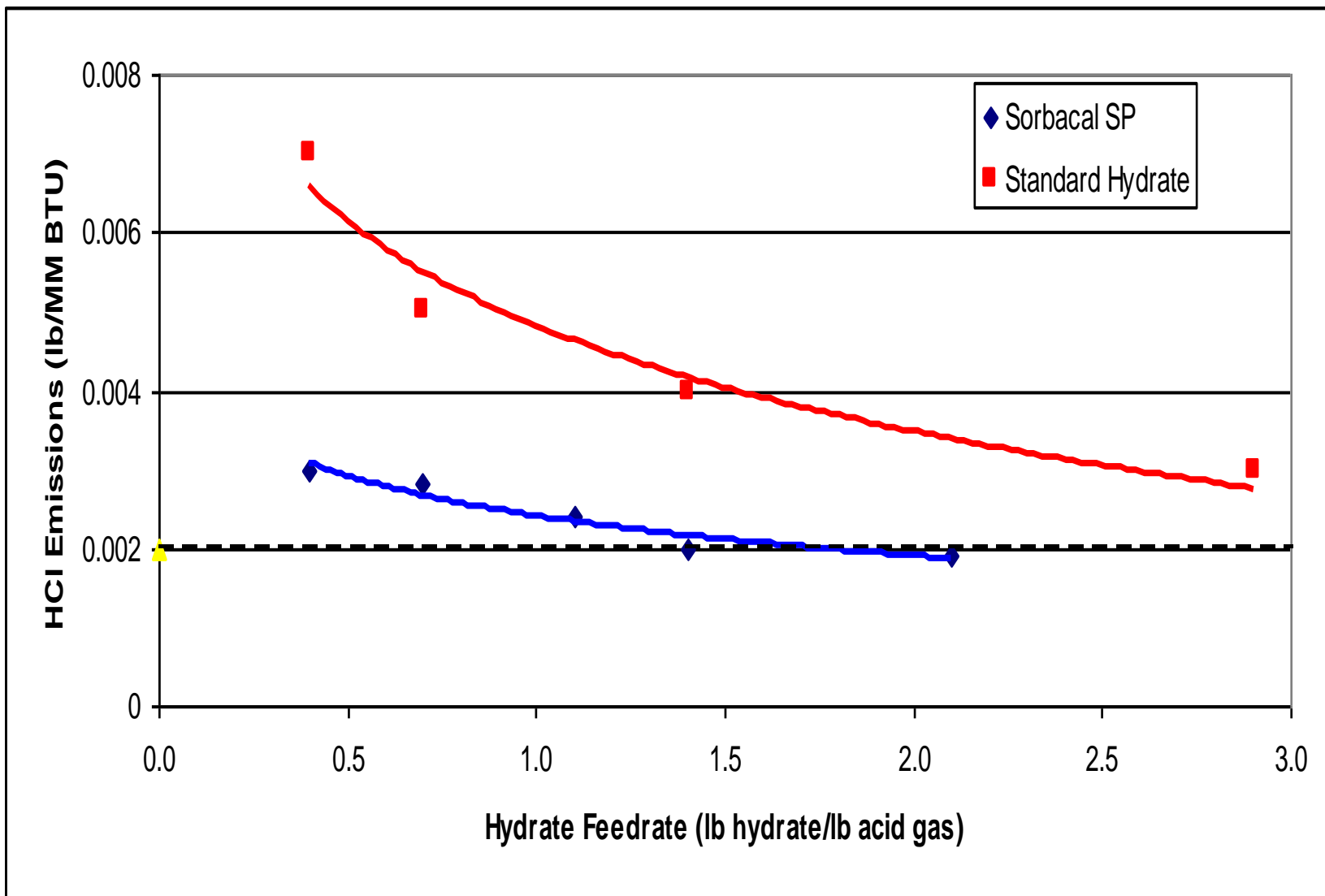
# HCI Test Results





# HCl Emissions

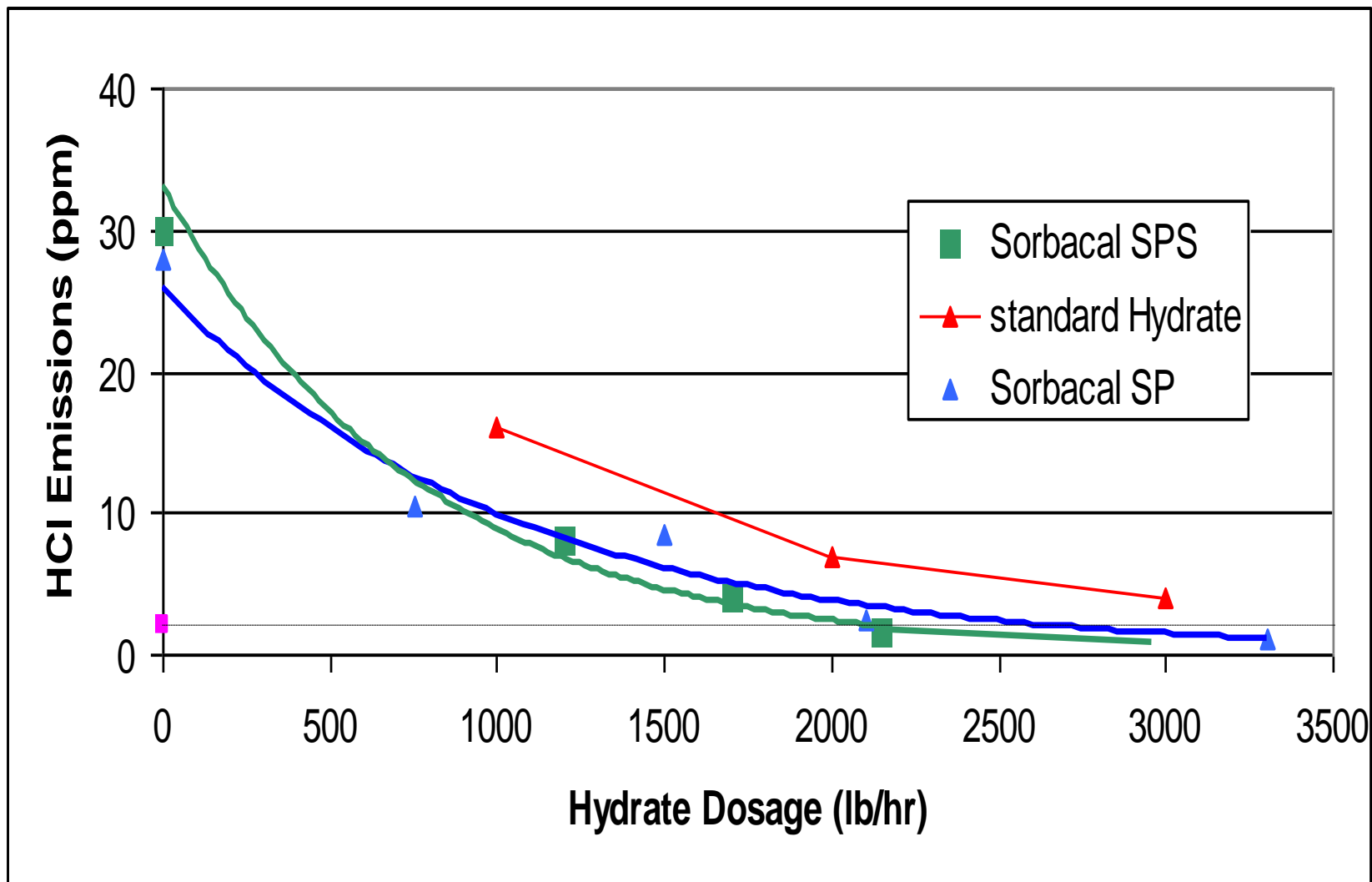
## Medium CI Coal – Air Heater Outlet T - Baghouse





# HCl Emissions

## CFB Boiler – Air Heater Inlet T - Baghouse

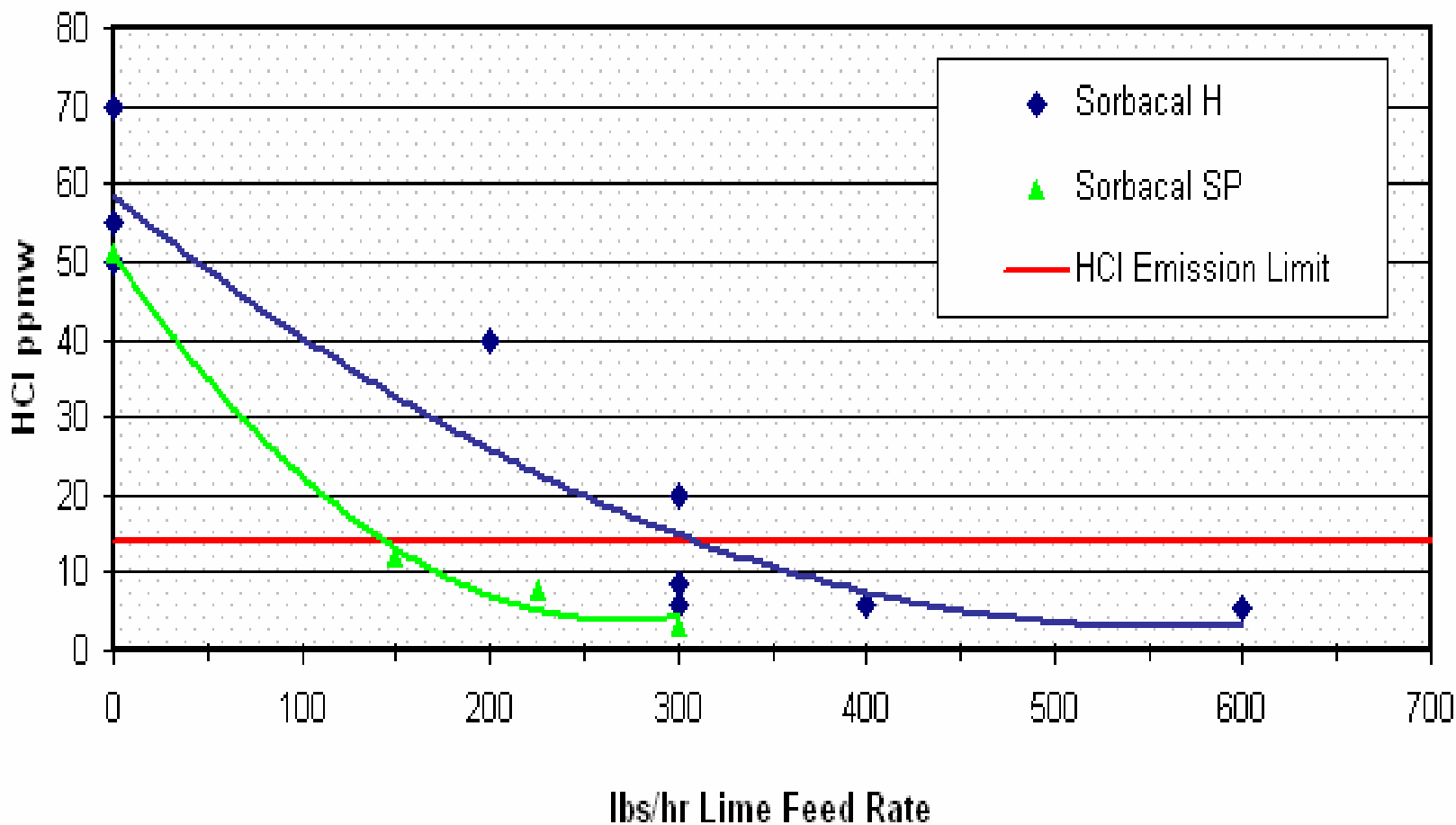




# HCl Emissions

Industrial Boiler - 380°F Injection T - Baghouse

HCl Emissions





# HCl Emission Testing Summary

- Sorbacal<sup>®</sup> SP and/or SPS performed >30% better than any other hydrate that was evaluated
- It may be possible to achieve the Industrial Boiler MACT HCl level (0.022 lb/MM BTU) with good standard quality hydrated lime, but Sorbacal<sup>®</sup> SP can meet the MACT HCl emission level using 30-50% less reagent
- Utility boiler MATS HCl level (0.002 lb/MM BTU) may require Sorbacal<sup>®</sup> SP to meet the limit
- Sorbacal can be an effective approach to reducing Cl build-up in FGD systems





# SO<sub>2</sub> Test Results

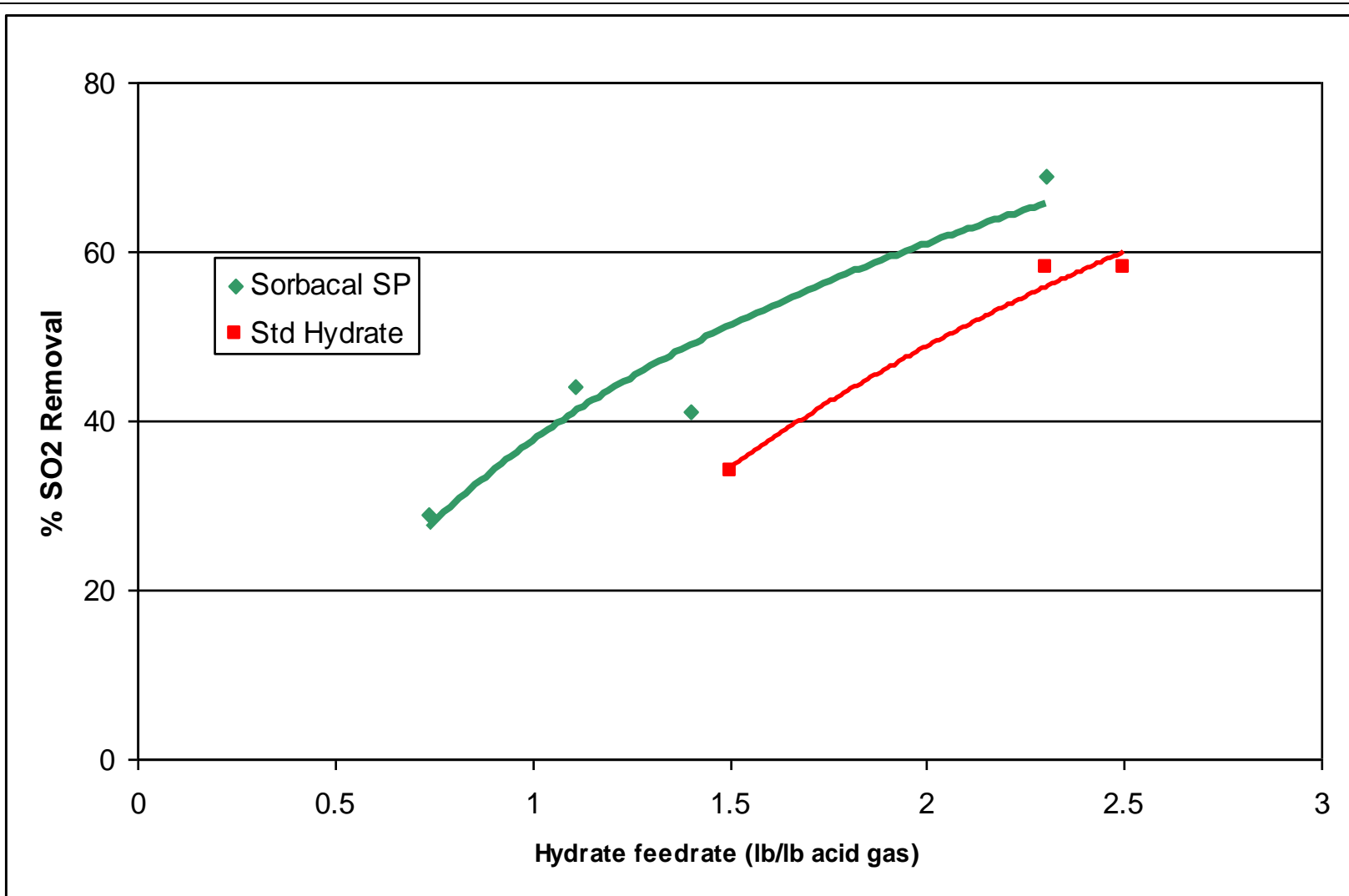






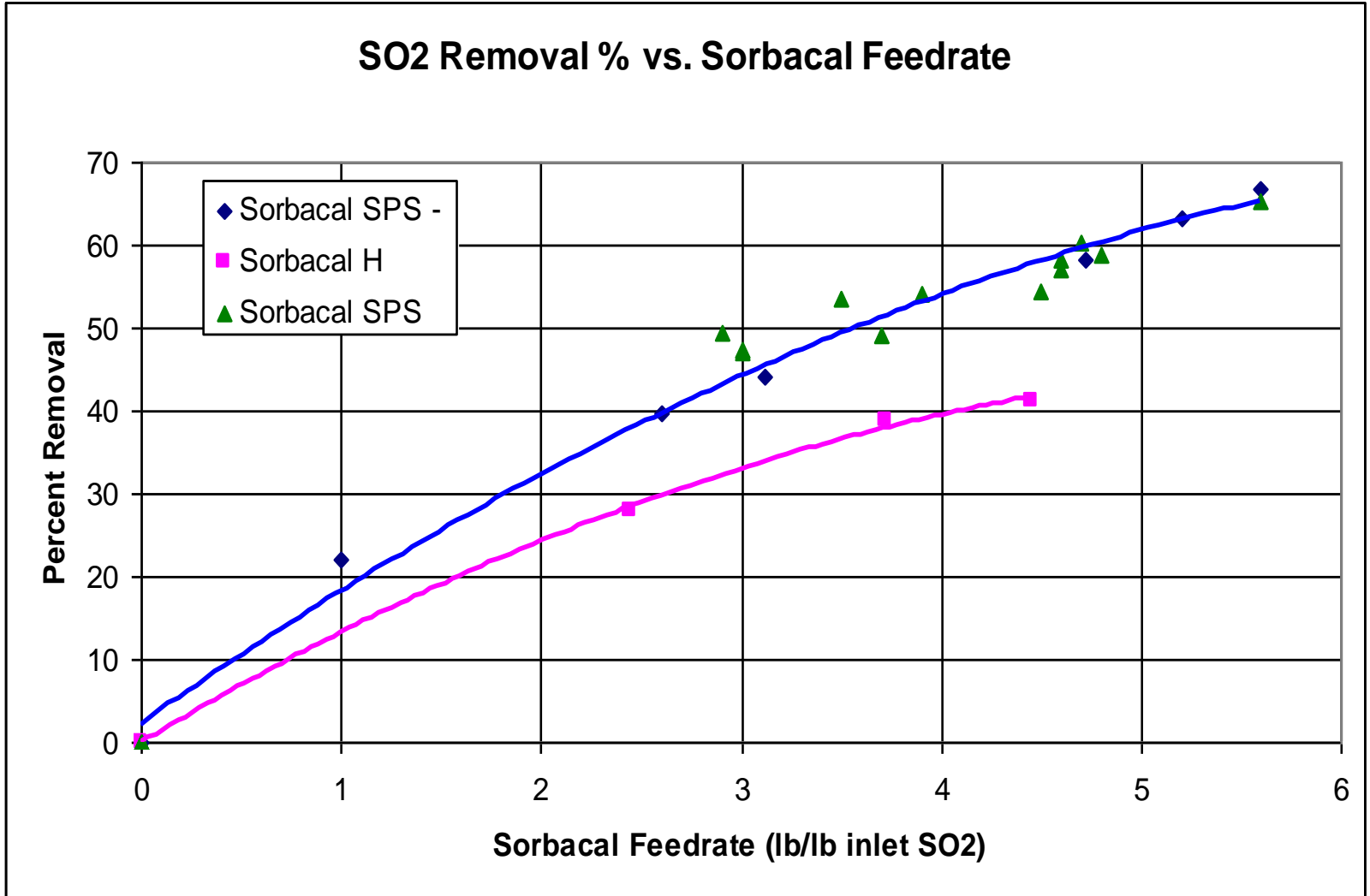
# SO<sub>2</sub> Removal

## Coal-Fired Boiler – Furnace Injection T - ESP

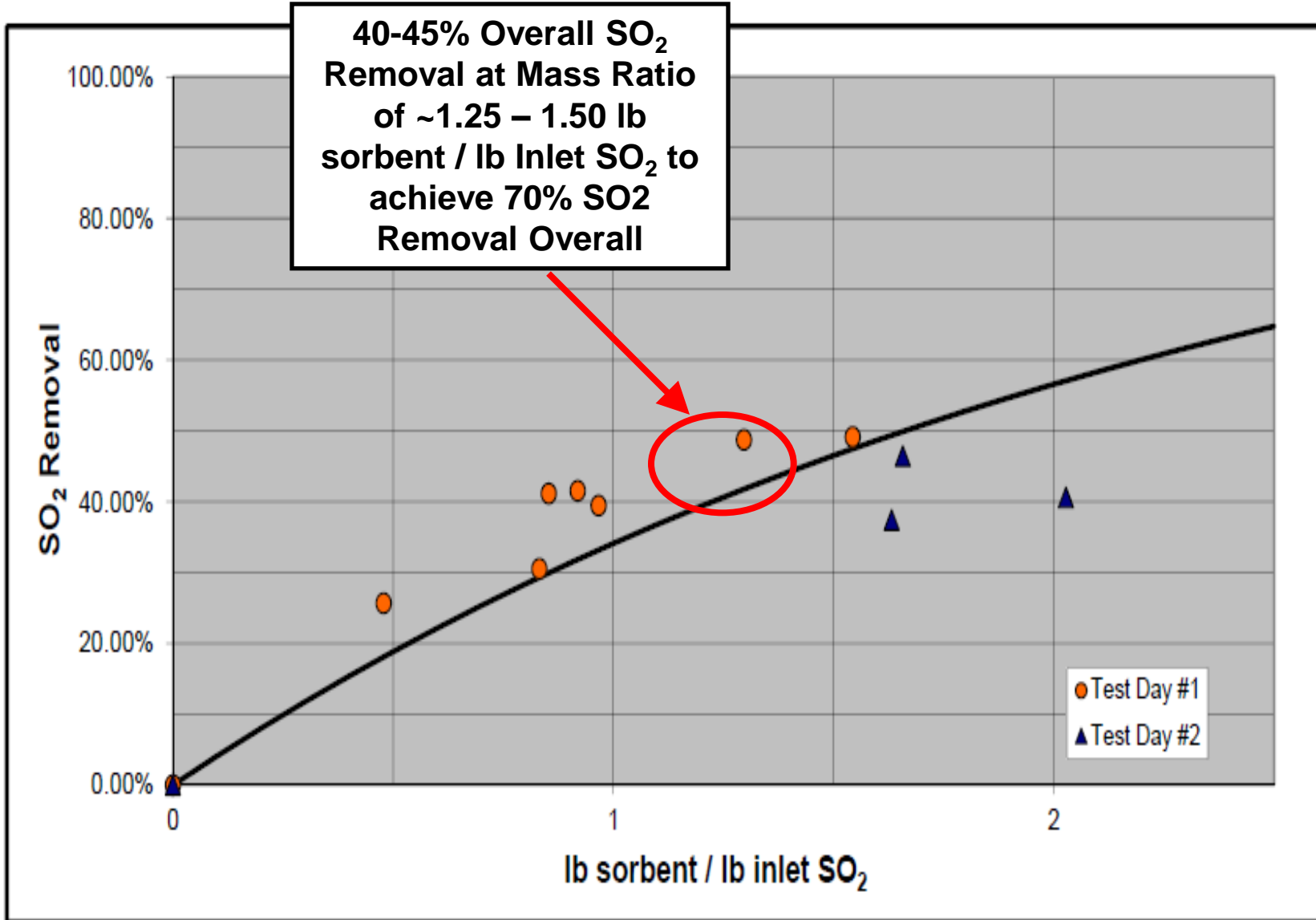




# SO<sub>2</sub> Removal @ Air Heater Inlet Injection T

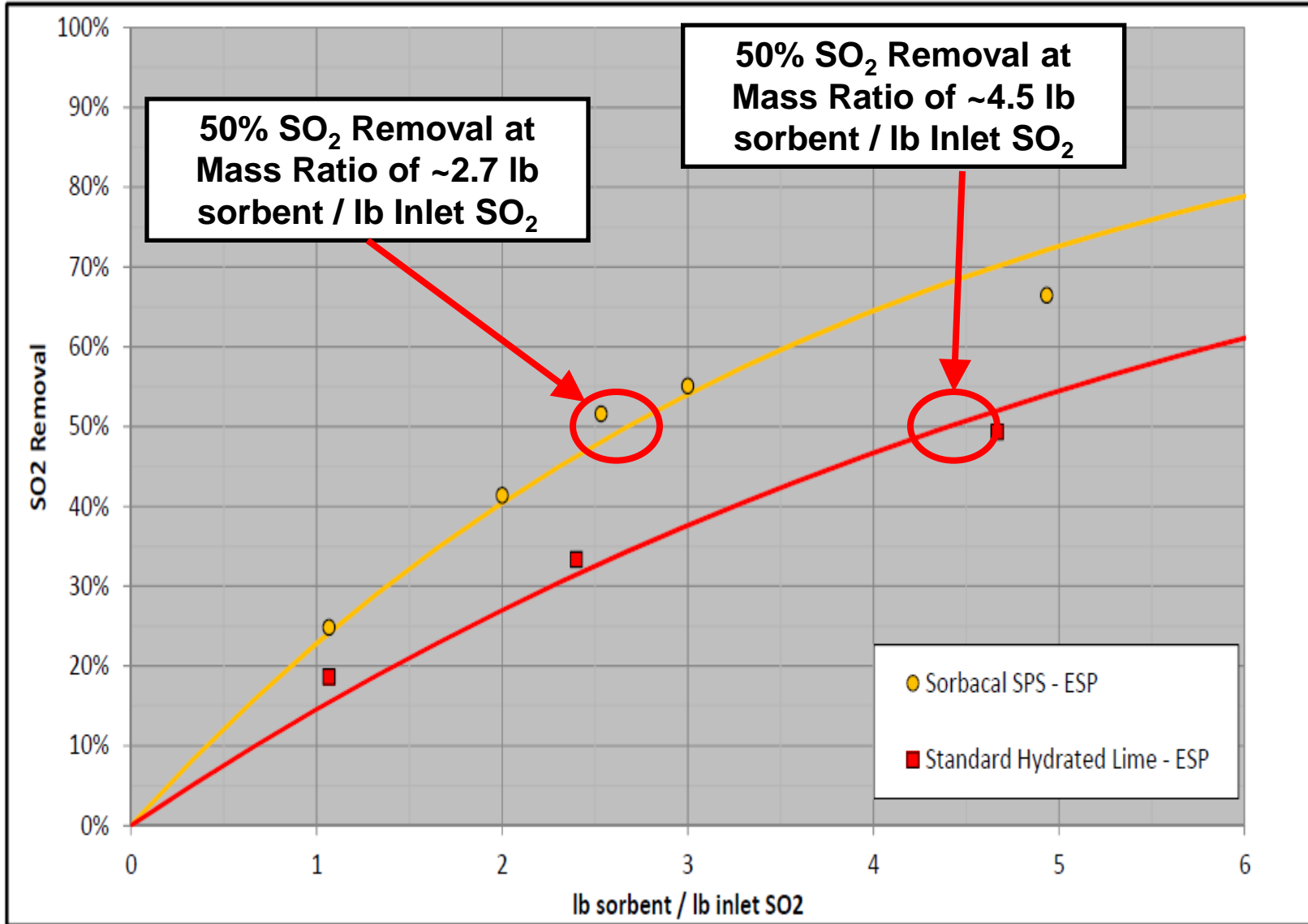


# 500 MW Utility Boiler

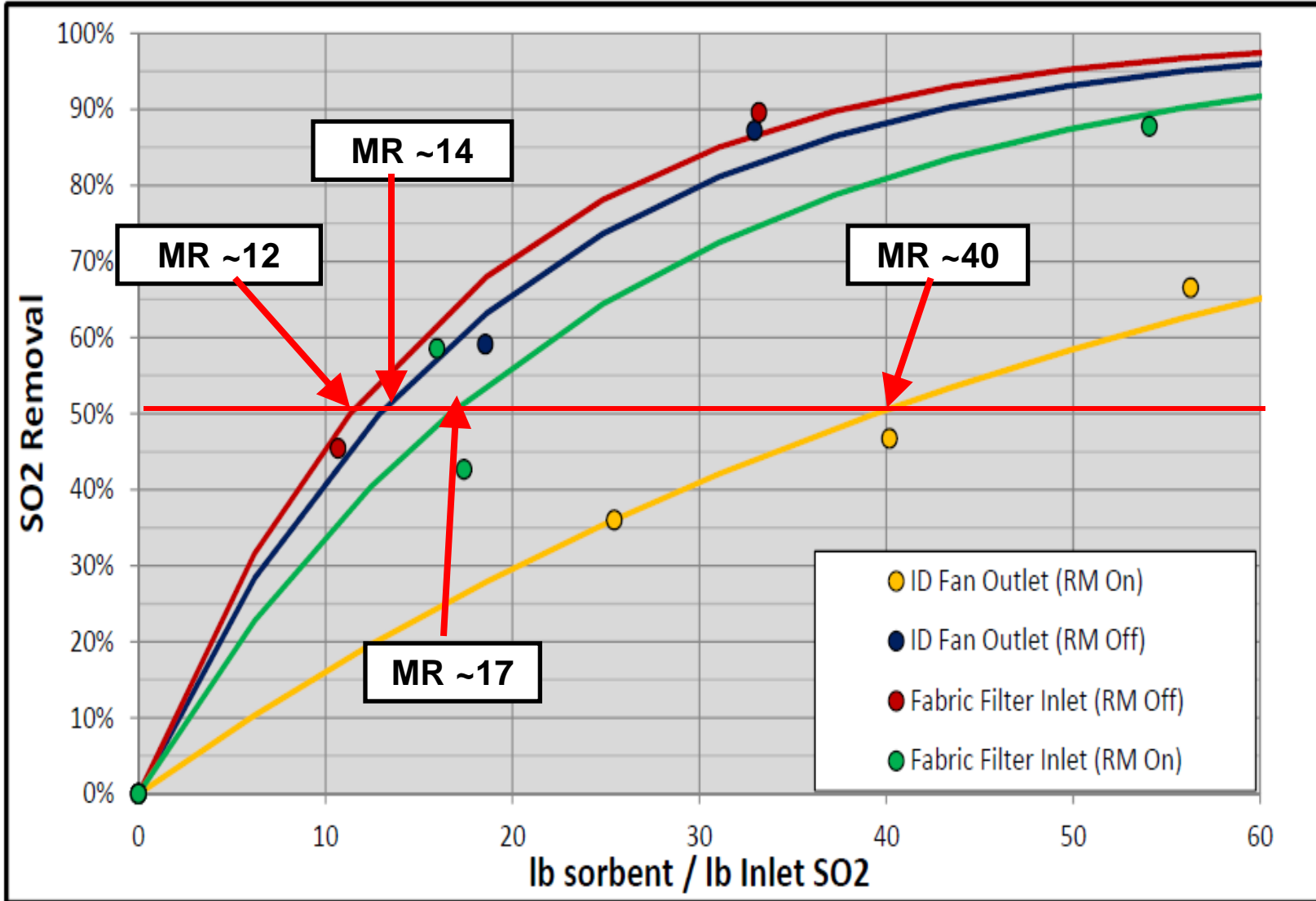


# Coal-fired Pilot Plant

Sorbacal®



# Cement Plant





## SO<sub>2</sub> Removal Summary

- Very SO<sub>2</sub> high removals (>98%) have been demonstrated for some industrial applications
- Sorbacal<sup>®</sup>SPS performed 30–50% better than other hydrates tested for all conditions
- Reaction is very temperature dependant – in general the higher the temperature, the better the removal



