



Michael D. Schantz
November 18, 2010

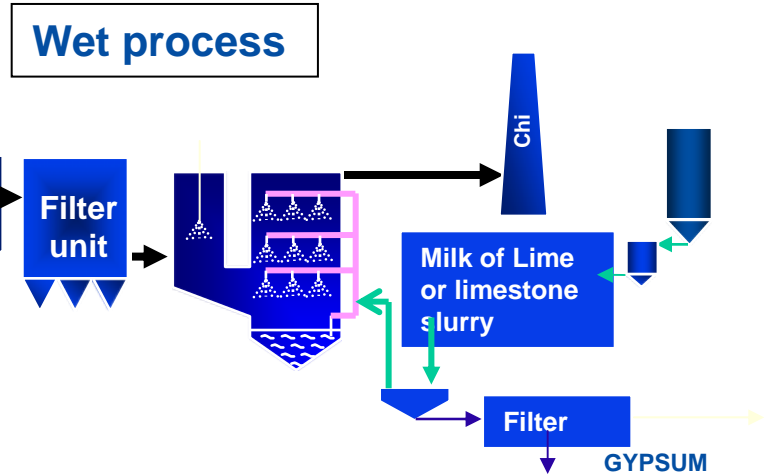
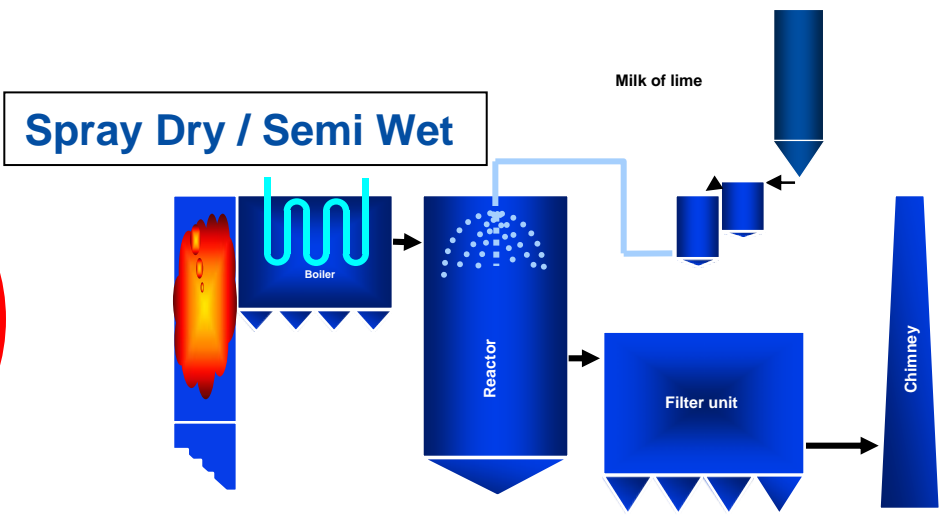
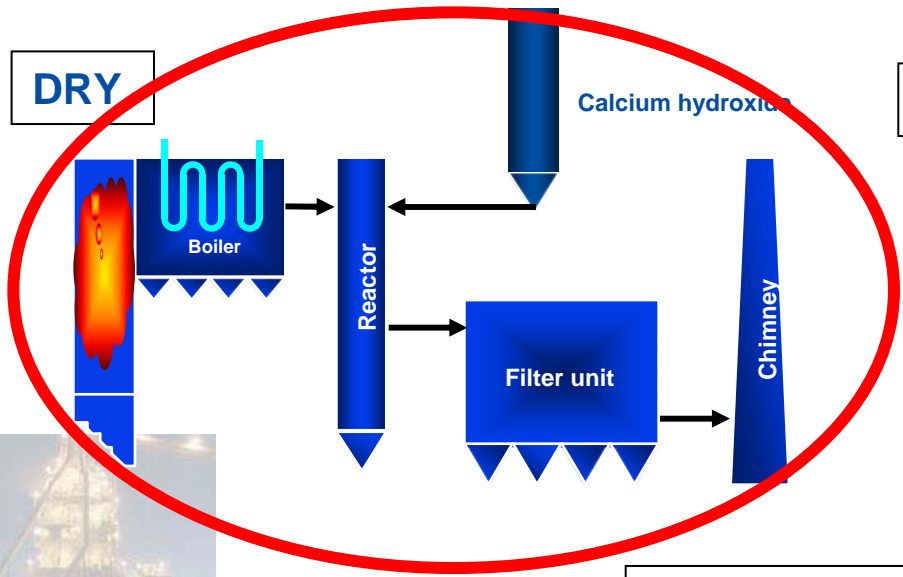
Sorbacal® Dry Sorbent Injection - a low capital solutions for HCl control



- LNA experience with Dry Sorbent Injection
- What are the factors that impact DSI effectiveness?
- Review of proven DSI experience



Wide range of Flue gas Treatments processes



DSI - Dosing unit & blower



DSI - Injection points



Sorbacal® DSI – Factors that impact effectiveness

- Flue gas properties
 - ✓ Temperature
 - ✓ Moisture
 - ✓ Competing acid gases
 - ✓ CO₂ concentration
- Reagent properties
 - ✓ Particle surface area
 - ✓ Pore shape, size and volume
 - ✓ Particle size distribution
- System properties
 - ✓ Distribution of reagent injection
 - ✓ In-flight residence time
 - ✓ Particulate control device



Flue Gas Properties – Impact of Moisture and temperature

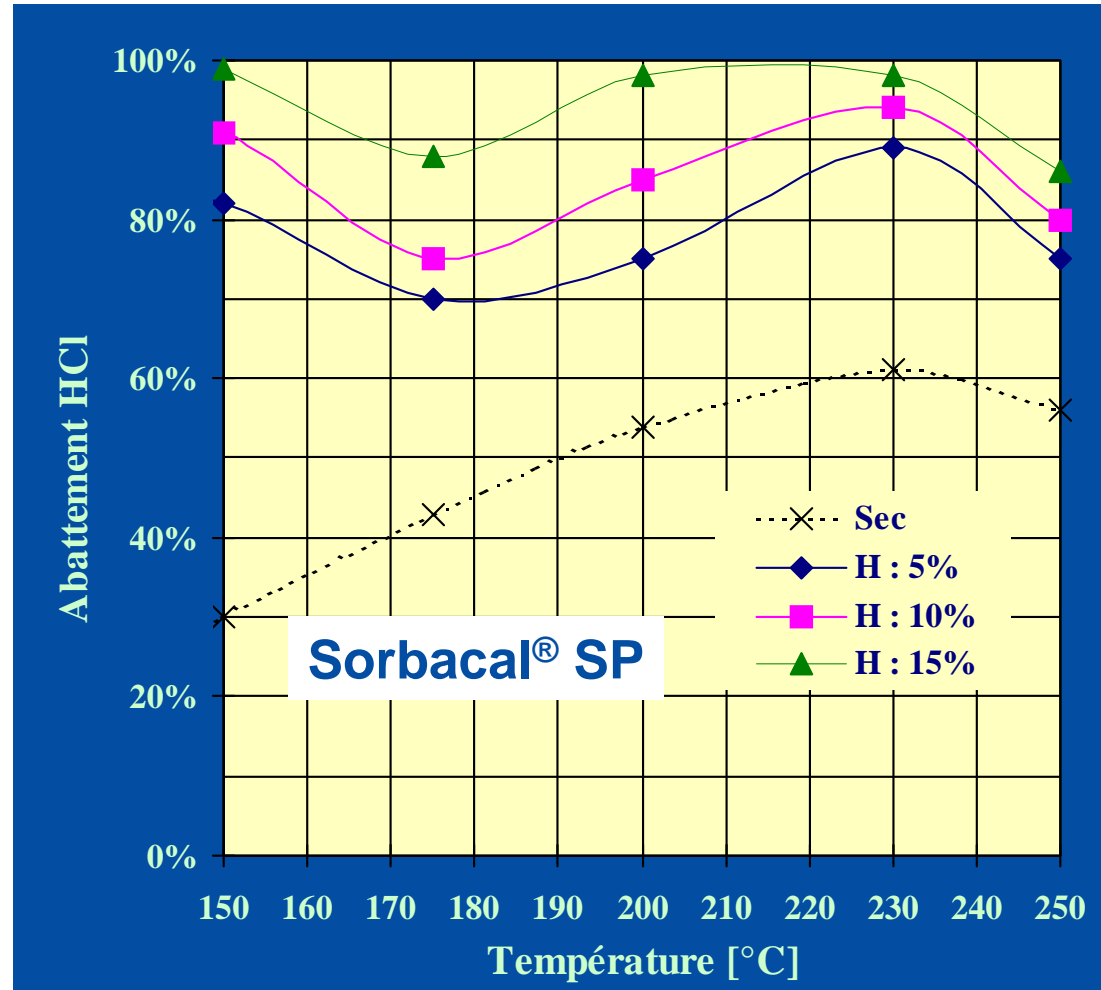
Acid Gas Hierarchy

SO₃

HF

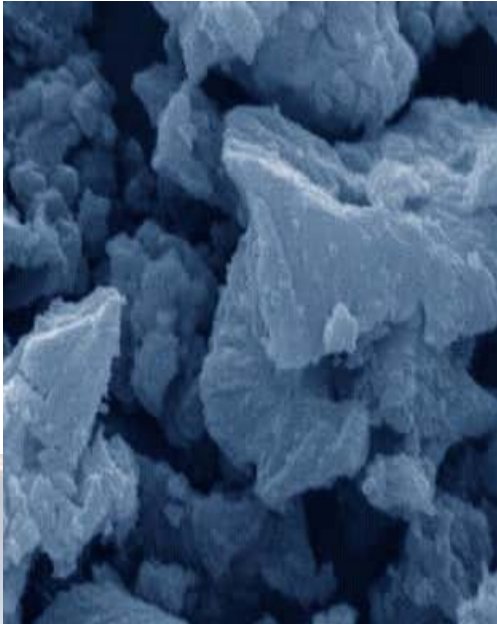
HCl

SO₂

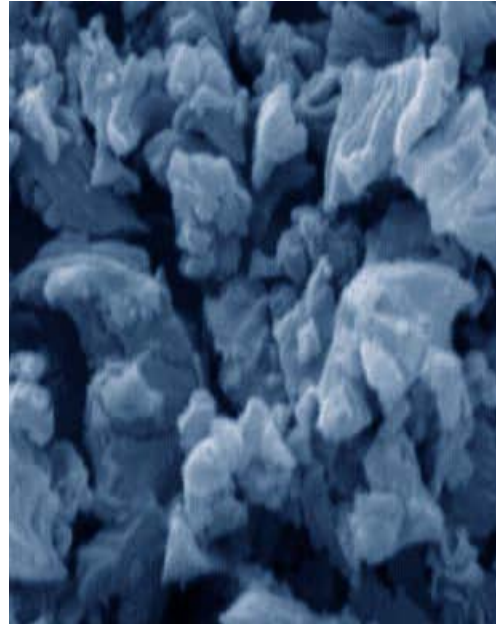


HCl : 1200 mg/Nm³ - CO₂ : 9 % - RS : 1,7

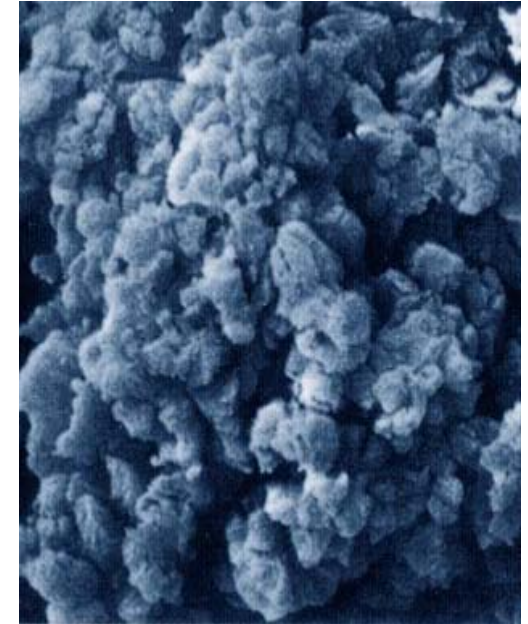
Reagent Properties – Impact of surface area & pore characteristics



Sorbacal[®] H
Standard
Hydrated lime



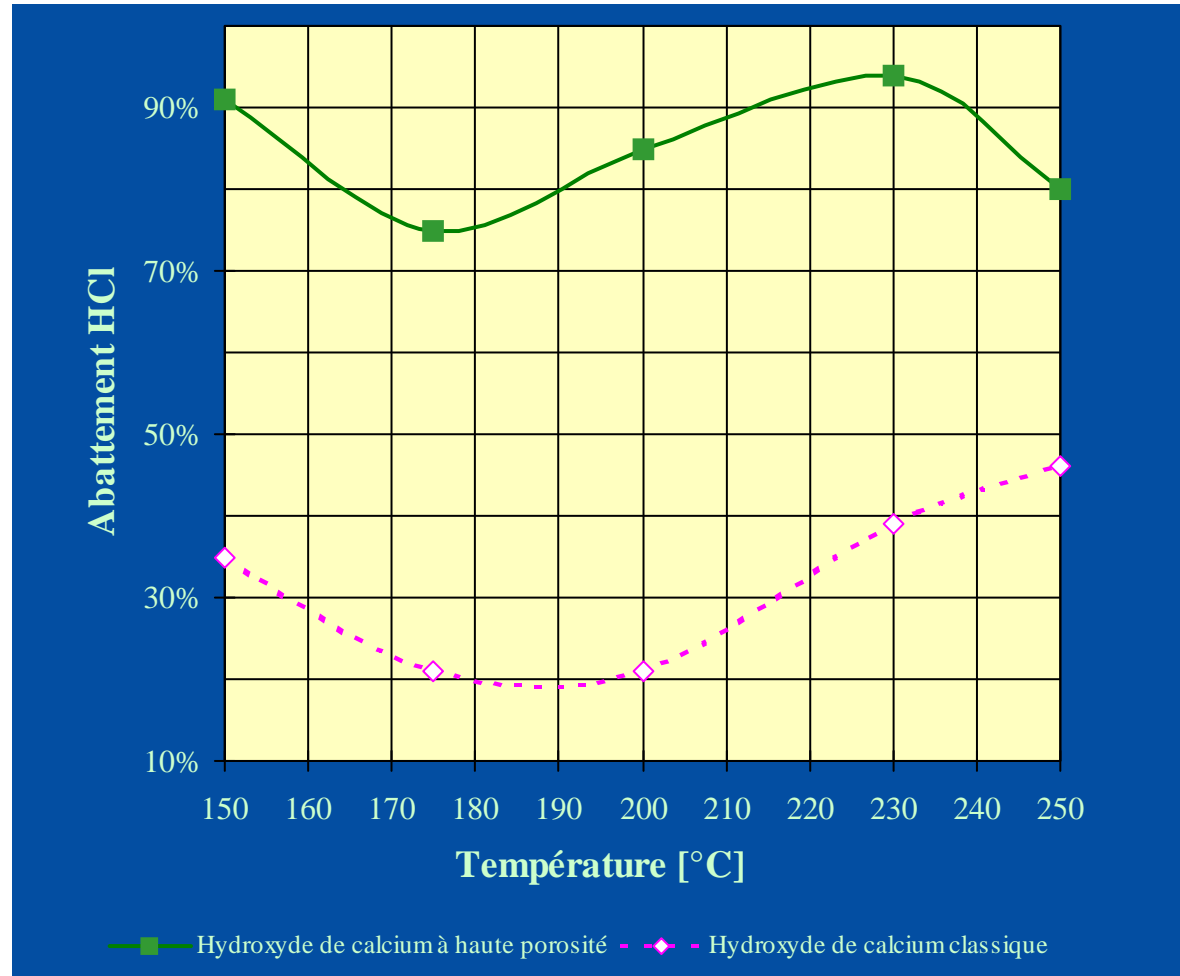
Sorbacal[®] A



Sorbacal[®] SP

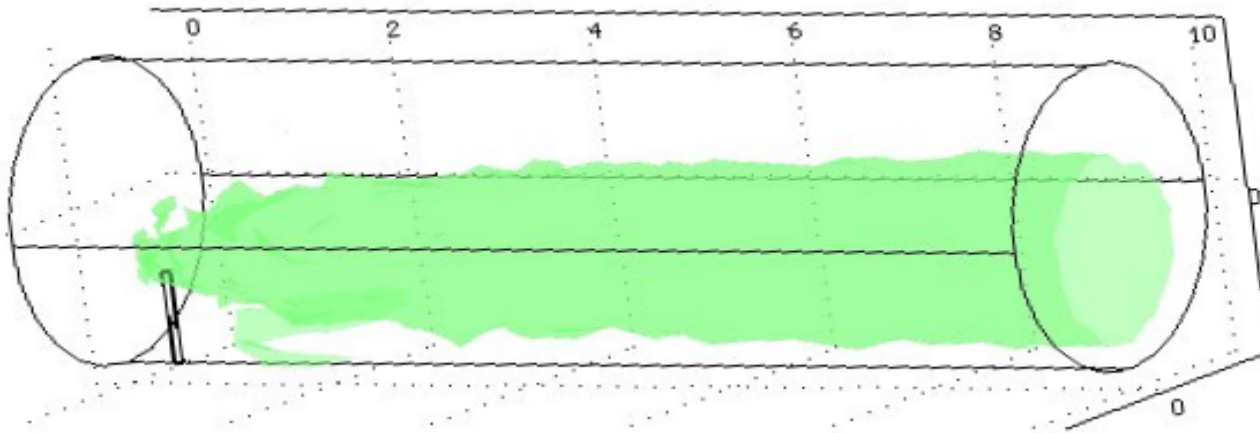


Dechlorination performance Sorbacal® SP vs. standard hydrated lime

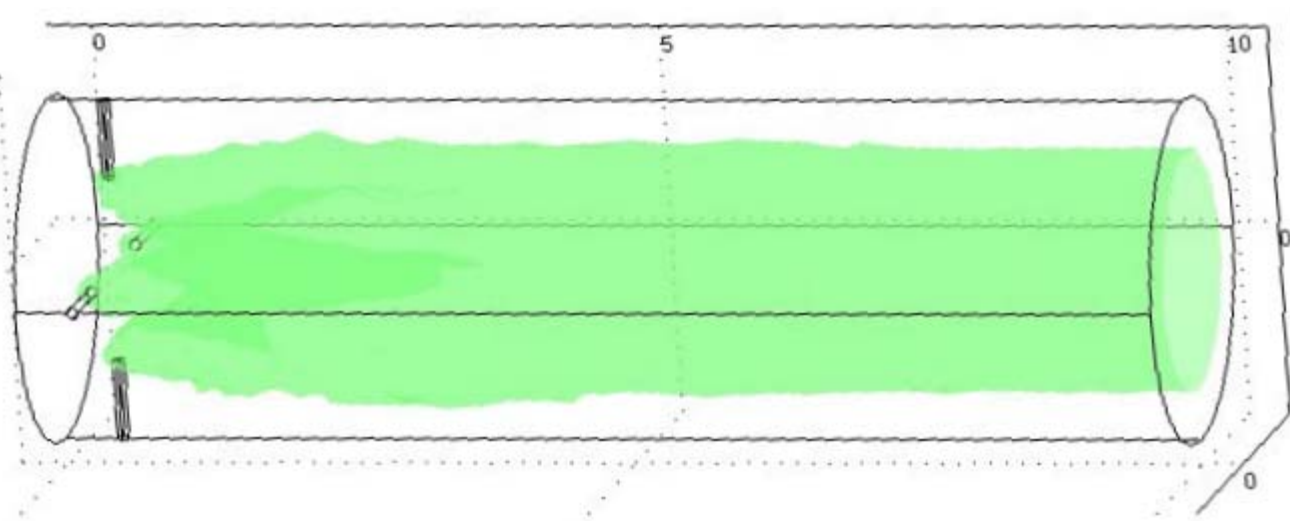


HCl : 1200 mg/Nm³ - H : 10 % - SR : 1,7 - CO₂ : 9 %

System Properties – Sorbent Dispersion

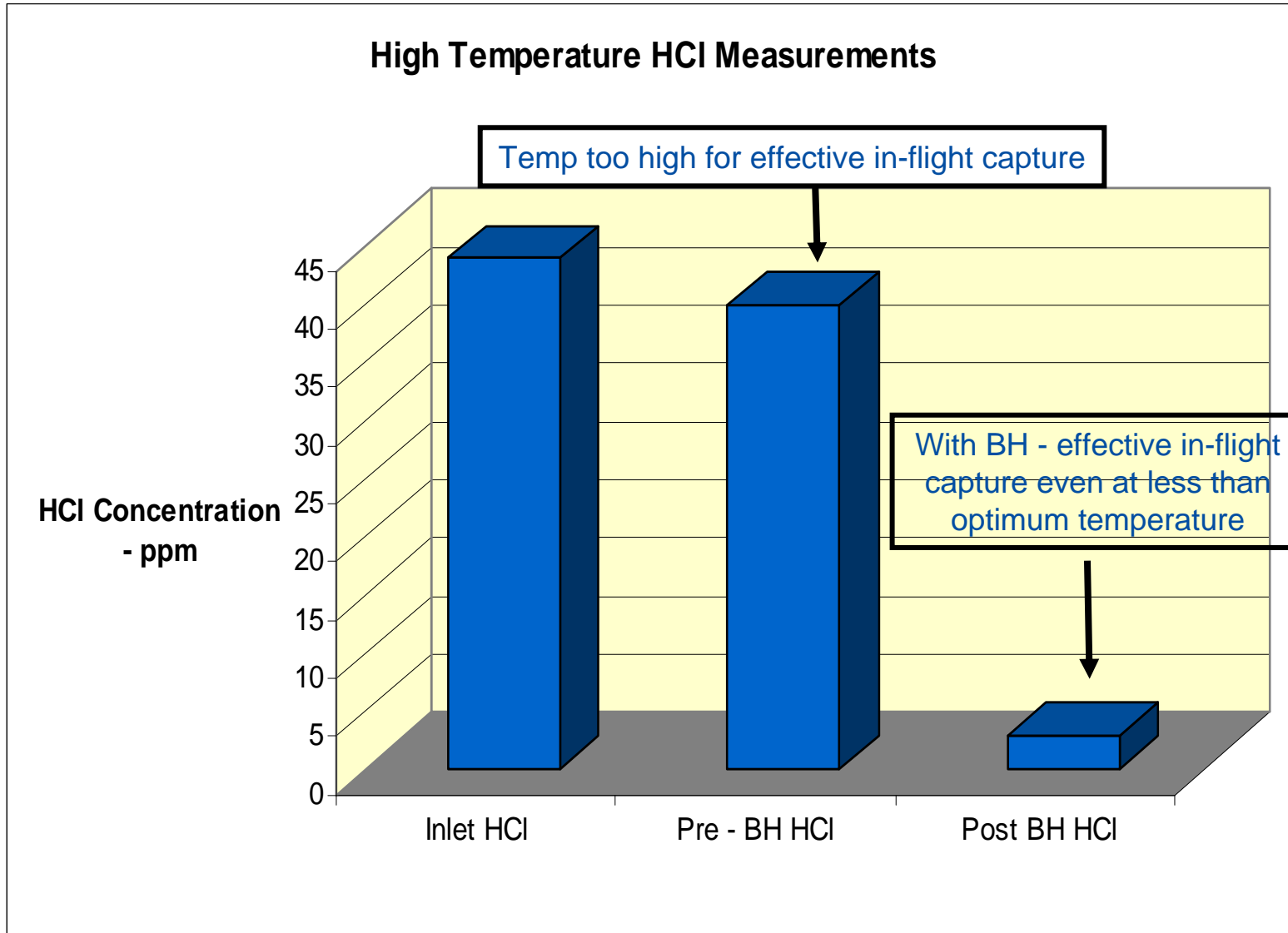


1 Injection Point:
Penetration: 1m
 V_{Inject} : 20 m/sec.
Length: 10 m



4 Injection points, 90°:
Penetration: 0,75m
 V_{Inject} : 20 m/sec.
Length: 10 m

Recent pilot combustor results - High Injection Temp results



- HCl can be effectively controlled by the injection of calcium hydroxide reagents
- Effectiveness a function of;
 - ✓ Flue gas properties
 - ✓ Reagent properties
 - ✓ System properties
- Field Trials can be typically be performed
- Further R&D to improve efficiency ongoing
- Contact LNA Flue Gas Solutions Group for more information

