REINHOLD ENVIRONMENTAL Ltd.

2015 APC Round Table & Expo Presentation

July 13 & 14, 2015, in Atlanta, GA / Hosted by Southern Company

Hydrate Lime DSI for MATS Compliance

APC Round Table

July 14, 2015

Agenda

- Who is Nol-Tec?
- DSI Design Considerations
- Aftermarket Technology

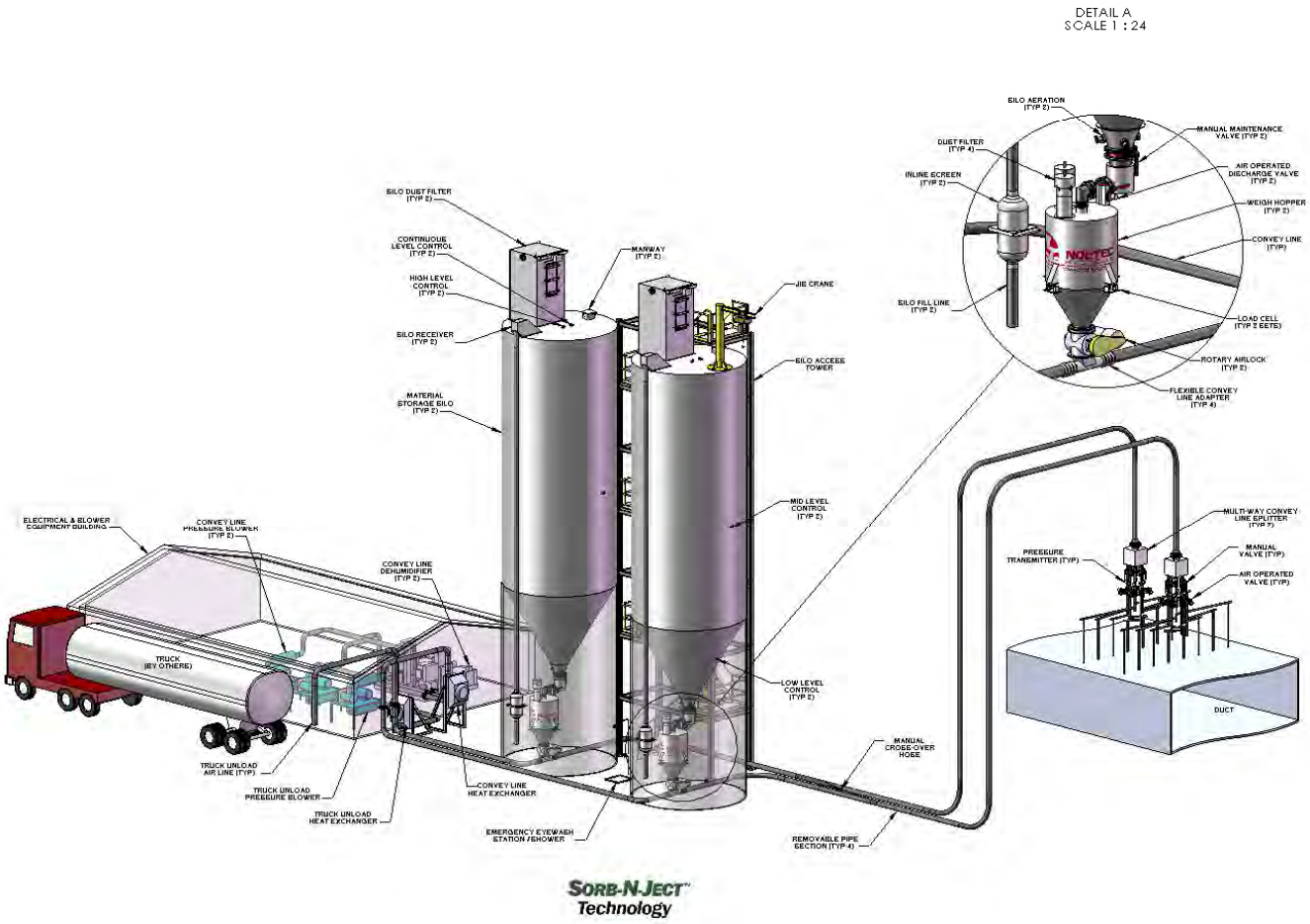
WHO is Nol-Tec?

NOL-TEC SYSTEMS

Your partner in handling success

Pneumatic Conveying, Bulk Material Handling, and Integrated Process Control Specialists

DSI Design Considerations



SORB-N-JECT™ Technology

DSI Design Considerations

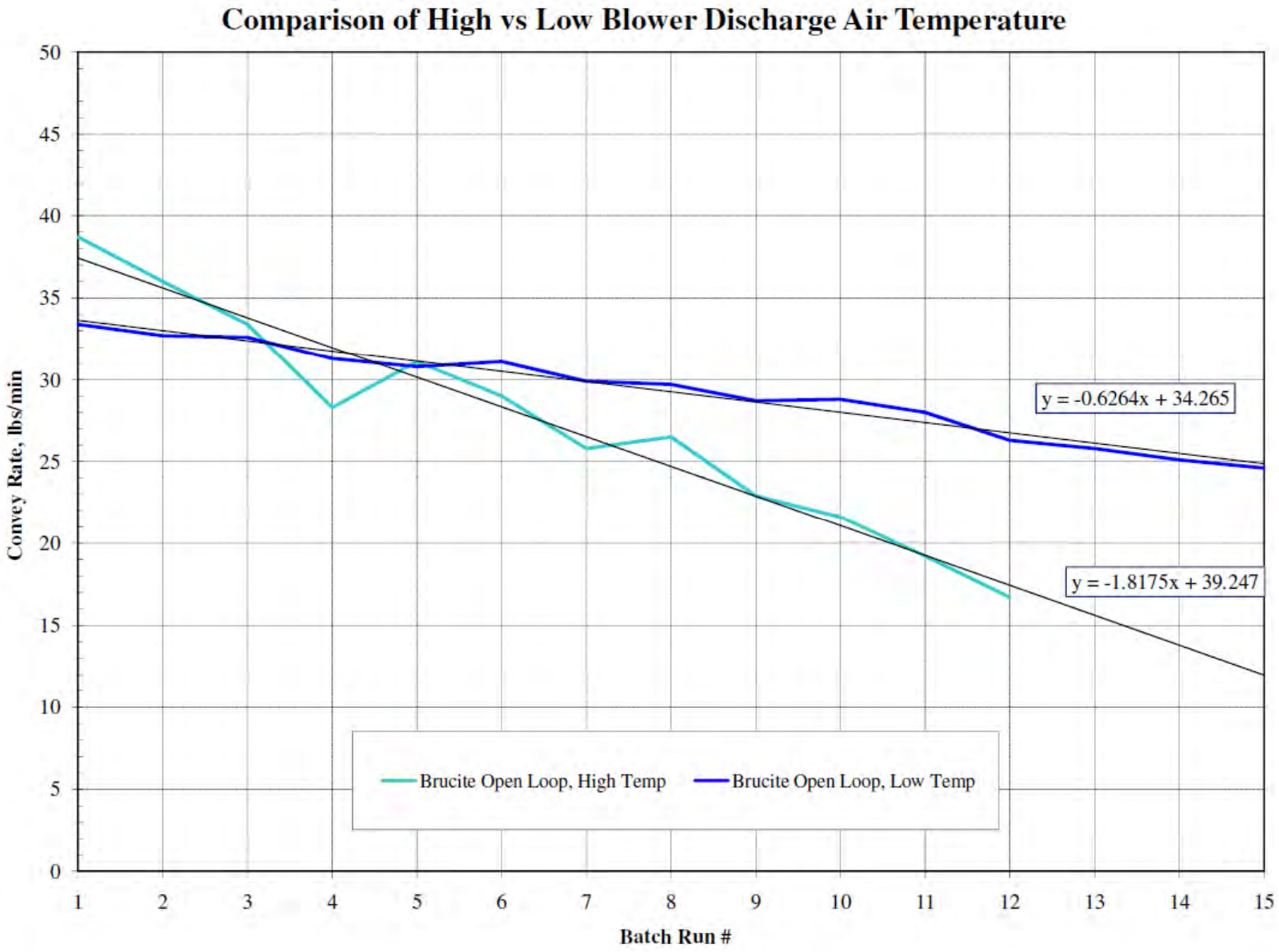
- What causes build up?
- How do you best combat it?

Dryers

- Convey line humidity is believed to cause buildup
- Lab testing contradicts this belief
- NT does not recommend as standard

Heat Exchangers

- Increased convey temperature accelerates build up effects
- Proven in experimental settings
- “Clean” side heat exchangers always included in NT base bids


Comparison of High vs Low Blower Discharge Air Temperature
Convey Rate, lbs/min
Batch Run #
y = -0.6264x + 34.265
y = -1.8175x + 39.247
Brucite Open Loop, High Temp
Brucite Open Loop, Low Temp
0
5
10
15
20
25
30
35
40
45
50
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Convey Velocity

- Faster convey velocities lead to increased buildup
- Lab testing mostly confirms this observation
- Nol-Tec recommends VFDs on all pneumatic blowers.

Elbows and Bends

- Long radius bends on main convey line
- Tee bends after the splitter

DSI Design Considerations- Key Takeaways

- Nol-Tec Standards include…
  - Heat exchangers (Temperature)
  - VFDs on blowers (Velocity)
  - Long Radius Bends and Tee Bends
- Nol-Tec Standards do not include…
  - Dryers (Humidity)
  - Short Radius Bends

After Market DSI Technology

- Operating Cost improvements
  - SorbMix
  - Resistive Splitting
- Reliability and Maintenance improvements
  - Fluidization and Silo Discharging

Resistive Splitting

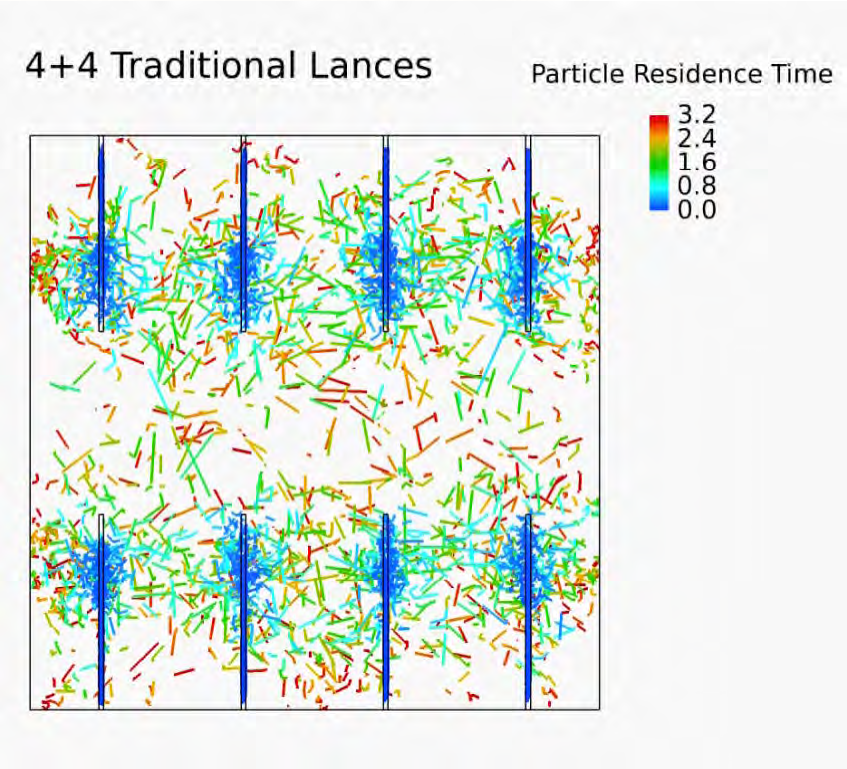
- Associated with NT throughout industry
- Ensures even split of material to all lances in the duct.
- Best used in conjunction with CFD modeling

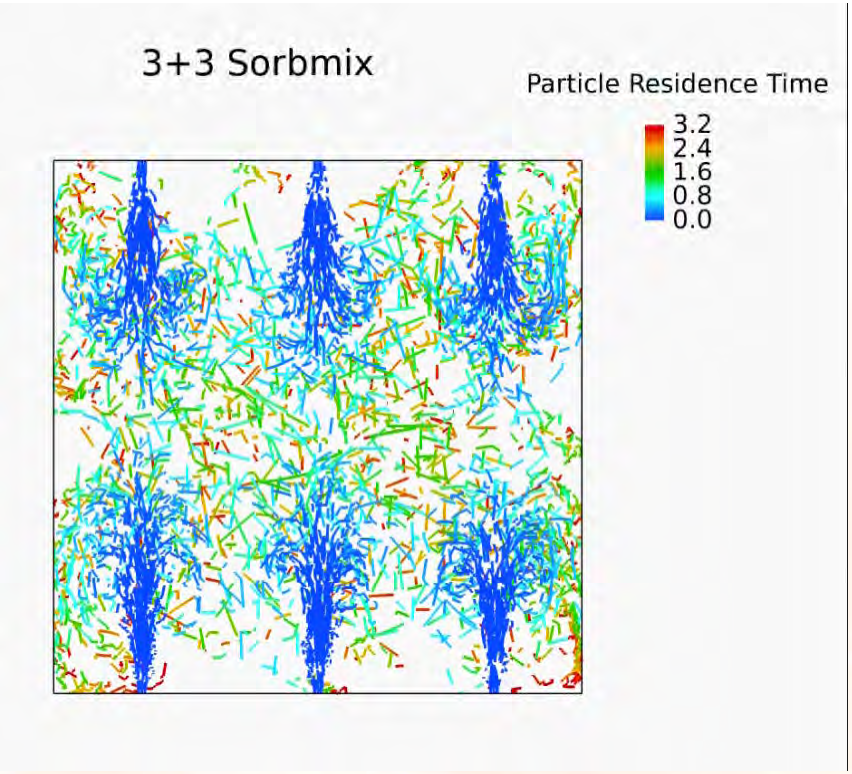
Fluidization and Silo Discharging

SorbMix by Mobotec

Features	Benefits
No Lance Injection System	Reduced System Plugging
Enhanced Mixing & Dispersion	Improved Performance (15-40%) Reduced Sorbent Flow $$
Low Maintenance	Reduced Operating Cost $$ Reduced Number Injection Points
Can Be Retrofitted to DSI, FSI, & ACI Applications	Capable Using All Sorbents & Activated Carbon Products
Tunability	Online Airflow Optimization
System External to Duct	No Pressure Drop, Equipment Longevity, Easy Maintenance w/ System is Online

Traditional vs. SorbMix approach





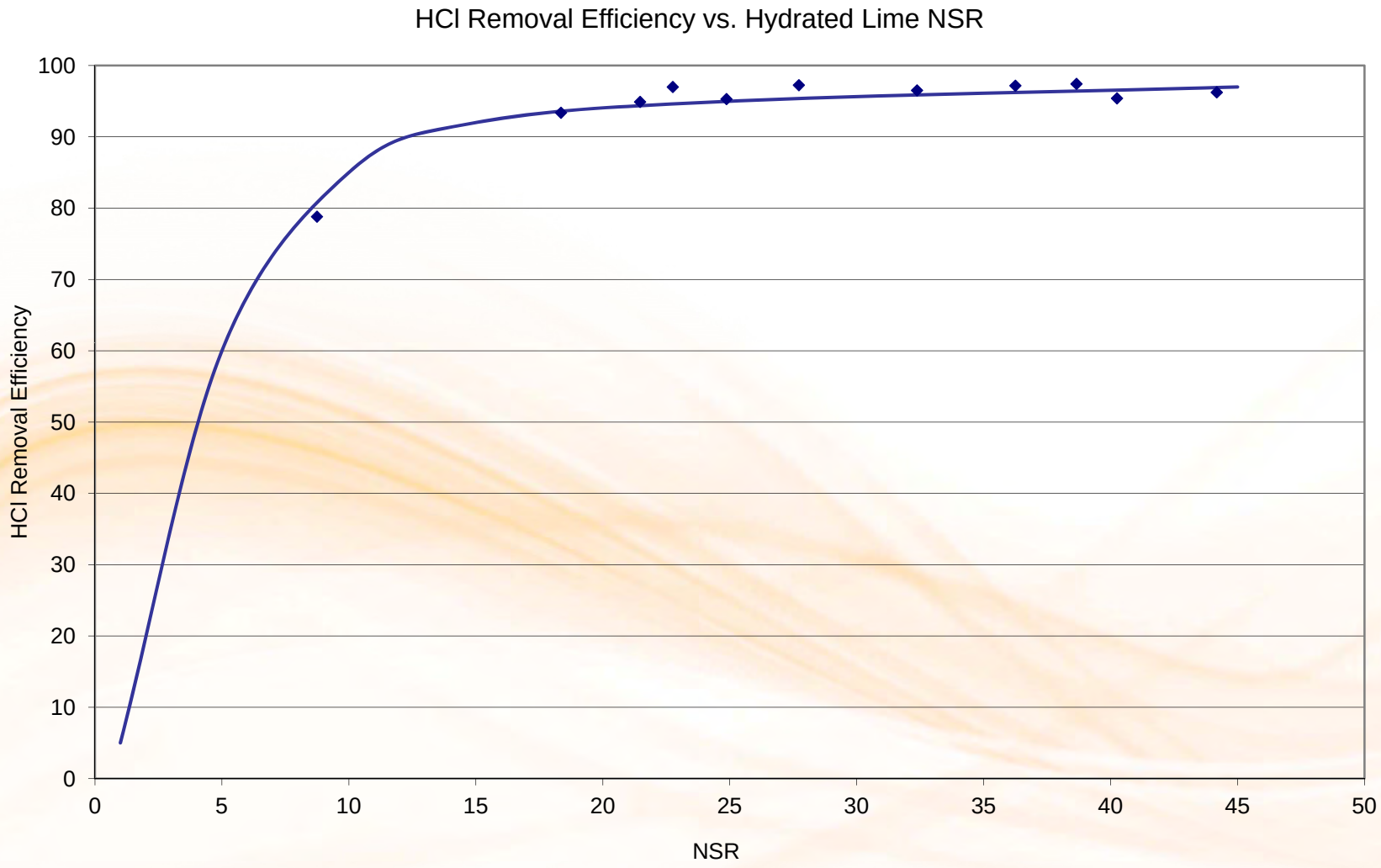
Questions?

In Summary…

- Nol-Tec's design recommendations are…
  - Backed up with years of experience and lab data
  - Geared towards enhancing cost-to-benefit ratio
- Nol-Tec offers aftermarket technology that…
  - Lowers operating costs
  - Decreases downtime and operational headaches

A Case Study

- Confidential Client in Western US
- Hydrated Lime for HCl Removal (0.002 lbs/MMBtu)
- Originally required 85% Removal
- Once installed, needed 95%+ Removal
- Compliance met with flexibility offered by NT


HCl Removal Efficiency vs. Hydrated Lime NSR
HCl Removal Efficiency
NSR
0
10
20
30
40
50
60
70
80
90
100
0
5
10
15
20
25
30
35
40
45
50