Department Scope

• Efficient, cost-effective way to improve your instrumentation and controls that does not lock you into an OEM service agreement.

• As an independent provider, we can upgrade or service your DCS, PLCs and instrumentation to improve plant performance, reduce human performance errors and mitigate commercial risk.
Problem and Solution

Problem

- Emissions control systems hunting for setpoints
- Activated Carbon Injection System using far more product than necessary
- Distributor running out of Carbon

Solution

- Tune ACI System
Executive Summary

Large coal plant in the Midwest

- 4 Units: all ACI systems were holding Mercury to the appropriate setpoint, but even as unit load was stable the feed rate would vary from 5lbs/hr to 400lbs/hr when ~20lbs per hour was called for.
- The plant was using far more activated carbon than was necessary
- Material costs were adding up, and feeder equipment was failing prematurely.
  - Having commissioned many of these systems we were the right choice to tune and make hardware adjustments for efficient cost effective operation.
NAES worked as a commissioning contractor for an OEM starting up Dry Sorbent Injection and Activated Carbon Injection Systems

- The OEM downsized significantly and could not provide the post commissioning support customers needed.
- NAES understanding these systems knew their flaws and how to fix them.
- NAES stepped in and tuned customers’ systems for better operation.
Business Key Points

- Activated Carbon Cost: $0.92/lb
- Activated Carbon Consumed: 570 lbs/hr
- Mercury Emissions Limit: 1.2 lbs/Trillion BTU
Key Challenges

Hardware
- Improperly Sized
  - Blower piping too small
  - Valves too small

Software
- Improperly Programmed
  - VFDs not programmed
  - No auto control
Industry Analysis

• Many vendors have AllenBradley RSLogix experience
• NAES has unique experience in ACI Systems
• ACI system built by FLSmidth and B&W are far more robust and well designed
Environmental Analysis

• Lowering the feed rate of carbon would not impact the Mercury scrubbing capability of the ACI system.

• Allowing the system to base carbon flow off of feedback from the CEMS and unit load would allow for properly tuned mercury capture.
Financial Performance

Present Condition
- Activated Carbon Feed Rate: 570lb/hr
- Material Cost: $377,500

Proposed Condition
- Activated Carbon Feed Rate: 42lbs/hr
- Material Cost: $28,000
Key Success Factors

- Emissions must remain in compliance
- Customer must save money on Activated Carbon
- Operators must be able to easily manipulate ACI system

1.2 lbs/ Trillion BTU

Use less Activated Carbon

Controls must run in automatic
Solution Analysis and Comparison

- Solved Mechanical Deficiencies
- Modified logic for Hg setpoint following
- Decreased feed rate of carbon from ~570lbs/hr to ~42lbs/hr
- Maintained Mercury output below 1.2lbs/Trillion BTUs
- Saved the customer $350,000/month in carbon cost
Recap

**Problem**
Customer using more carbon than necessary

**Solution**
NAES proposed experience based solution

**Result**
NAES modified the hardware and logic saving the customer ~$350,000/month
**Field Technical Services – Specialties**

- **Instrument Calibrations**
  - 1 Week Jobs
  - $8,000

- **PLC Programming**
  - 2 Week Jobs
  - $17,500

- **Acceptance Testing**
  - 2 Week Jobs
  - $17,500

- **I&C Shift Support**
  - $8,000/week

- **DCS Programming**
  - 2-5 Week Jobs
  - $17,500-$80,000

- **Commissioning**
  - 2-5 Week Jobs
  - $17,500-$80,000

- **Recovery Plan**
  - Fixed Price
  - $18,000 CC
  - $25,000 Coal