

SAS PROJECT MANAGEMENT TEAM

Stanley Arnold Air Quality Engineer / Sr. Project Manager

Mr. Arnold has 18 years of air quality and source testing experience in the electric power generation, synthetic organic chemical, pharmaceutical, nuclear, and hazardous waste combustion industries.

His emissions monitoring and testing experience includes: compliance and performance testing, continuous emission monitoring (CEMs), relative accuracy tests audits (RATA), leak detection and repair (LDAR) program management, field laboratory sample recoveries and in-field analyses, equipment calibration, lab analysis, and quality assurance/quality control procedures.

Glenn Quarles Sr. Project Manager

Mr. Quarles is an engineering and project management professional with over 20 years of experience and achievements in the areas of engineering, field/project management, contract administration, staff management, and client relations that have been critical to the successful completion of complex, multi-million dollar government and commercial projects.

Mr. Quarles' also has extensive experience managing environmental remediation and civil infrastructure construction projects in addition to his air emissions testing and air pollution control experience.

Geoffrey "Dutch" Schoenberger Project Manager

Mr. Schoenberger has over 15 years experience in air quality and source testing projects in the electric power generation, printing, chemical processing, pulp and paper, food processing, iron and steel production, pharmaceutical, mineral processing, and automotive industries.

Mr. Schoenberger's experience includes compliance and performance testing, continuous emission monitoring (CEMs), relative accuracy tests audits (RATA), leak detection and repair (LDAR) program management, field laboratory sample recoveries and in-field analyses, equipment calibration, lab analysis, and quality assurance/quality management programs.



*Turn the cost of your next stack test
into solutions for compliance and the
maximum permitted process throughput...*

*...call the SAS professionals for a
consultation on your process objectives
and air quality goals.*



Clearing the Air



ADVANCED STACK TESTING SERVICES
FOR EMISSIONS COMPLIANCE AND
PROCESS PERFORMANCE ANALYSIS



SORBENT INJECTION
FOR AIR POLLUTION CONTROL AND
MAXIMUM PERMITTED THROUGHPUT



“What differentiates us from conventional stack testing companies is the analytical value of our 70+ team years in air pollution control and process analysis to maintain the maximum permitted process throughputs at your facility.”

Steve Baloga, PE / SAS Sr. Project Manager

Air Quality Measurements for Compliance & Process Analysis

SAS provides air emissions measurement and regulatory consulting to industrial, commercial, state, local, and federal clients. SAS delivers comprehensive analysis of complex air quality issues, including EPA's newly promulgated test methods using PM 2.5/CPM and FTIR technologies.

SAS assists their clients in preparing and troubleshooting process and air pollution control equipment operation in preparation for the compliance test. Permit limits are often predicated on results of compliance tests. It is therefore imperative to optimize process operating parameters while still meeting all permitted emission limits.

***For the best analysis of your source -
from startups to annual compliance...
..SAS delivers comprehensive solutions
to complex air quality issues.***

Proven Air Measurement Experience

SAS leadership in criteria pollutant and hazardous air pollutant measurements is a result of over 70 years of team experience in performing air emission measurements for industrial, commercial and government clients.

Achieve Maximum Permitted Process Throughputs

SAS assists their clients in process optimization to achieve maximum permitted process throughputs without having to hire expensive engineering consultants. For example, before a compliance test we can evaluate industrial boiler performance against original design parameters and good combustion practices. In some cases it is advantageous to conduct parametric testing for combustion and pollution control systems optimization. SAS can do this for our clients

For routine compliance testing, we understand our clients' permitting needs. As companies continue to address air quality issues associated with the Clean Air Act, SAS provides complete air testing and engineering services to meet specific needs with an emphasis on data quality and continuing professional services.

- ▶ **Boiler Performance Evaluation**
- ▶ **SCR Performance Tuning**
- ▶ **SNCR Optimization**
- ▶ **Sorbent Injection Optimization**
- ▶ **ACI/Hg Oxidation**

SAS Emissions & Process Tests

- CEMS certification and RATA (40 CFR 60 / 75)
- Boiler performance evaluation
- SCR tuning
- SNCR optimization
- DSI optimization
- ACI/Hg oxidation
- EPA Reference Methods
- PM, PM10/2.5 (filterable), CPM
- HCl/HF (IC on-site or next-day results)
- Hg (OHM or M30B with on-site analytical)
- Speciated metals
- SO₃ with on-site analytical
- Field GC (VOC, TRS)
- Dioxins/furans, SVOC, VOC
- Mobile CEMS
 - SO₂, NO_x, CO, THC
 - FTIR - HCl, HF, NH₃
- Gas Chromatography (VOHAP, TRS)
 - Fuel - Ult/Prox, Cl, GCV, Ash
 - Ash - TCLP, Trace metals, Cl, LOI
 - FGD - slurry/blowdown



SAS employs state-of-the-art sampling and analytical equipment to measure organic and TRS emissions, including gas chromatographs (GC) and FTIR technologies.

- Quantify multiple compounds simultaneously
- In-the-field data delivery



Maintain the long term profitability of your existing low cost boiler sources...

...Sorbent Injection (SI) from SAS can offset expensive APC upgrades and production interruptions.

Multiple Pollutant Control via Sorbent Injection (SI)

Sorbent Solutions for Emissions Compliance

Southern Air Solutions conducts full-scale multi-pollutant control (MPC) demonstrations using multiple sorbent medias and reagents (PAC, trona, sodium bicarbonate, hydrated lime, chemical Hg oxidants) individually, and in combinations, for the mitigation of acid gases, metals and Hg.

To comply with final EU MATS, ICI Boiler and Portland Cement Kiln NESHAP standards, owners and operators are exploring these lower capital/operating cost systems as alternatives to more costly traditional technologies such as dry and wet FGD.

Sorbent Injection Advantages

Sorbent injection systems have several advantages over other system requirements:

- SI systems can be installed in existing ductwork without disrupting source operations
- Full scale trials determine the proper mix of sorbents and reagents to control present and future emissions
- Sorbent Injection is much less expensive to install and operate than conventional alternatives such as wet or dry FGD's.

Real Solutions to Complex Air Quality Issues

Southern Air Solutions' background in air emissions measurement, air permitting, air dispersion modeling, air pollution control engineering and design enable us to approach NESHAP compliance challenges with a comprehensive understanding of complex air regulatory issues. We have worked exclusively on air quality related projects for the past 20 years.

The SAS Advantage

SAS can provide full scale DSI services, including emissions testing, for a fully integrated SI solution to multiple pollutants control while evaluating the impact to all regulated pollutants and balance-of-plant operations.



Sorbent Injection system delivers the correct combination of sorbents.



Sorbent supply is mixed and metered during trial burns for mitigation of emissions gases, metals and Hg.

Multi-Pollutant Source Testing

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| <ul style="list-style-type: none"> • Wet Methods - Speciated Hg by OHM - SO3 - HCl/HF, Cl2/F2 - Metals - PM2.5/10/CPM (by dry impinger) - SVOC | <ul style="list-style-type: none"> • Mobile CEMS - SO2, NOx, CO, THC - FTIR - HCl, HF, NH3 |
| <ul style="list-style-type: none"> • Dry Methods - Total Hg Speciation by Method 30B (Sorbent Trap) - VOST | <ul style="list-style-type: none"> • Gas Chromatography (VOHAP, TRS) • Solids/Liquids Sampling - Coal - Ult/Prox, Cl, GCV, Ash - Ash - TCLP, Trace Metals, Cl, LOI - FGD - Slurry/Blowdown |

For details on advanced test analysis for complex air quality solutions, contact:

Stanley Arnold

865.607.2791

sarnold@southernaircorp.com