

Chem Shot Air Operations



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Chem Shot Automated Injection



Revolutionize your air drilling operation with electronically controlled and metered chemical injection.

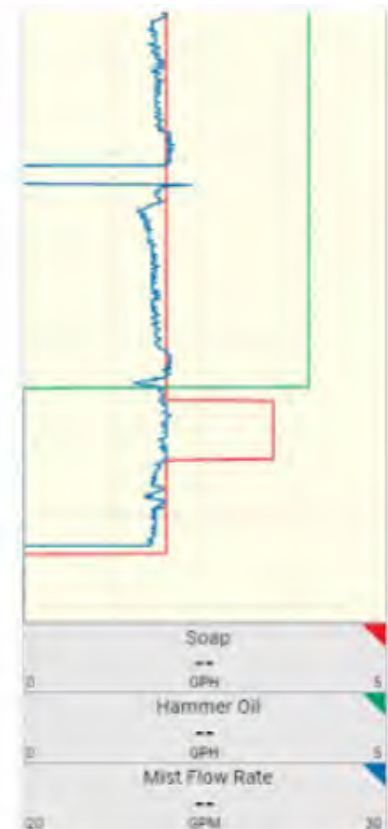
Chem Shot is the first and only intelligent misting system that monitors mist parameters, optimizes chemical injection, and outputs data to Pason/Totco that has never before been collected.

Save money with Chem Shot by:

- Reducing wasteful chemical spend downhole and in the back yard
- Improved hole cleaning and reduced circulating/connection times
- Eliminating preventable incidents by ensuring proper downhole tool and wellbore treatments
- Collecting new data to Pason/Totco creating new optimization opportunities

Chem Shot includes the following features:

- Air flow meter (scfm) output to Pason/Totco
- Mist water flow meter (gpm) to Pason/Totco
- 5 Chemical injection pumps electronically controlled to +/- 0.1 gph
- Intelligent touch screen control panel (on unit and remote drillers control panel)
- Chemical tote racks for a clean, organized, HSE focused operation
- Electric power adaptable to any rig or generator source
- Low impact 44" x 68" footprint





Chem Shot Case Study



Case Study: Operator Savings in Appalachia

Major Lessons Learned:

- Actual pump rates in the field vs what was thought to be pump rates are significantly different with typical air rig operations
 - o i.e. Rig thought their foamer rate was 3 gph vs actual was 8 gph
- Defoamer is the costliest waste chemical during air drilling operations
 - o Standard operations of manual applications or mechanical pump in the backyard causes over application
- Foamer injection rates on Pason optimizes hole cleaning leading to increased mist ROP and reduction in circulation/connection times

Operator optimizes air chemical usage with Chem Shot system and Stryker Drilling chemicals.

- 66% decrease in defoamer usage through automated injection straight to flowline
 - o Defoamer injected in ratio to soap to prevent over usage from typical operations
- 50% decrease in soap usage through in line injection at optimized rates
- Major reduction in pressure surging throughout each stand
- More consistent hole cleaning, improving overall ROP of motors and hammers
- Additional cost savings in 12.5% - 15% reduction in chemical tote cost from direct manufacturer
- In line injection of formation stabilizers provides more consistent hole stability and faster reaction times than batch mixing

Increased Tool Reliability:

- Operator reduced hammer failures by 90% by utilizing Chem Shot for rock oil injection
 - o Previous method of using built in rock oil pump on rig had frequent user error of either not pumping enough oil or pumping the reservoir dry resulting in no lubrication

CHEM SHOT



Eliminate Spills

Eliminate Open Mixing Tanks

Regulatory Agency Reporting

100% Electric

Free Up Rig Personnel



Environment, Health & Safety

Eliminate Spills: Your drilling operation will truly become "closed loop" with Chem Shot. Quick connect hoses connect your totes directly to the system preventing any opportunities for spills. In the event a hose is accidentally disconnected, the integral check valves prevent any chemical from touching containment. Never again will chemicals need to be carried around in buckets around location.

Eliminate Open Mixing Tanks: By design an open mixing mist tank is the highest risk chemical spill item on location. Dumping products into the tank with either telehandlers, buckets, or pneumatic pumps is a messy operation for even the most experienced hands. Chem Shot pumps your chemicals into the standpipe downstream of mist tanks, eliminating any open-air chemical mixing.

Regulatory Agency Reporting: As the only chemical injection system that outputs to EDR, true chemical consumption data can be recorded for both operational and regulatory purposes. Chem Shot can also output tour sheets that summarize chemical use.

100% Electric: Chem Shot can run off of any available power on site ranging from 480V 3-Phase down to 240V Single Phase.

Free Up Rig Personnel: The largest HSE benefit of Chem Shot is freeing up the hand responsible for maintaining the air pack. Replacing hazardous chemical mixing with more time to operate and safely maintain critical air drilling equipment is invaluable.

Chem Shot Specs



Length of air/water pipe - 105"

Available air connections - Fig 1502, Fig 400, Fig 200

Available water connections - Fig 1502, Fig 400, Fig 200

Footprint 90" x 40"

Power requirements: 480V 3Ph 30A, 240V 3Ph 30A or 240V 3Ph 30A

Electrical plug style: Appleton 3034BC or 3044BC. These are the 2 most common plugs, we can adapt to other connections if needed.

Defoamer line connection ½" NPT. Typically ties directly to the buster but we can also tie into ports in the flow line.

30' of chemical supply hose is provided with the unit. Extension hoses billed in addition if needed.