Silica Exposure and Lung Disease in the Mining Industry workshop

Reducing exposure of roof bolter operators to dust in coal mines and cab filtration for controlling dust exposure in metal non-metal mines

J. H. Fletcher & Co.
October 23, 2020
Presentation Summary

• MSHA Approved Roof Bolter Dust Collection System
• Wet Dust Box Update
• Canopy Air Curtains
• Computer Controlled Drilling and Drilling Parameters
• Remote Bolters
• Automatic Bolters
• Enclosed Cabs
• Cab ISO standards working group goals
J. H. Fletcher & Co, Roof Bolters. W/MSHA approved dust collection components and system.

Different sizes and models of roof bolters needed due to conditions and bolting requirements.

Drill head near operator position on the front of booms.
Dual Boom Dust Collection Schematic
Typical Dust Box with Dust Bag

Dual Cyclones

Final Filter

Dust Bag
Dust Box Improvements
Exhaust Water Conditioner

Precleaner

Dust System Available Features

Final Filter Box
Patented Dust Agitator
Warning and Instruction Tags on Dust Tank Door
Wet Dust Box Improvements;
- Enlarged Dump Valve
- Water Resistant Filter
- Hopper Shape

Status; MSHA has granted limited field approval to two mines.
Canopy Air Curtain
Computer controlled drill, feedback system for optimizing drill cuttings
Correct drilling parameters, manually drilling or computer controlled with feedback, are important.

- Feed Pressure
- Feed Speed
- Rotation Speed
- Vacuum

Bits need to cut not grind.
Remote Roof Bolter w/Enclosed Cab
Remote Roof Bolter Module
Automatic Bolt Module, view from cab
Automatic roof bolter – Polish Copper Mine
ROBOTIC ARM
ROOF BOLTER
ANR
FOUNDATION
GRANT -
UK &
FLETCHER
Enclosed, Filtered, Pressurized Cabs
NIOSH study

J.H. Fletcher Co. face drill and roofbolter machine were evaluated at two different underground limestone mines over four years.
ISO 23875 CAB FILTRATION
DRAFT STANDARD GOALS

Ambient CO2 + 400 ppm maximum

120 seconds or less to clean cab to <= 25 ug/m3

Maintain cab pressure between 20 and 200 Pa

Cab pressure and CO2 levels monitored with permanently installed monitoring system