Equipment Designed for Hazardous Locations

**Pneumatic Ventilation Kit**
- SVF10EXCUP
- **Features:**
  - Ultra-quiet operation – under 80 dbA
  - 4HP air motor, operates from 10 - 100 psi
  - CE registered
  - Conductive polyethylene fan housing
  - Aluminum non-sparking blower wheel
  - Static grounding lug installed
  - Powder coat tubular steel frame with dual handles
  - Molded safety guards
  - 8" intake and exhaust flange
  - Weight: 61 lbs.

**Explosion-Proof Blower Ventilation Kit**
- SVB-E8XP
- **Features:**
  - Explosion-proof switch installed and wired with 25 foot cord, no plug, user wired per NEC requirements
  - 1/3 HP electric motor, 115 VAC, 12.6 amp
  - Approved for Class 1, Div. 1, Groups C and D
  - CSA-approved and CE registered
  - Conductive polyethylene fan housing
  - Aluminum non-sparking blower wheel
  - Static grounding lug installed
  - Powder coat tubular steel frame with dual handles
  - Molded safety guards
  - 8" intake and exhaust flange
  - Weight: 72 lbs.

All Conductive Blower Kits Include:
- 1) Pneumatic or explosion-proof Blower
- 2) Industrial Saddle Vent® - SV-189CND
- 3) 90° elbow for Saddle Vent® - SV-90CND
- 4) 15 foot duct - SVH-CND15
- 5) 6 foot duct - SVH-CND06
- 6) Duct canister - SVH-DC25
- 7) Universal mount - SV-UM

**10" In-Line Explosion-Proof Electric Axial Fan**
- Frame: All steel, powder coat red with rubber base feet
- Intake/exhaust flange made of molded conductive polyethylene
- Explosion-proof Electric Motor: 1/3 HP, 115 VAC, 1-phase, 60 Hz. UL and CSA approved
- Automatic reset thermal overload
- Power cord: 10 foot SOOW cable with installed strain release
- External on/off switch
- Grounding lug installed on steel housing on explosion-proof model
- Flow: 1390 cfm free air delivery
- 72 dbA @ 3 ft.
- Weight: 38 lbs
- Customer supplied plug

**Confined Space Entry**
- Do It Right The First Time

The Industry Leader in Grade-D Breathing Air Filtration, Confined Space Ventilation & Area Lighting

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829 Juniper Crescent, Chesapeake, VA 23320
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Controlling & Removing Static Electricity During Confined Space Entry Ventilation

By: Dave Angelico, President
Air Systems International, Inc.

The Safety Industry needs a clear well defined "How-To" Standard on the proper procedures for controlling and safely removing electrostatic charges from confined space ventilation.

Working in tanks, manholes and underground vaults are some of the most dangerous and potentially lethal occupations found in the industrial work environment. Federal, State and corporate safety departments have written reams of documents and procedures on how to safely enter a confined space and perform some sort of maintenance, repair or cleaning operation. Good corporate work practices and procedures have existed for years at the industry specific level. These documents, chemical, pharmaceutical and oil storage and refineries have long seen the necessity of a "How-To" manual for work on their own specific confined space hazards. The current OSHA Standard, 1910.146 "Permit-required Confined Spaces", goes a long way towards identifying some of the hazards a worker may encounter. This OSHA Standard was the outgrowth of many existing standards that came together to provide minimum guidelines for General Industry to follow. The one process needed in the OSHA Standard for the removal of static charges is called grounding and the means to test this. The working practice should be simple enough for all industry trades to be able to perform.

Meeting Industry Demands

As a manufacturer, we have to be responsive to the wants and needs of our customers. Since the development and marketing of the first Saddle Vent® confined space entry ventilation system in the early 1990's, we have constantly been asked by companies, contractors, military and consultants, "How do you properly handle the potential problem of static electricity build-up on the plastic ducting of the Saddle Vent® and the ducting when you are ventilating a tank or manhole?" The art and science of ventilation has many textbooks and articles to help in the quest for understanding the many ventilation techniques used in industry. However, one technical area that is very sketchy involves ventilation with regard to the potential disastrous problems of static electricity build-up. The one process needed in the OSHA Standard for the removal of static charges is called grounding and the means to test this. The working practice should be simple enough for all industry trades to be able to perform.

Static Electricity - The Basics

At some time in our lives we have all felt the effect of static electricity build-up. Walking across the living room carpet and touching a metal doorknob or refrigerator and we feel and see the spark of discharged static electricity. Static is generated whenever two dissimilar materials are in relative motion to each other. If I recently was filling my car with gasoline and I noticed a very slight spark from the plastic fuel nozzle contacting my car. If I get out of my car to put fuel in the tank, please do not get back in the car with fuel pumping until I touch the front frame of the car and discharge any potential build-up of static electricity or a resulting explosion could occur. About three years ago, a Safety Director at a petrochemical company called me for advice. He was using Gas Vent® and identifying some of the hazards a worker may encounter. He explained to me that static electricity build-up, in the confined space, can cause a tremendous build-up of static charges by the mechanical friction of the blasting material. This static build-up can provide the charge necessary to cause an intense explosion of the dusty space. The one aspect of this ventilation set-up that is missing is how to test the system once it is in place and assure a proper electrical bond has been achieved. (What level or range of resistance, in ohms, are sufficient to remove static charges?)

Solution: The Conducative Saddle Vent® Technology

Part of a good confined space entry program is having met the objectives listed in the OSHA 1910.146 "Permit-required Confined Space" Standard. One important objective is the aspect of static electricity build-up on the plastic ducting of the Saddle Vent® and the ducting when you are ventilating a tank or manhole. The electric motor and on/off switches must be approved, at a minimum, for use in Class I, Division 2, Group D atmospheres for the gas pumps. This equipment must be grounded and assured a proper electrical bond has been achieved. The discharge of static electricity from the ventilation system is accomplished by the use of a complete electrical bond. Ducting should be supplied with fabric manufactured with a conductive coating material and a 12" grounding wire attached to each end of the metal duct in the duct. The bonding process is simply where components in the ventilation system are connected to form a complete path that ensures electrical continuity and the flow of static electricity will travel back to the earth ground or an earth ground or earth connection.

The Saddle Vent® device meets the objective for workers who may encounter a hazardous work environment and need to rapidly egress the confined space. The equipment used in the ventilation system to provide ventilation system that eliminates the build-up of static electricity and its potential ignitability. The device that is connected to the tank that is connected to a proper earth ground. ANSI/API Standards 2015 and 2016 provide detail how the use of a venturi style eductor along with an explosion-proof electric blower can be used to accomplish a preferred push/pull method of confined space ventilation. The one aspect of this ventilation set-up that is missing is how to test the system once it is in place and assure a proper electrical bond has been achieved. (What level or range of resistance, in ohms, are sufficient to remove static charges?)

Test for Conductivity

Prior to the start of the ventilation process, the entire Conducative Saddle Vent® Ventilation System should be set-up and tested to assure a complete circuit has been achieved. The ventilation system should include a pneumatic or explosion-proof electric blower, a Conducative Saddle Vent® conductive duct with attached ground wires on each end; all components should be connected together properly; the Saddle Vent® device should be connected to the farthest end of the ducting and metal ducting and the other lead should be attached to the metal frame or ground lug of the blower. The voltmeter should provide a reading between 50K and 350K ohms and prove the existence of an electrical circuit. This resistance range will provide sufficient conductivity for the static charge build-up to drain to a properly grounded source through the blower's electric cord or earth ground.

Conclusion

Confined space entry is hazardous for even the most seasoned professionals. Unfortunately, most of the work done in confined spaces is done on an ocasional basis with less than expert workers. It is only a matter of time when all the right conditions of fuel, oxygen, and ignition come together to form a combustible mixture. We believe OSHA needs to seek the guidance and expertise of industry professionals to write additional "How-To" procedures to aid and assist the occasioned confined space worker on handling and removing static electricity when ventilating. The use of a work specific device like the Conducative Saddle Vent® device meets the objective for workers who may encounter a hazardous work environment and need to rapidly egress the confined space. The ventilation system must be tested to assure proper electrical bond has been achieved. The Conducative Saddle Vent® device meets the objective for workers who may encounter a hazardous work environment and need to rapidly egress the confined space.

Control your work environment - Choose the Conducative Saddle Vent® Ventilation System.