

Spencer's Central Vacuum Expertise Helps Customers Comply with OSHA Combustible Dust Requirements and NFPA 654, 68 & 69

The Spencer Turbine Company's [Central Vacuum Systems](#) are ideal for industrial customers who need to respond to the combustible dust requirements of OSHA as well as those of the National Fire Protection Agency (NFPA).

OSHA has determined that good housekeeping practices are vital to reducing the risk of explosions and deflagration from combustible dust build up in industrial environments. Spencer provides a complete line of Central Vacuum Systems (CVS) for all types of applications to help keep areas free of fine dust particles, which can fuel explosions. Every year, industrial dust explosions threaten the safety of employees, damage equipment and interrupt productivity.

The OSHA list of combustible dusts under watch include metal, such as aluminum and magnesium; wood; coal, toner, charcoal and other carbon; plastics; biosolids; other organic materials like sugar, flour, cotton, barley, milk powder, grain, soap, and paper tissue dust; and certain textile materials. Industries identified by OSHA as the producers of these and other combustible dusts include agriculture, food, chemical, paper, pulp, textiles, coal, forestry, tobacco, pesticides, metal processing, and pharmaceuticals. For more information on affected industries and combustible dusts, refer to the Combustible Dust leaflet published by OSHA.

OSHA stresses the importance of establishing a formal housekeeping program with regular cleaning frequency for floors and horizontal surfaces such as ducts, pipes, hoods, ledges, and beams to minimize dust accumulation within operating areas of a facility. At the same time, NFPA 654, 68 & 69 for dealing with combustible dust now include mandatory requirements to vent, isolate, and suppress dust deflagrations. Spencer has the capability to assist customers in developing housekeeping practices to address the issues outlined by both regulatory bodies.

Spencer has more than 115 years of experience in dealing with the technical challenges of keeping industrial plants cleaner and safer. The company custom builds Central Vacuum Systems, and its technical experts can custom engineer, design, and manufacture a system to handle customers' specific dust removal vacuum cleaning requirements. In addition, Spencer will consult with customers to discuss how their existing Spencer Central Vacuum System may be retrofitted to help comply with NFPA 654, 68 & 69 and to address OSHA housekeeping requirements.

Spencer's solutions to assist in maintaining facility cleanliness include:

- Modular Central Vacuum Systems
- Stationary Integrated Vacuum Units
- Custom Designs & Fabrication from Special Metals
- Tubing, Fittings, Valves, Hoses, Tools & Controls

Each system is custom designed and manufactured for specific plant environments. Based on the K_{St} value and P_{max} of the dust, the number of vacuum operators, hose size, facility layout, equipment location, and tools required, Spencer provides a tailored [Central Vacuum System](#) solution to meet even extreme housekeeping conditions and to help reduce the risk of dust explosion.

Spencer also provides explosion-proof (XP) design features that help mitigate the potential for explosion. An Explosion Relief Vent can be ducted to the outside of the building. With the optimum one- to two-foot maximum duct length, if there should ever be a deflagration, it will be vented safely outside the building. The relief bung's connection to the outside is specially designed to contain a deflagration, and an isolation valve or chemical suppression may also be required to keep the deflagration from spreading to the piping system.

In addition, grounded hoses, zinc-galvanized tubing, and grounded filter bags will help to eliminate static electric charges associated with high-velocity dust collection and industrial vacuum cleaning systems.

To discuss a vacuum solution to meet industrial housekeeping challenges, customers can call their nearest Spencer representative; call 800-232-4321, ext. 210; or email marketing@spencer-air.com .

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About The Spencer Turbine Company

The Spencer Turbine Company is a privately held, U.S.-owned and -operated provider and servicer of blowers and gas boosters, vacuum systems and other accessory products. Based in Windsor, CT, Spencer has applied a unique Engineering Edge since 1892 to create innovative solutions for air and gas handling problems. The company is a world leader in addressing wide-ranging energy and environmental solutions across industries and applications that include nuclear, coal, gas, electric and emerging technologies such as fuel cells and hydrogen systems. The company also provides solutions for digester gas and landfill gas recovery and utilization; barge vapor extraction; combustion air delivery; wastewater treatment aeration; soil remediation; emission control; flue gas desulfurization processes, vacuum cleaning for plant-wide cleanliness; and waste material reclamation and recycling.

The Spencer Turbine Company

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Blowers Gas Boosters Central Vacuum Systems Separators Tubing & Fittings Electrical Control Panels System Accessories

Combustible Dust

Does your company or firm process any of these products or materials in powdered form?

If your company or firm processes any of these products or materials, there is potential for a "Combustible Dust" explosion.

<p>Agricultural Products</p> <p>Egg white Milk, powdered Milk, nonfat, dry Soy flour Starch, corn Starch, rice Starch, wheat Sugar Sugar, milk Sugar, beet Tapioca Whey Wood flour</p>	<p>Cottonseed Garlic powder Gluten Grass dust Green coffee Hops (maltd) Lemon peel dust Lemon pulp Linseed Locust bean gum Malt Oat flour Oat grain dust Olive pellets Onion powder Parsley (dehydrated) Peach Peanut meal and skins Peat Potato Potato flour Potato starch Raw yucca seed dust Rice dust Rice flour Rice starch Rye flour Semolina</p>	<p>Soybean dust Spice dust Spice powder Sugar (10x) Sunflower Sunflower seed dust Tea Tobacco blend Tomato Walnut dust Wheat flour Wheat grain dust Wheat starch Xanthan gum</p>	<p>Chemical Dusts</p> <p>Adipic acid Anthraquinone Ascorbic acid Calcium acetate Calcium stearate Carboxy-methylcellulose Dextrin Lactose Lead stearate Methyl-cellulose Paraformaldehyde Sodium ascorbate Sodium stearate Sulfur</p>	<p>Epoxy resin Melamine resin Melamine, molded (phenol-cellulose) Melamine, molded (wood flour and mineral filled phenol-formaldehyde) (poly) Methyl acrylate (poly) Methyl acrylate, emulsion polymer Phenolic resin (poly) Propylene Terpene-phenol resin Urea-formaldehyde/cellulose, molded (poly) Vinyl acetate/ethylene copolymer (poly) Vinyl alcohol (poly) Vinyl butyral (poly) Vinyl chloride/ethylene/vinyl acetylene suspension copolymer (poly) Vinyl chloride/vinyl acetylene emulsion copolymer</p>
<p>Agricultural Dusts</p> <p>Alfalfa Apple Beet root Carrageen Carrot Cocoa bean dust Cocoa powder Coconut shell dust Coffee dust Corn meal Cornstarch Cotton</p>		<p>Carbonaceous Dusts</p> <p>Charcoal, activated Charcoal, wood Coal, bituminous Coke, petroleum Lampblack Lignite Peat, 22%H_2O Soot, pine Cellulose Cellulose pulp Cork Corn</p>	<p>Metal Dusts</p> <p>Aluminum Bronze Iron carbonyl Magnesium Zinc</p>	
			<p>Plastic Dusts</p> <p>(poly) Acrylamide (poly) Acrylonitrile (poly) Ethylene (low-pressure process)</p>	

Dust Control Measures

The dust-containing systems (ducts and dust collectors) are designed in a manner (i.e., no leaking) that fugitive dusts are not allowed to accumulate in the work area.

The facility has a housekeeping program with regular cleaning frequencies established for floors and horizontal surfaces, such as ducts, pipes, hoods, ledges, and beams, to minimize dust accumulations within operating areas of the facility.

The working surfaces are designed in a manner to minimize dust accumulation and facilitate cleaning.

Ignition Control Measures

Electrically-powered cleaning devices such as vacuum cleaners, and electrical equipment are approved for the hazard classification for Class II locations.

The facility has an ignition control program, such as grounding and bonding and other methods, for dissipating any electrostatic charge that could be generated while transporting the dust through the ductwork.

The facility has a Hot Work permit program.

Areas where smoking is prohibited are posted with "No Smoking" signs.

Duct systems, dust collectors, and dust-producing machinery are bonded and grounded to minimize accumulation of static electrical charge.

The facility selects and uses industrial trucks that are approved for the combustible dust locations.

Prevention Measures

The facility has separator devices to remove foreign materials capable of igniting combustible dusts.

MSDSs for the chemicals which could become combustible dust under normal operations are available to employees.

Employees are trained on the explosion hazards of combustible dusts.

Protection Measures

The facility has an emergency action plan.

Dust collectors are not located inside of buildings. (Some exceptions)

Rooms, buildings, or other enclosures (dust collectors) have explosion relief venting distributed over the exterior wall of buildings and enclosures.

Explosion venting is directed to a safe location away from employees.

The facility has isolation devices to prevent deflagration propagation between pieces of equipment connected by ductwork.

The dust collector systems have spark detection and explosion/deflagration suppression systems.

Emergency exit routes are maintained properly.

