

Explosion Protection Technical Update

Fike® Calculating Total Suppressed Pressure Can Make or Break System Performance Not To Mention Safety In The Field...

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Coming Next Month...

Did You Know?

- How the changes in ASME affect rupture disc installations?
- What the new ASME guidelines say about DE-RATING pressure relief valves and rupture discs in combination?
- NFPA has introduced their new edition in 2007, and it is now a STANDARD, and not a guideline?

When applying an explosion protection system to a piece of your process equipment, there is quite a bit of important information required. After all, this is being put into service to protect your personnel, process and process equipment, as well as the overall facility, right?

Knowing your TSP, or Total Suppressed Pressure is **CRITICAL**.

So, knowing that the TSP number is critical, we need all of the application information to calculate the important number.

We will classify this set of criteria as the "application knows".

This is the process data that is required to choose anything from the size and quantity of the suppressant canisters, all the way to the placement of the equipment in the system.

The standard "knowns" are, operating positive pressure, vacuum levels, air flow, Kst and P-max values of the media, process temperature, P-red rating of the equipment, the maximum fill levels of the media inside the equipment, and location of the equipment.

Once all of this information is "known", we then need to know the equipment function, overall geometry, filter type, quantity and size, if any, inlet and discharge sizes, and how it ties into the process.

The geometry of the equipment is important, because the volume is

needed to properly determine the amount of suppressant required.

The type size and quantity of filters, if any, is important because we can take credit for this area as being

effect of the system activating. The media fill levels, if any, are important because it will tell us how much actual free volume we have available to discharge suppressant into. The typical rule of thumb is a minimum of 0.5m³ is needed to be able to apply suppression.

How the equipment ties into the process is important, because it assists in determining if there is any chemical or mechanical isolation required to protect the process or any interconnected process equipment.

Now to the issue of Total Suppressed Pressure. The combined "knowns" of operating pressure, Kst and P-max value of the media, and the minimum and maximum free volume.

In the end, this calculation will ultimately determine if the system being applied will work and perform safely. Without the knowledge of this calculated number and the "knowns" that determine it, you cannot safely and reliably put a system into service.

If it's not safe and reliable, what's the point?

If your vendor isn't providing this **CRITICAL** calculation, you should ask why.

If your equipment provider isn't running this calculation, you should go somewhere else.

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"clean", so it may reduce the size and quantity of canisters required.

The air flow is important because it will affect equipment placement to optimize the systems reaction time.

The equipments P-red rating (meaning, how much reduced explosion pressure the equipment is capable of withstanding during a suppressed deflagration) is important because it will figure into the

Fike's Explosion System Suppressant Container Design Really *Deliver's* Protection

SUPPRESSANT CONTAINERS DESCRIPTION

Fike suppressant containers provide optimum performance in delivering the suppressant agent and suppressing an explosion. These patented high-rate discharge suppressant containers are specifically designed to reduce the time required to inject the agent and suppress the flame front. In addition, Fike offers 9-liter containers used specifically for chemical explosion isolation. This technique is often used in conjunction with explosion suppression and explosion venting to protect interconnected vessels. The high-rate discharge containers comply with the ASME Boiler and Pressure Vessel Code. 9-Liter complies with DOT regulations.

FIKE SERVICES

Fike expertise creates the right explosion protection solution for your specific application:

- Engineers and application specialists familiar with your

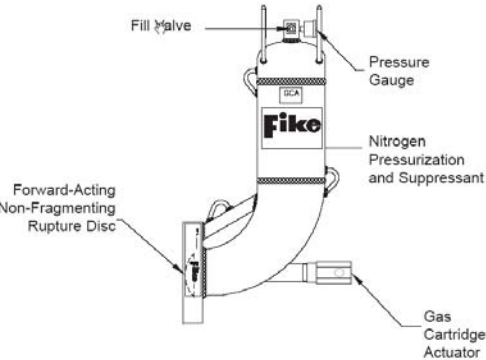
ers suppressant agent faster, reducing overall pressure and damage to the vessel and protects a wider range of hazards. Gas cartridge actuator with 10 year service life reduces maintenance and cost of ownership.

GCA's may be easily removed for maintenance without depressurization or removing the container from the vessel.

A variety of suppressant agents help us protect against a wide range of hazards.

Field refurbishable; return to normal operating conditions faster, easier,

and cheaper. Designed for optimal throw distance our design enables better, faster suppression, and reduces pressures and protects your vessel and equipment from damage.



application and applicable codes

- Product testing and hazard analysis to design appropriate protection

FEATURES BENEFITS

Patented 90° elbow and zero restriction nozzle opening deliv-

****NFPA 68 2007 Standard is just that. It is no longer a guideline. Material must be tested, new sizing criteria apply including new duct length considerations, mass of the vent being considered, vent placement, and much more.****



NFPA 2007 Lunch & Learn Sessions

We are continuing our series of on-site NFPA 2007 Update seminars. We have conducted 5 sessions year-to-date, and we have four more booked through November of this year.

We have conducted these sessions for as few as five, and as many as forty participants. These are Power Point based presentations, and a printed copy with a notes area is given to each attendee.

The format is interactive, and can be a great forum for addressing problematic applications that may exist within the project you are designing.

We include what the parameters may be when it may be best to look at our flameless venting products or

our suppression and / or explosion isolation systems.

As before, we need only two weeks notice, and we will work the timing and lunch details with your point of contact. Thanks for your attendance, and we look forward to working together in the future.

NFPA 68
Standard on
Explosion Protection by
Deflagration Venting
2007 Edition



Here are just a few of the details on the subject matter that we cover in our seminars:

New Standard Affects:

- Hazard Analysis and Design Options
- Vessel L/D Determination

- Revised general correlations for dusts
 - Basic equation
 - Initial pressure
 - L/D
 - Turbulence
 - Panel inertia
 - Partial volume
 - Vent ducts
- Inspection and Maintenance

You can see the entire Power Point overview on our web site

@
www.ForgyProcess.com

Please call:

1-800-229-8258 to schedule a date for one of our update sessions.



Beginning November 1st, Forgy Process Instruments is your new SOR Process switch, level, and flow representative!!



Explosion Protection Worksheet

Rectangular Bag Filter Dust Collector

704 South 10th Street • P.O. Box 610 • Blue Springs, MO 64015-4263 • (816) 229-3405 • Fax (816) 228-9277

Company _____
Address _____

Project # _____

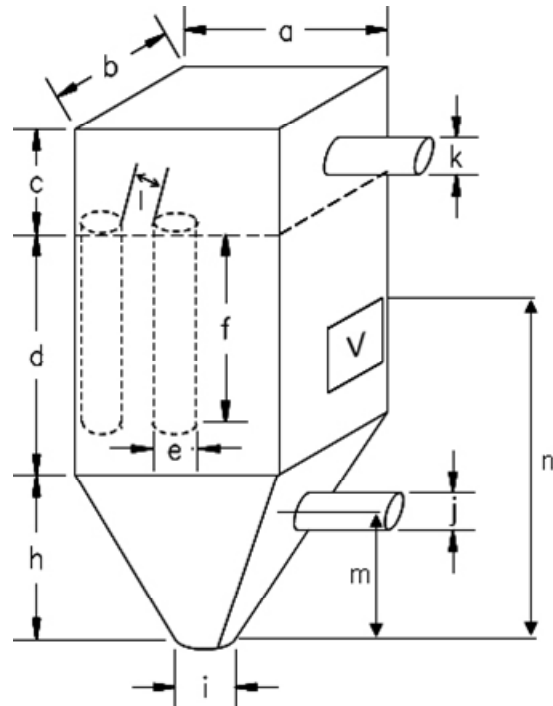
Contact _____
Phone _____
Fax _____
e-mail _____

Description: Dust-laden air will enter the collector below the filters and be distributed around the filters by the air flow or dust distribution baffle. Heavy dust particles will fall into the collection hopper at the base of the collector and small light particles will be collected on the filter's surface. The filters are typically cleaned by reverse air flow (pulse jets) dislodging the collected material. The large particles fall into the hopper and fines remain in suspension until returning to the filter surface. Clean air will pass through the filters, enter the clean air chamber and exit the collector through the exhaust. Designs outside this description should be noted in comments and/or illustrated in the provided sketch.

Process	
Maximum positive pressure	
Maximum vacuum	
Maximum process temperature	
Ambient temperature	
Airflow	
Reduced Explosion Pressure (P_{red})	
Enclosure location	<input type="checkbox"/> indoors <input type="checkbox"/> outdoors
If vent duct is required	___ Length ___ Qty. of Elbows

Combustible material	
Name	
K_{St}	bar*m/sec
P_{max}	barg

Enclosure		
Tag/I.D. Number		
Manufacturer		
Model Number		
a	Width	
b	Length	
c	Clean-straight wall	
d	Dirty-straight wall	
e	Filters-diameter	
f	Filters-length	
g	Filters-quantity	
h	Hopper-height	
i	Hopper discharge-diameter	
j	Inlet diameter	
	Distribution baffle	<i>provide sketch</i>
k	Exhaust diameter	
l	Distance between filters	
m	Inlet centerline location	
n	Vent elevation	Min. Max.



- Explosion Venting** - Control the Explosion Pressure. Relieves explosion overpressure within process enclosure before destructive levels of pressure are reached.
- Explosion Isolation** - Control the Explosion Propagation. Mechanical or chemical barriers to prevent the spread of explosions through interconnected pipe or ducts.
- Explosion Suppression** - Control the Explosion Pressure and Flame. Detects and extinguishes the deflagration in its very early stages before destructive levels of pressure are reached.
- Flameless Venting** - Extinguishes the flame from a vented explosion, where it could ignite secondary explosions or endanger personnel.

Comments:

FORGY

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[Http://www.ForgyProcess.com](http://www.ForgyProcess.com)

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St. Louis, Missouri 63146

Contact Our Customer Service Center @ 1-800-229-VALV For Application & Quotation Information

Control Valves & Regulators

Rotary Eccentric Plug, V-Ball, Rotary Butterfly, & Globe Style Control Valves; Regulators, & BP Valves



BadgerMeter, Inc.
RESEARCH CONTROL® VALVE



Process Flow & Level Instrumentation

Turbine, Disc, Impeller, & Mag Meters / Gap Switch, RF Capacitance, Radar, Nuclear, Ultrasonic Level Technologies



BadgerMeter, Inc.



Ball Valves, Butterfly Valves, Knife Gate Valves, & Plug Valves, & Tube Fittings

Rubber Seated & High-Performance, Teflon Lined, Multi-Port, Through ANSI 1500LB Class



Pressure Relief & Tank Protection

Rupture Discs, Explosion Vents, Relief Valves, Conservation Vents, Tank Blanketing Valves, & Sight Glasses



Valve Automation

Electric & Pneumatic Valve Actuators, Airsets, LP Transducers, Monitors, Positioners, Switches, & Bus Systems



Indicating Devices & Systems

Pressure Switches, Gauges, Thermometers, Temperature Sensors & Transducers

