



Explosion Protection Application Worksheet

Project/ Process Overview

Project Info

Project I.D. / RFQ #:

Quote Due Date:

Sold to:

Installed at Company:

Installed at Address:

City, State, Country:

Contact Info

Name: Company:

Phone/Email:

Approvals

Approvals (if any): ☐ FM ☐ ATEX ☐ Other:

Hazardous Area: ☐ Class I ☐ Class II/Div 1 ☐ Class II/Div 2

☐ Undefined/Other:

Combustible Material

Has Hazard been tested? ☐ No ☐ Yes

Can the hazard be exposed to personnel or the atmosphere? ☐ No ☐ Yes

Hazard Name:

Hazard Type: ☐ Organic ☐ Metal ☐ Other:

KSt or Su: barg*m/s or cm/s for Su

Pmax: barg

Hazard Data Source:

Describe the process that we are protecting.

Describe the Scope of the Design.

What is the Protection Objective?

Does the hazard need to be contained in the enclosure? Is it toxic? (i.e. poison, drugs, etc)

Example:
"Aluminum Dust", "Corn Starch", "Powdered Sugar"

Dust → KSt (Deflagration Index)
Gases → Su (Fundamental Burning Velocity)

Describe where the KSt or Su value came from. If tested in a laboratory, please provide the name & a test report. If value is from a reference documents (NFPA or similar), please provide the source.

Describe what the line or equipment is being used for. Example: "The Mill receives bulk product and grinds in down. The Filter Box pulls outside air to transfer the product. The cyclone separates the larger particles from the smaller. The dust collector collects the smallest fines. The fan on the exhaust of the collector conveys the dust through the system."

Describe what is to be protected and what isn't part of the scope. Example: "Customer would like to protection on their milling line which includes the mill, the cyclone, dust collector, and most of the interconnected duct work. The filter box below the mill & fan at the end is not to be protected by Fike."

Describe how we are going to protect the system. Example:
"Mill - designed for containment, inlet has a rotary valve by other & discharge requires chemical isolation. Clean air filter box not protected by Fike.
Cyclone - suppression with chemical isolation on inlet and outlet. Discharge has rotary valve by others.
Dust Collector - suppression with chemical isolation on inlet. Exhaust outside and not protected by Fike. Discharge has rotary valve by others. Fan not protected by Fike."

Enclosure Protection Type (Select One)

Define the method of overpressure protection on the vessel. Only select one method for design.

Suppression

If Suppression, choose Standard SBC agent or Food Grade SBC agent.

Venting

Free is for outdoors. Flameless can be indoors.

Vent Ducting

Free vent to direct the deflagration to the outdoors if the duct is less than 20 feet (NFPA). This will increase vent area, require a higher Pred, and/ or may not be possible. Record the length of the duct and any bends for evaluation.

Containment

Enclosure must be able to withstand the deflagration.

Isolation Protection Requirements

Define the type of duct, size, & isolation to be used.

Type

Type of duct being protected (i.e. Inlet, Exhaust, Outlet, Dust Aspiration, Clean Air Inlet, etc.)

Protection

The type of hardware used. (i.e. Chemical Isolation, EIV, EIPV, DFI, Ventex, etc.)

Enclosure Protection Type (Select one)			Isolation Protection Requirements		
Suppression: ☐ Standard SBC ☐ Food Grade SBC			Type	Size	Protection
Venting: ☐ Free ☐ Flameless			Type	Size	Protection
☐ Vent Ducting If yes, Length:			Type	Size	Protection
Other: ☐ Containment ☐ Other:			Type	Size	Protection

Process Operating Parameters			
Operating Pressure	Min	Max	Enclosure ID/ Tag #
Process temperature	Min	Max	Manufacturer
Ambient temperature	Min	Max	Model
Pred			Alternate KST
Pred Verified?	☐ Yes ☐ No		Dust Morphology
Pstat (if vents by others)			Dust Concentration
Enclosure location	☐ Indoors ☐ Outdoors		Additional Notes: (Identify any extra plenums, internal partitions, baffles, or moving internal parts)
Max. Safe Fireball Path (venting)			
Does the enclosure vibrate/shake?	☐ No ☐ Yes (explain in notes)		
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)		

Alternate KST

Kst of dust specific to the enclosure if available.

Dust Morphology

Particle Size (Dv,90%) & shape of dust required for flameless venting. (**fine** = <35µm, **coarse** = 35-69µm, **very coarse** = 70-150µm, **fibrous** = <106µm with ≥1:5 length to width ratio)

Dust Concentration

Mass of dust per volume of air which can effect clogging factor, venting efficiency and suppression of metal dusts.

Process Operating Parameters

Operating Pressure & Process Temperature

These values describe the range of conditions inside this enclosure during operation. This is typically not a fan/blower rating.

Ambient Temperature

This is the range of temperature outside the enclosure.

Pred

Pred is the maximum allowable pressure can be developed in the enclosure that will result in an acceptable amount of deformation.

Venting Requires a Pred of at least 1.25 PSIG.

Suppression requires a Pred of at least 3.0 PSIG.

FM 7-76 provides guidance when Pred is unknown for vented systems

Verified Pred

Value acquired from the equipment manufacture or from an engineering consultant.

Maximum Safe Fireball Path (venting)

For venting, this value is the shortest distance from the vent opening to any area where personnel, structures, or equipment may be present.

Does the enclosure vibrate/ shake?

The amplitude of movement of the enclosure may require additional hardware to dampen effects on devices/containers.

Is there sight glass ports or windows?

Sight glass ports or windows on the enclosures/ duct work will need to be identified when using Optical Detectors.

Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Inlet Size Protection

Type Exhaust Size Protection

Type Size Protection

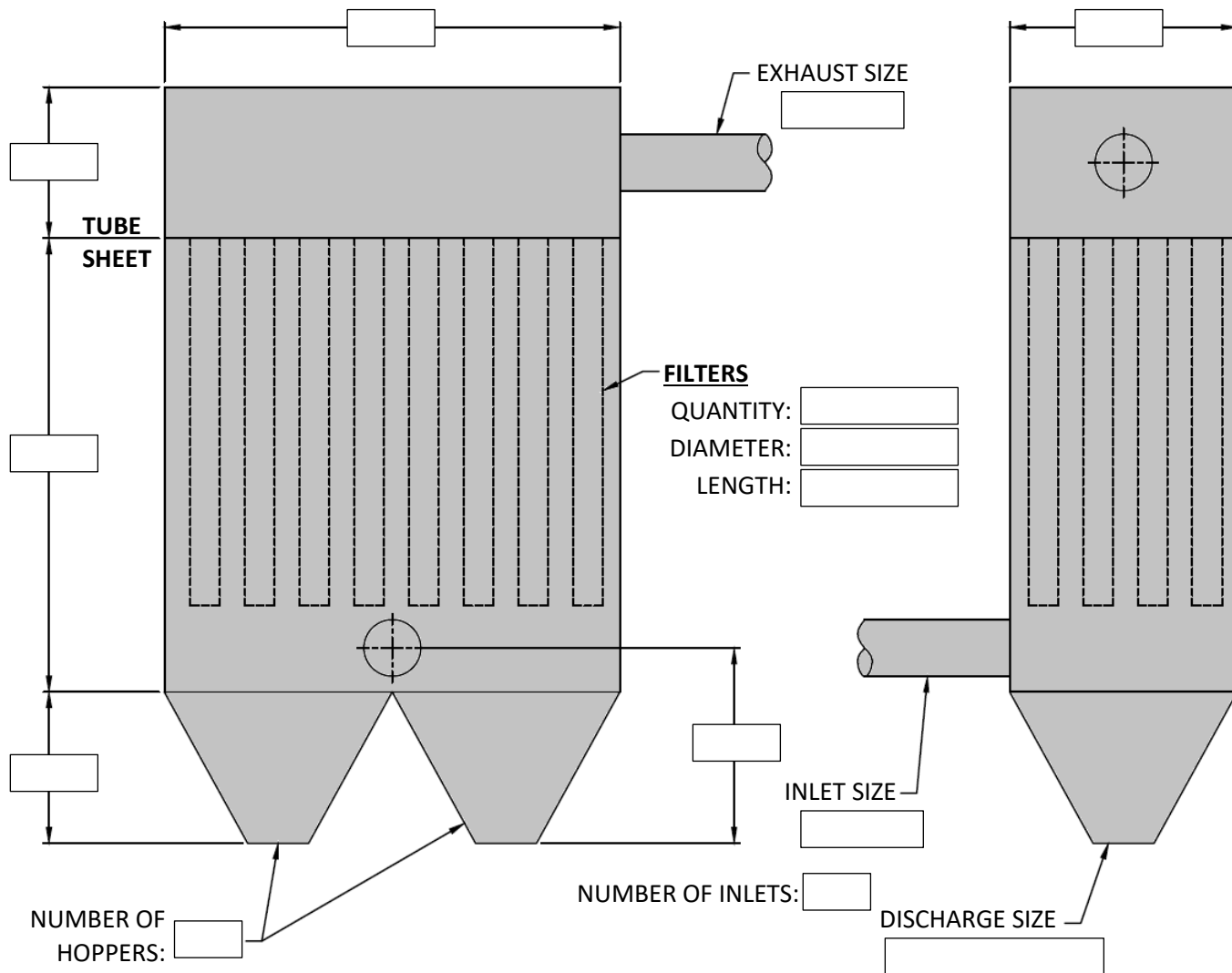
Type Size Protection

Process Operating Parameters		
Operating Pressure	Min	Max
Process temperature	Min	Max
Ambient temperature	Min	Max
Pred		
Pred Verified?	☐ Yes ☐ No	
Pstat (if vents by others)		
Enclosure location	☐ Indoors ☐ Outdoors	
Max. Safe Fireball Path (venting)		
Does the enclosure vibrate/shake?	☐ No ☐ Yes (explain in notes)	
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)	

Enclosure ID/ Tag #	
Manufacturer	
Model	
Alternate KST	
Dust Morphology	
Dust Concentration	

Additional Notes:

(Identify any extra plenums, internal partitions, baffles, or moving internal parts)





Explosion Protection Application Worksheet

Round Dust Collector w/ Vertical Filters

Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Inlet Size Protection

Type Exhaust Size Protection

Type Size Protection

Type Size Protection

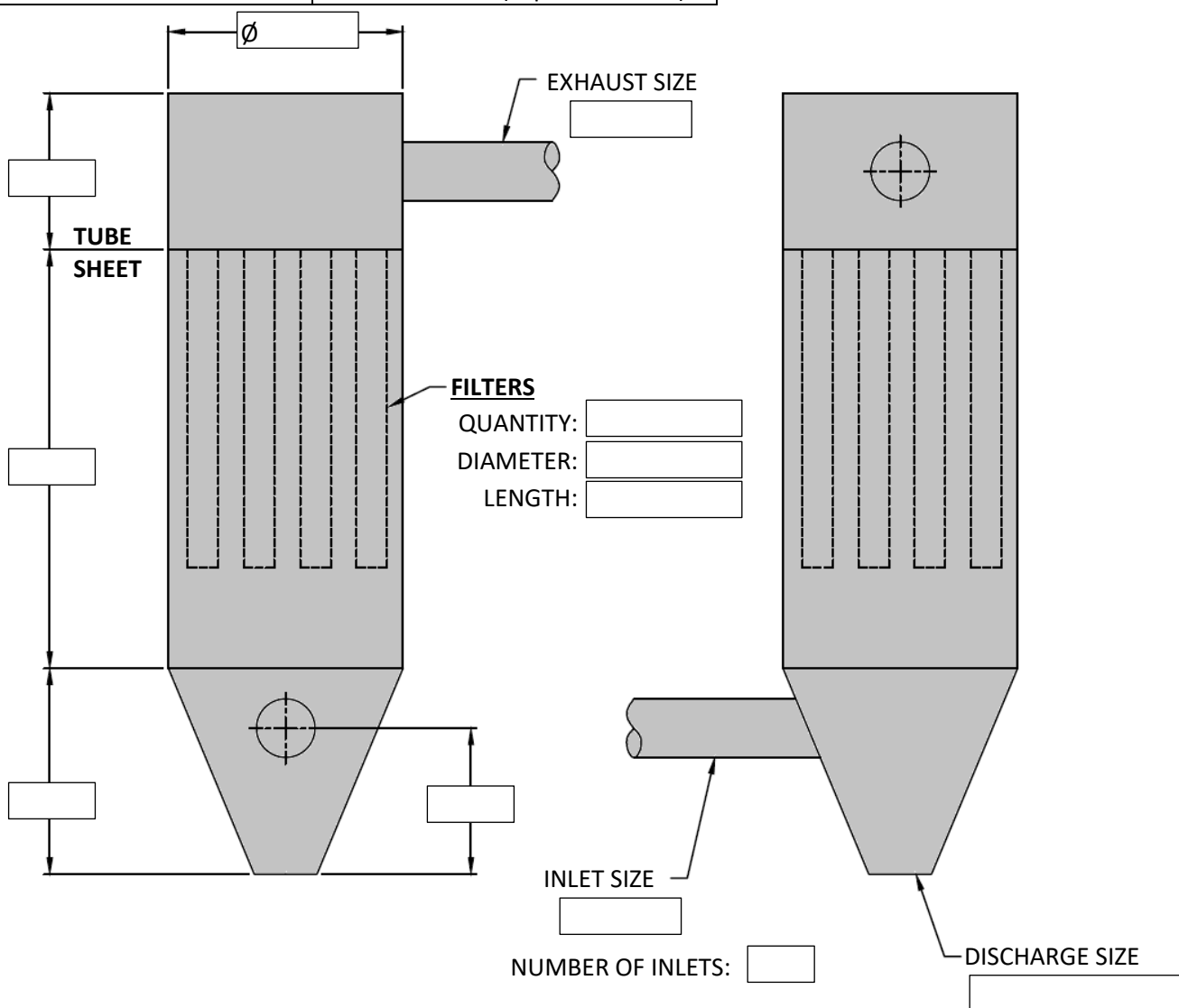
Process Operating Parameters

Operating Pressure	Min	Max
Process temperature	Min	Max
Ambient temperature	Min	Max
Pred		
Pred Verified?	☐ Yes	☐ No
Pstat (if vents by others)		
Enclosure location	☐ Indoors ☐ Outdoors	
Max. Safe Fireball Path (venting)		
Does the enclosure vibrate/shake?	☐ No ☐ Yes (explain in notes)	
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)	

Enclosure ID/ Tag #	
Manufacturer	
Model	
Alternate KST	
Dust Morphology	
Dust Concentration	

Additional Notes:

(Identify any extra plenums, internal partitions, baffles, or moving internal parts. Is the Inlet tangential?)





Explosion Protection Application Worksheet

Cyclone Separator

Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Size Protection

Type Size Protection

Type Size Protection

Type Size Protection

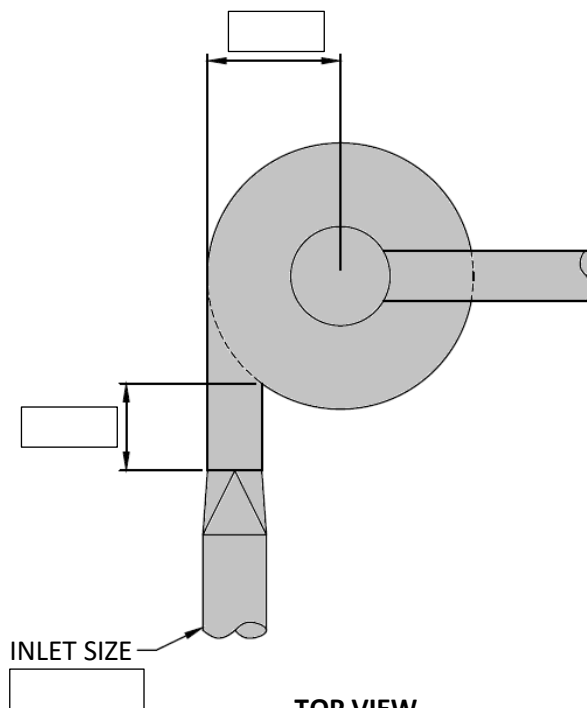
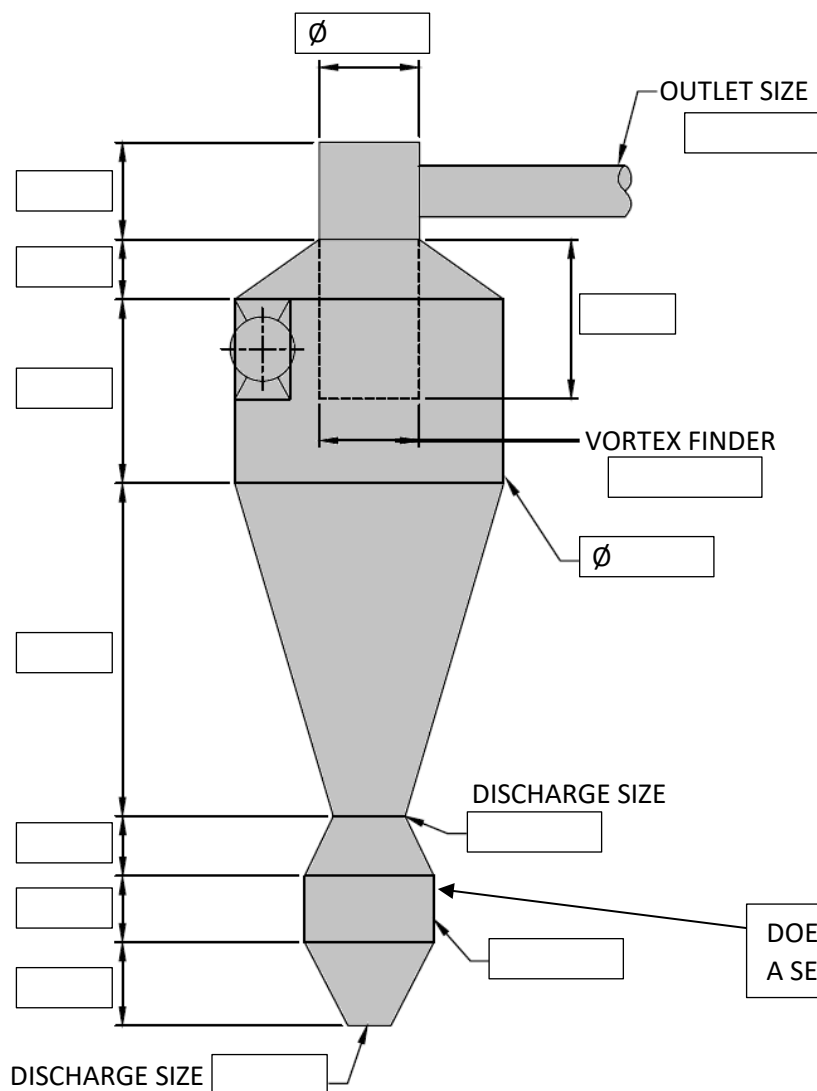
Process Operating Parameters

Operating Pressure	Min	Max
Process temperature	Min	Max
Ambient temperature	Min	Max
Pred		
Pred Verified?	☐ Yes ☐ No	
Pstat (if vents by others)		
Enclosure location	☐ Indoors ☐ Outdoors	
Max. Safe Fireball Path (venting)		
Does the enclosure vibrate/shake?	☐ No ☐ Yes (explain in notes)	
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)	

Enclosure ID/ Tag #	
Manufacturer	
Model	
Alternate KST	
Dust Morphology	
Dust Concentration	

Additional Notes:

(Identify any extra plenums, internal partitions, baffles, or moving internal parts.)



TOP VIEW

DOES THE CYCLONE HAVE
A SECONDARY DUST CHAMBER: ☐ NO ☐ YES



Explosion Protection Application Worksheet

Bin/ Hopper/ Silo

Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Inlet Size Protection

Type Size Protection

Type Size Protection

Type Size Protection

Process Operating Parameters

Operating Pressure	Min	Max
Process temperature	Min	Max
Ambient temperature	Min	Max
Pred		
Pred Verified?	☐ Yes ☐ No	
Pstat (if vents by others)		
Enclosure location	☐ Indoors ☐ Outdoors	
Max. Safe Fireball Path (venting)		
Does the enclosure vibrate/shake?	☐ No ☐ Yes (explain in notes)	
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)	

Enclosure ID/ Tag #	
Manufacturer	
Model	
Alternate KST	
Dust Morphology	
Dust Concentration	

Additional Notes:
(Identify any extra plenums,
internal partitions, baffles, or
moving internal parts.)

ENCLOSURE SHAPE

☐ ROUND

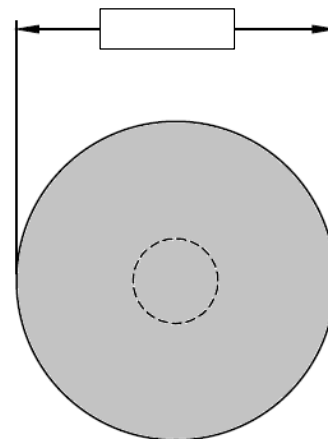
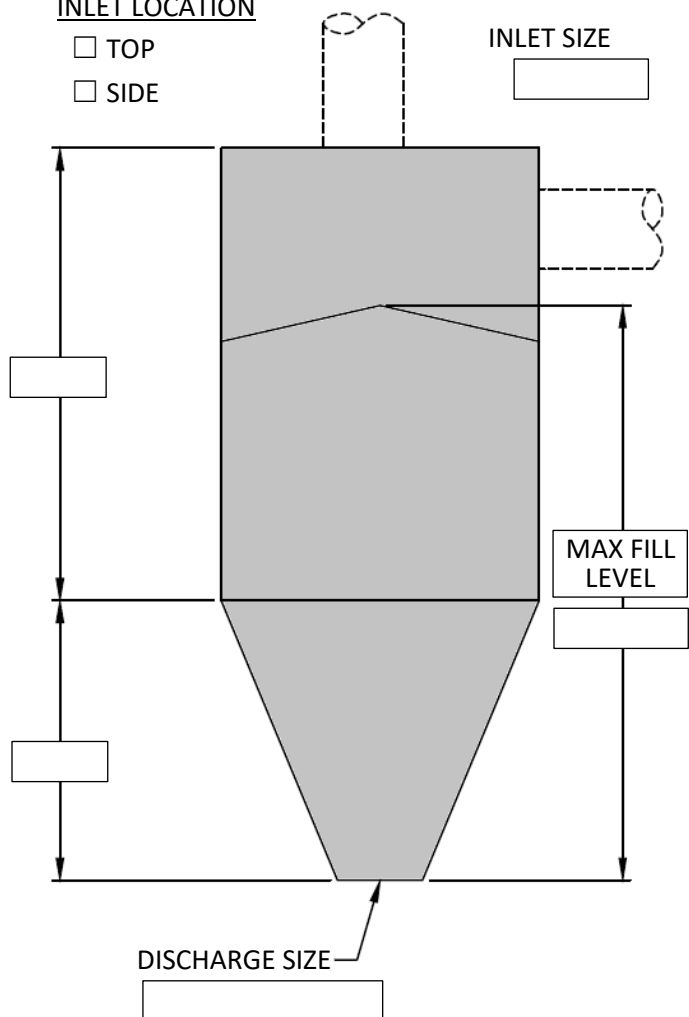
☐ RECTANGULAR

INLET LOCATION

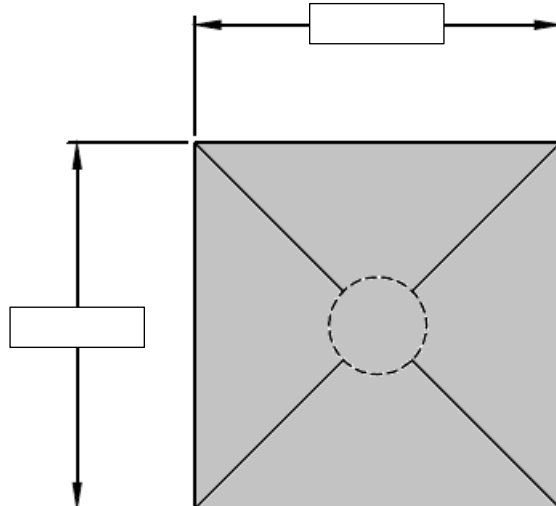
☐ TOP

☐ SIDE

INLET SIZE



- OR -



TOP VIEW



Explosion Protection Application Worksheet

Bucket Elevator – Single Leg

Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Inlet Size Protection

Type Outlet Size Protection

Type Size Protection

Type Size Protection

Process Operating Parameters

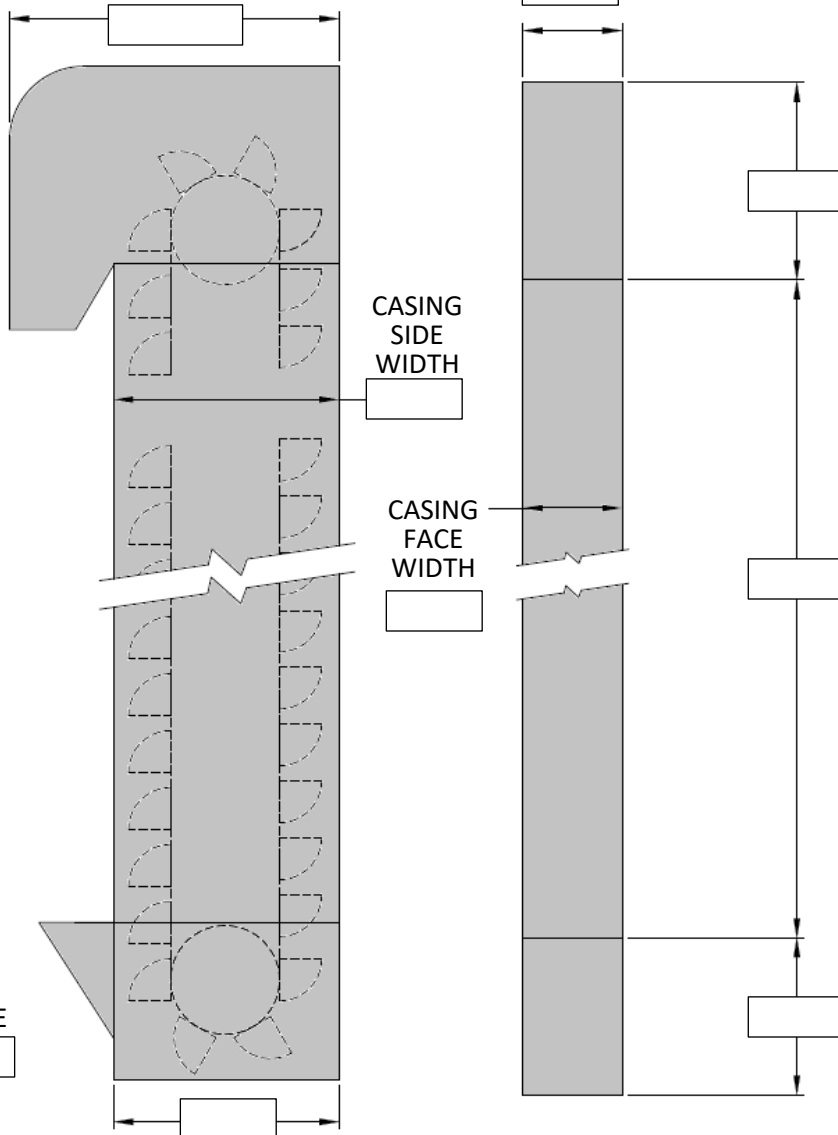
Operating Pressure	Min	Max	Enclosure ID/ Tag #	
Process temperature	Min	Max	Manufacturer	
Ambient temperature	Min	Max	Model	
Pred			Alternate KST	
Pred Verified?	☐ Yes ☐ No		Dust Morphology	
Pstat (if vents by others)			Dust Concentration	
Enclosure location	☐ Indoors ☐ Outdoors		Additional Notes: (Identify any extra plenums, internal partitions, baffles, or moving internal parts.)	
Max. Safe Fireball Path (venting)				
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)			

BUCKET TYPE: ☐ PLASTIC ☐ METAL

PROVIDE SKETCH OF INLET, OUTLET, AND ANY ADDITIONAL DUST ASPIRATION LINES OR INLETS

OUTLET SIZE

INLET SIZE





Explosion Protection Application Worksheet

Bucket Elevator – Twin/ Double Leg

Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Inlet Size Protection

Type Outlet Size Protection

Type Size Protection

Type Size Protection

Process Operating Parameters

Operating Pressure	Min	Max	Enclosure ID/ Tag #	
Process temperature	Min	Max	Manufacturer	
Ambient temperature	Min	Max	Model	
Pred			Alternate KST	
Pred Verified?	☐ Yes ☐ No		Dust Morphology	
Pstat (if vents by others)			Dust Concentration	
Enclosure location	☐ Indoors ☐ Outdoors		Additional Notes: (Identify any extra plenums, internal partitions, baffles, or moving internal parts.)	
Max. Safe Fireball Path (venting)				
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)			

BUCKET TYPE: ☐ PLASTIC ☐ METAL

PROVIDE SKETCH OF INLET, OUTLET, AND ANY ADDITIONAL DUST ASPIRATION LINES OR INLETS

OUTLET SIZE

CASING SIDE WIDTH

CASING FACE WIDTH

INLET SIZE

Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Size Protection

Type Size Protection

Type Size Protection

Type Size Protection

Process Operating Parameters

Operating Pressure	Min	Max
Process temperature	Min	Max
Ambient temperature	Min	Max
Pred		
Pred Verified?	☐ Yes ☐ No	
Pstat (if vents by others)		
Enclosure location	☐ Indoors ☐ Outdoors	
Max. Safe Fireball Path (venting)		
Does the enclosure vibrate/shake?	☐ No ☐ Yes (explain in notes)	
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)	

Enclosure ID/ Tag #	
Manufacturer	
Model	
Alternate KST	
Dust Morphology	
Dust Concentration	

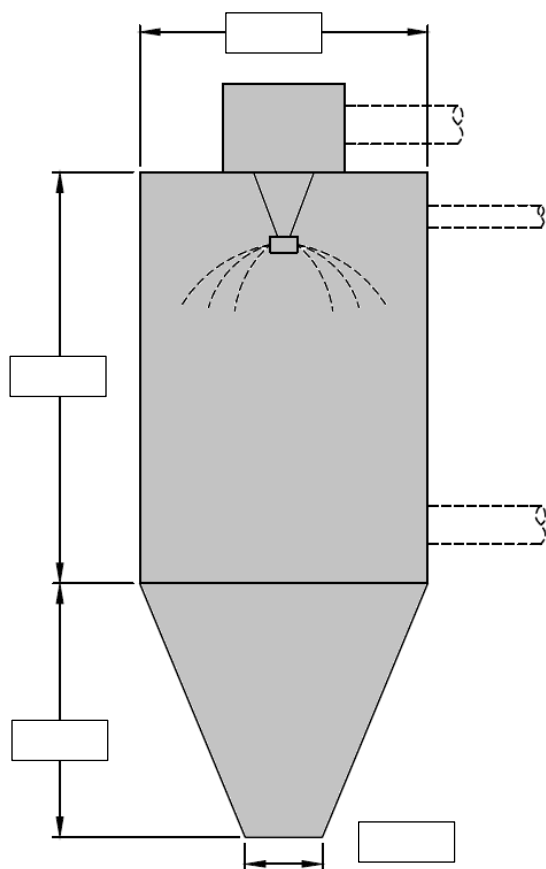
Flow Type:

- ☐ Co-Current – Air & particles flows same direction
- ☐ Counter-Current – Air & particles flows opposite direction
- ☐ Mixed Flow – experiences both co- & counter- flow

Additional Notes:

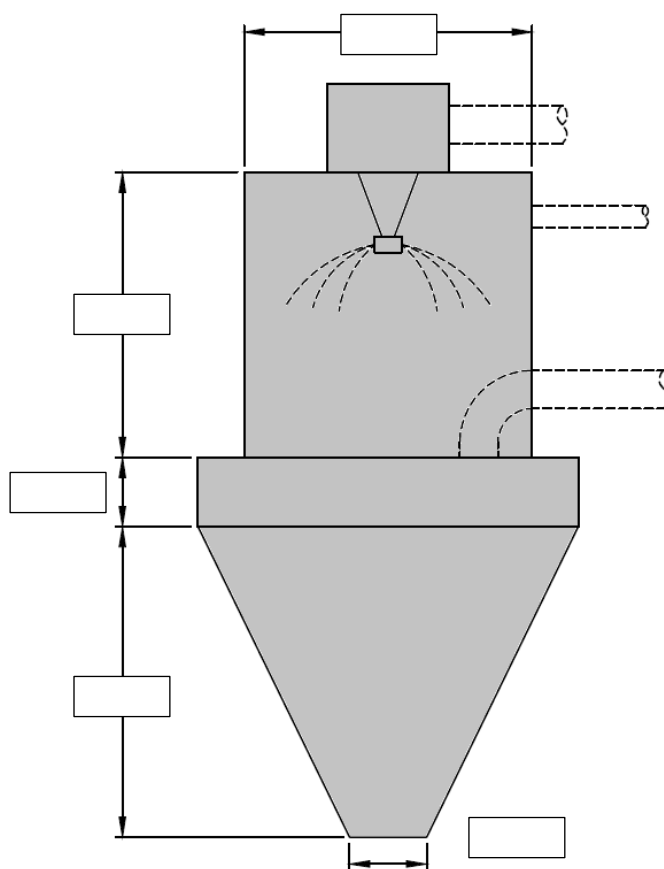
(Identify any extra plenums, internal partitions, baffles, or moving internal parts.)

Standard Spray Dryer



- OR -

Spray Dryer Bustle Type



Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Size Protection

Type Size Protection

Type Size Protection

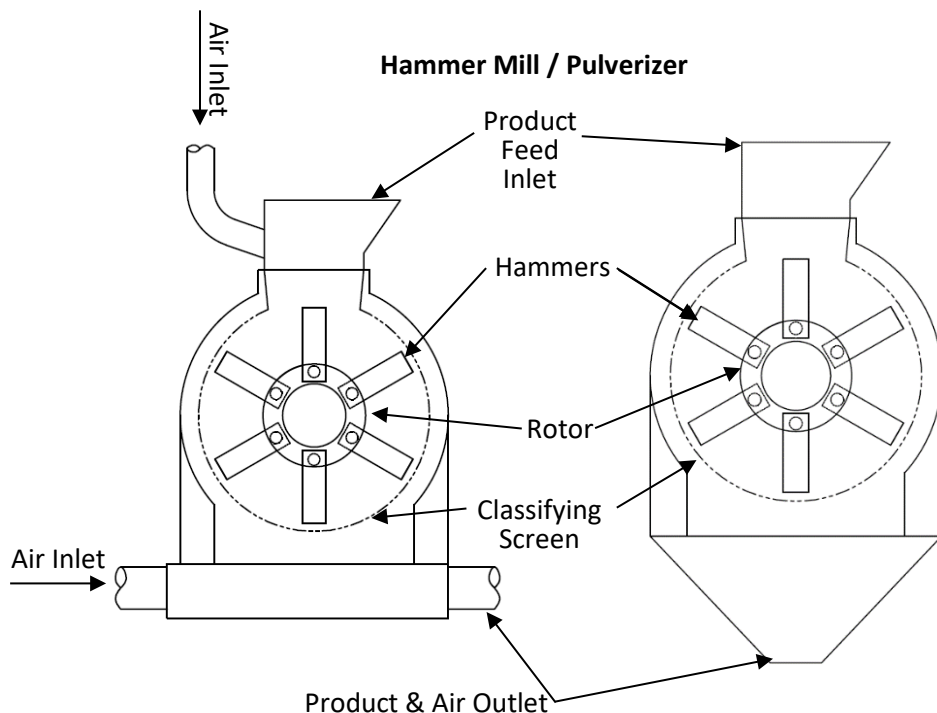
Type Size Protection

Process Operating Parameters		
Operating Pressure	Min	Max
Process temperature	Min	Max
Ambient temperature	Min	Max
Pred		
Pred Verified?	☐ Yes ☐ No	
Pstat (if vents by others)		
Enclosure location	☐ Indoors ☐ Outdoors	
Max. Safe Fireball Path (venting)		
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)	

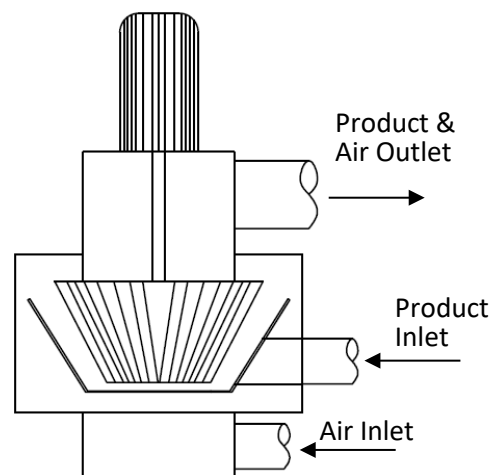
Enclosure ID/ Tag #	
Manufacturer	
Model	
Alternate KST	
Dust Morphology	
Dust Concentration	

MILLS

PROVIDE ESTIMATED INTERNAL VOLUME, SKETCH/ EXPLANATION ON HOW THE MILL WORKS, AND IDENTIFY PRODUCT AND AIR INLETS/ OUTLETS



Air Classifier





Explosion Protection Application Worksheet

General Enclosure

Enclosure Protection Type (Select one)

Suppression: ☐ Standard SBC ☐ Food Grade SBC

Venting: ☐ Free ☐ Flameless

☐ Vent Ducting If yes, Length:

Other: ☐ Containment ☐ Other:

Isolation Protection Requirements

Type Size Protection

Type Size Protection

Type Size Protection

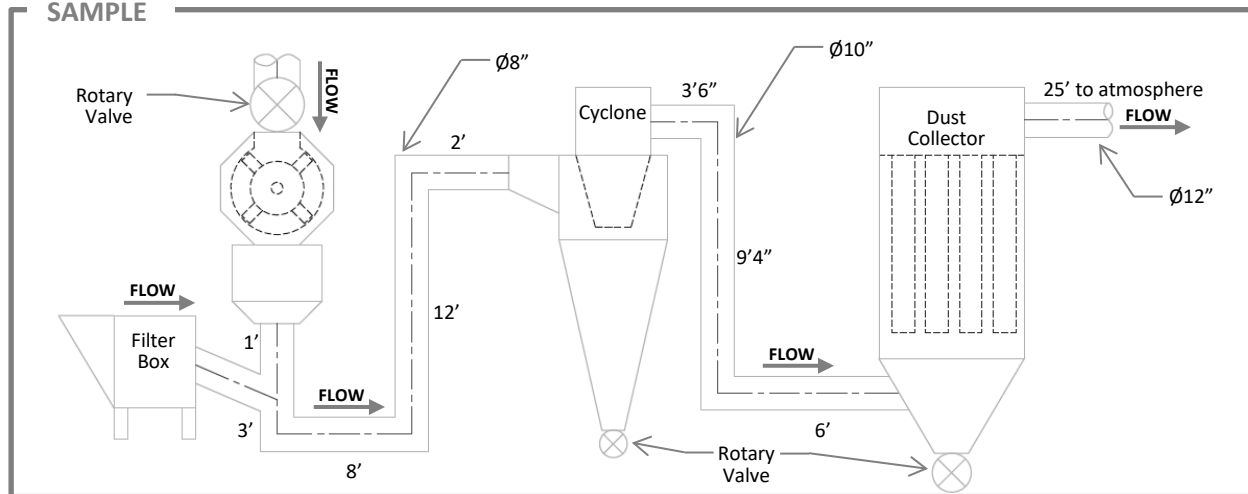
Type Size Protection

Process Operating Parameters		
Operating Pressure	Min	Max
Process temperature	Min	Max
Ambient temperature	Min	Max
Pred		
Pred Verified?	☐ Yes ☐ No	
Pstat (if vents by others)		
Enclosure location	☐ Indoors ☐ Outdoors	
Max. Safe Fireball Path (venting)		
Does the enclosure vibrate/shake?	☐ No ☐ Yes (explain in notes)	
Is there sight glass ports or windows?	☐ No ☐ Yes (explain in notes)	

Enclosure ID/ Tag #	
Manufacturer	
Model	
Alternate KST	
Dust Morphology	
Dust Concentration	

Sketch the system layout which includes up to 30' up and down stream of the inlet and exhaust/ outlet.
(Include flow direction, duct diameters, bends, interconnected duct, and distances between bends/duct)

SAMPLE





Explosion Protection Application Worksheet

Hardware Requirements

ONSITE REQUIREMENTS

Is there any site specific PPE required for entry? ☐ No ☐ Yes Explain:

Is there any site specific safety training required? ☐ Yes ☐ No

HARDWARE MATERIAL REQUIREMENTS

Is the area susceptible to wash-down or corrosive cleaning chemicals? ☐ No ☐ Yes Explain:

Does the process enclosure vibrate? (do we need flexible hardware for HRD, PD, & SRD) ☐ Yes ☐ No

Does the material tend to be sticky or agglomerate? ☐ Yes ☐ No

Does the process have air velocities exceeding 4000 feet/ min (20 m/s)? ☐ No ☐ Yes Explain:

Hardware Options:

Junction Boxes: ☐ Provided by others ☐ Carbon Steel ☐ Stainless Steel

Pressure Detector (if required)

Detector Type: ☐ Ceramic Detector ☐ Hi-Temp SST ☐ Other:

Detector Connection O-Ring Material: ☐ PTFE ☐ Viton ☐ Other:

Detector Options: ☐ Lateral Wye ☐ Air Purge/ Purge Spool

HRD (if required)

Lockout Type: ☐ Standard Slide Gate ☐ Carbon Steel Ball Valve ☐ Stainless Steel Ball Valve

HRD Bolting Pads: ☐ Carbon Steel ☐ Stainless Steel ☐ Other:

HRD Nozzle Cover: ☐ Food Grade Neoprene ☐ Viton ☐ Stainless Steel ☐ Other:

SRD (if required)

Lockout Type: ☐ None ☐ Carbon Steel Ball Valve ☐ Stainless Steel Ball Valve

Flex Hose: ☐ Yes ☐ No



Explosion Protection Application Worksheet

Installation Requirements

INSTALLATION (turnkey or PM only)

What material composition (material & thickness) is the duct /enclosure /equipment that we are cutting and welding on?

Describe any special access requirements to get to the anticipated device locations.

What will be the anticipated duration of the available shutdown? (weekday/ weekend/ nights /etc.)

Is there confined space entry required? If so, what is the plant's minimum requirements?

If required, will there be a lift/ scaffolding onsite? ☐ No ☐ Yes

Can we use a plasma cutter to cut penetrations? ☐ No ☐ Yes

Explain:

Are there any special welding standards at the facility? ☐ No ☐ Yes

Explain:

Is there any insulation on the process to be replaced? ☐ No ☐ Yes

If yes, is any of the insulation asbestos? ☐ No ☐ Yes

Is there dedicated power available for welding/cutting? ☐ No ☐ Yes