

PROCESS FIRE PROTECTION

SANDERS

& FORMERS

INTRODUCTION

Ed Pridgen

- Entered the field of Process Fire Protection in 1997
- Commissioned First Minifog ProCon in 1999
- Minifog Project Manager 2002
- Minifog Product Manager 2005

Aaron Bates

- Entered the industry in 2016
- Key Account Liaison
- 10 years manufacturing experience in Industrial Engineering and Test Engineering capacities.

INTRODUCTION

Fires are destructive!

The purpose of our presentation today is to help our industry partners understand todays practices and prevent experiencing these destructive consequences!





ABRASIVE SANDING PROCESS

High-speed sanding and milling equipment:

- Provides great potential for dust fire or explosions
- Produces large volumes of combustible material
- Metal tooling failures
- Equipment brake downs
- Buildup of material

ABRASIVE SANDING APPLICATION

SanderProtect



ABRASIVE SANDING APPLICATION





SANDING SURFACE DETECTION

SANDING ProCon EXTINGUISHING

FORMING PROCESS

Forming and storage:

- Contains large amounts of combustible material
- Over temperature bearings
- Milling break downs
- Conveyor belt tracking

FORMING PROCESS



FORMING PROCESS





DOFFING ROLL DETECTION

WEIGHBELT DETECTION AND EXTINGUISHING

SPARK DETECTION

Infrared Spark Detectors

In Pneumatic conveying systems





Hot Particle Spark Detectors

At Sanding surface

FLAME DETECTION

- For detecting fires in the area in and around the protected object
- Triple Infrared "I/R³" design prevents false detections
- Self-Testing of the optics
- Large viewing angles
- 50 meter detection range



HEAT DETECTION

• Will alarm when a pre-set temperature is exceeded or when an abnormal rate of rise is detected.

• Normally used in baghouses, cyclones & Bunkers



GAS DETECTION

- Used for the early detection of smoldering fires, designed for use in rough industrial environments
- Typical applications can found in Bunkers and Silos
- Adjusted to the environmental conditions



PROACTIVE FAST TARGETED SUPPRESSION STSTEMS

- Fast response solenoid (24 VDC)
- Typical applications found in Pneumatic conveying ducts
- Drop chute suppression



Extinguishing Set

CONVENTIONAL DELUGE SYSTEMS

- Impulse solenoid allows remote start and stop activation
- Typical applications found in conveyors, baghouse, bunker and silos.
- Machine protection such as sanders and industrial presses





NOZZLE FOR MACHINE PROTECTION

• A multitude of nozzle alternatives for protection of various process equipment is available within the industry.



NOZZLE FOR VARIOUS PROCESS EQUIPMENT

- Silos, Bunkers, Storage Bins, Baghouse, Conveyors typically use conventional spray nozzles.
- Fine Water spray nozzles are used in Industrial Press, Sanders, Thermal Oil pumps, and Hydraulic pump application.
- •Fast response directional spray nozzles are uses in pneumatic conveying ducts
- •Foam nozzles for Hydraulic pumps, Thermal oil pumps, and press pits

NOZZLE FOR MACHINE PROTECTION

- Design criteria is normally .20 gallons per foot²
- The density is calculated for each particular hazard as the code recommends
- Nozzle size and quantity is determined by the protected area



General Sprinkler Nozzle Spray Pattern

Fine Water Spray Systems

- Low volume of water
- Special spray pattern
- Targeted nozzle arrangement for equipment coverage
- Damage is avoided and equipment remains in an operable condition.
- Minimizing operational downtime

Impulse Minifog Nozzle Spray Pattern



FAST RESPONSE DIRECTIONAL SPRAY NOZZLES



- Directional Spray Nozzles covering the entire cross section of the duct
- Self opening/closing nozzle design
 - Prevents the buildup of debris and/or nozzle damage

NOZZLE FOR MACHINE PROTECTION

- Medium expansion foam nozzle
- Blankets oil fires, where as standard water sprinklers spread oil fires and cause possible secondary explosions.
- Allows rapid extinguishing
- Hydraulic and Thermal oil Pumps



SYSTEM CONTROL PANELS

- Wide Range of Available Sizes
- Larger mills require multiple panels
- Smaller work shops need cost effective panel units
- Panel should be customizable



NETWORKING

- Remote Systems can be Monitored & Operated from the Control Room
- Can be Hard Wired or Linked Through Existing PLC Network
- Communication is Monitored





HUMAN MACHINE INTERFACE ABILITY



§ Ability for offsite remote support

Alarm - 1 / Fault - 1 O Off - 2 9 Activ - 0 Other - 0

APPROVALS

- First FM Approval for Spark Detection Systems in 1978
- FM Approved for Large Diameter Ducts (up to 118")
- Minifog concept was FM Approved in 1999





REFERENCES

- NFPA Codes such as:
- 664 Standard for the Prevention of Fires and Explosions in Wood Processing and Working Facilities
- 654 Standard for the Prevention of Fire & Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids
- 69 Standard on Explosion Prevention Systems
- 68 Guide For Venting of Deflagrations
- FM approval guides

SUMMARY

- Protect the mill assets with approved and proven systems.
- Consult your insurance underwriter and/or your local AHJ.
- Take in account all design possibilities.
- Communicate all Process Fire Protection systems with the mills management team.
- Ensure that once the systems are in place that the proper Preventive Maintenance procedures are implemented.

THANK YOU! FLAMEX® INC.

Ed Pridgen – Minifog Product Manager Aaron Bates – Key Accounts Liaison

www.sparkdetection.com