Wood Dust Explosion Prevention
Upgrades and New Installations, Getting it Right the First Time

Dust explosions are one of the major preventable losses of life and property in industry today. Many installed systems are either old or non compliant to today’s standards, are recent installations without the necessary explosion prevention features or poorly maintained resulting in questionable reliability of the installed safety features. This seminar is intended to cover all aspects of dust explosion prevention including NFPA and OSHA code requirements as well as recommended proven engineering practices which control the collection, transport, storage and disposal of explosive dusts.

This seminar is intended for HSE, operators, maintenance, engineering, insurers, inspectors and suppliers, who will benefit from an improved knowledge of how to design, install, operate, maintain and test existing or new explosive dust collection systems to ensure all required explosion safety devices are installed and operational through the life of the facility.
Objective

This seminar will provide the participants with the necessary dust explosion prevention information to prepare a risk assessment and action plan to ensure code compliance and ensure the correct fire prevention engineering standards are used in their facilities.

Benefits to Participants

• Gain a better understanding of the requirements of a complete dust explosion prevention program
• Recognize existing dust explosion problems and methods for correction
• How to prepare a risk analysis and action plan
• Familiarization of the applicable NFPA and OSHA codes relating to preventing dust explosions
• Recommended practices for collection, transport, collection and storage of combustible dusts
• Focus on methods for ensuring capture hoods are collecting +99% of produced dust
• Review plant legal responsibilities for proactive dust explosion prevention programs
• Requirements for scheduled inspection and testing of installed explosion prevention equipment as well as retaining record keeping
• Improve your understanding of capital cost when implementing an explosion prevention program

Course Outline

Why Dust Collection?
HSE aspects, interior air quality, exterior air quality & recycle opportunities
Hazards when not done safely (CBS video)

Critical Steps for Dust Explosion Prevention
Determine Dust Explosion Characteristics
Applicable Codes
Transport System
Collection Devices
Fire/Explosion Protection
Regular Inspection, Testing and Documentation requirements

Session 1: Determining Explosive & Transport Properties of the Dust to be Handled (inc. KST)
Definition and typical sources of minimum ignition energy (MIE)
Minimum explosion concentration (MEC)
Which equipment and areas are under risk of explosion through evaluation of an explosion risk matrix?

Session 2: What Codes Apply for the Material to be Collected & Identified
Explosion risk areas and/or equipment
Which governing province/state inspector has jurisdiction
NFPA
SMACNA
OSHA
International Electrical Code

Session 3: Safe Collection & Transport Methods for +99% Capture
Proper transport velocities to prevent build-up of combustible and/or explosive hazards inside the ducting

Session 4: Collection Devices
Proper bonding methods to eliminate static build-up
Sprinkler installation, spark detection and abort gates
Backflow prevention for explosions traveling back into the process area

Case Study 1: Upgrading typical wood shop shaker style dust collectors to Explosion and Fire Prevention Codes
Review of available vendor information for upgrading a dust explosion prevention system

Case Study 2: Review selected class participant submitted problems. Lab example for hood design and capture efficiency.

Session 5: Fire Protection
Fire protection options, sprinkler design, CO2 systems, equipment interlocks, deluge systems and proper drainage
Interior duct inspection and cleaning
Common Problems Overcome for Upgrading Explosion Protection in Existing Facilities
Recommendations and adherence to acceptable engineering /HSE practices Typical reasons for upgrades include:
Change in process components
Upgrade of older systems to current codes
Insurance inspection requirements
Local inspector having jurisdiction citation
Improperly designed system
Improperly installed system
Changes in HSE requirements
Changes in the use of the facility

Instructor

John E. Bachynski, B.Sc. P.Eng., is President of EPM Consulting located in Halifax, Nova Scotia. He has over 30 years experience in the field of Mechanical Engineering, specializing in plant air quality, dust collection, transport, storage and dust explosion prevention. Since graduating from the Technical University of Nova Scotia (TUNS) (B.Eng., Mechanical) in 1980 he has worked continuously in the testing, design, installation and commissioning of industrial dust collection and explosion prevention systems. His project experience includes dust and fume collection systems, dilute and dense phase pneumatic conveying systems in the rubber, cement, coal, steel, grain, foundry, salt, machining, wood pellets, pulp, paper and wood handling facilities. He continues his growing client base in Canada, United States, Mexico and Europe specializing in upgrading plants to prevent dust explosions and also designing, commissioning and testing for new facilities. Mr. Bachynski has published articles on dust related topics for Bulk and Powder magazine, and has been a technical presenter for the dust related topics for Powder and Bulk, Dalhousie University, College of Continuing Education, NFPA International Technology Conference and private industry. He was nominated for a Canadian design award 1982, and received the Nova Scotia Award for Energy Conservation, Large Industry Sector, 1988 for the installation of a 40TPD wood dust burning boiler.