LEARNING OUTCOMES:
• manage and optimize a dust collection system for a maximum efficiency at lowest cost,
• prepare and implement a preventive maintenance program,
• plan, control and implement a system upgrading avoiding costly errors from wrong modifications of a dust collection system,
• recognize and prevent the fire and explosion dangers of a dust control system,
• use complex concepts of air pollution control systems, the performance parameters and the interaction with systems design and operation,
• apply practical new solutions in specifying, operating and maintaining a dust collection system,
• be familiar with required performance of the various components of a dust collection system and equipment,
• examine many possibilities of maximizing efficiency and economical performance of your dust collection systems,
• comply with the codes and regulations governing the air pollution control at a work place.

DESCRIPTION
Dust is a hazard for industries which requires special skills to the course focuses on providing the basics for specifying, operating and maintaining dust collection systems for industrial production processes. It covers the fundamental knowledge pertaining to indoor air quality, industrial air pollutants as well as applicable codes and regulations. A presentation of the principles of local exhaust systems operations is followed by a hands-on session for dissecting and troubleshooting a dust collection system. The course provides participants with the knowledge required for the successful operation and maintenance of a dust collection system.

OBJECTIVE
To provide participants with a better understanding of industrial dust collection systems and develop their skills in the operation, maintenance and troubleshooting of these systems.

WHO SHOULD ATTEND
Mechanical design, operation and maintenance personnel in industrial plants who are responsible for dust collection for industrial production processes. Also, this course will benefit contractors who install or refurbish such systems.

FACULTY
Oleg Kenchin, PhD, P.Eng., Senior Consultant, Mechanical Engineering has over 25 years experience as a Mechanical Engineer. He has graduated with a Doctor of Philosophy degree from the State Technical University of St-Petersburg in Russia. The Diploma is considered by the University of Toronto in level to the standard PhD degree from a reputable Canadian university. During his career Dr. Kenchin has been primarily involved in research and development, designing, installations, evaluation, troubleshooting and commissioning of all types of industrial, commercial and institutional HVAC and Air Pollution Control systems and equipment. Additionally, he has been a lecturer at Engineering Professional Advancement Courses teaching several mechanical engineering subjects. Three patents, over eighteen books and articles have been published by Dr. Kenchin in the technical literature in Europe and North America.
### PROGRAM OUTLINE

**Faculty:** Oleg Kenchin, PhD., P.Eng.

#### Day I

**Dust Collection System**
- Air Pollutants (1 hr)
  - Poisoning and flammable gases
  - Particles and classification
  - Mist, vapor and heat
  - Explosivity
- Codes and Regulations (45 minutes)
  - OSHA and Regulations for Industrial Establishments
  - The Fire Code and NFPA
  - American Conference of Governmental Industrial Hygienists (ACGIH)
  - Environmental Protection Act (EPA)
- Local Exhaust system components (45 minutes)
  - Capturing devices (hoods, enclosures, side-drafts, etc.)
  - Ducts and airflow throttling devices
  - Dust Collectors
  - Fans and stacks
- Basic Performance parameters of a Local Exhaust system (1.5 hrs)
  - Capturing velocity
  - Conveying velocity
  - System Pressure
- Workshop – exercises in determining proper performance parameters of an air exhaust system (2 hrs)
  - Case #1
  - Case #2
  - Case #3
- Adjournment

#### Day II Fabric Dust Collector

Types of Fabric Dust Collectors operations (45 minutes)
- Reverse airflow (low pressure)
- Shaker
- Reverse pulse (high pressure)
- Filtration media (45 minutes)
  - Filtration mechanisms
  - Permeability of the media and "air to cloth ratio"
  - Characteristics of Filter Fabrics
  - Fabric and pleated bags
  - Cartridge filters
- Key performance parameters of Fabric Dust Collectors (1.5 hrs)
  - Reverse airflow (low pressure)
  - Shaker
  - Reverse pulse (high pressure)
- Prevention of Fire and Dust Explosions of a dust collector (1 hr)
  - National Fire Protection Association (NFPA)
  - Standards
- Workshop – exercises in troubleshooting a Dust Collector (1.5 hrs)
  - Case #1
  - Case #2
  - Case #3
- Closing Comments and Final Adjournment

#### Day III Troubleshooting of an Exhaust System and a Dust Collector

**CAUSES OF MALFUNCTIONING OF AN EXHAUST SYSTEM**
- Symptoms of malfunctioning
- Design problems
- Maintenance problems
- Change in production process

**Diagnosing and troubleshooting an exhaust system** (1 hr)
- Measurements and observation
- Interpretation of the measurement results
- Troubleshooting chart

**Workshop – exercises in troubleshooting an exhaust system** (1.5 hrs)
- Case #1
- Case #2
- Case #3

**CAUSES OF MALFUNCTIONING OF A DUST COLLECTOR**
- Symptoms of malfunctioning
- Design problems
- Maintenance problems
- Change in production process

**Dissecting and troubleshooting a Dust Collector** (1 hr)
- Measurements and observation
- Interpretation of the measurement results
- Troubleshooting chart

**Workshop – exercises in troubleshooting a Dust Collector** (1.5 hrs)
- Case #1
- Case #2
- Case #3

2.1 CEUs/21 PDHs

**Closing Comments and Final Adjournment**

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**FEE:** The fee for this course is $1,695 + GST. If you register less than 21 days before the start date, the fee increases to $1,895 + GST.

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