



# CORPORATE RESUME

Odor and Air Pollution Control | AUGUST 2020





## Applied Contaminant Control Ltd.

10908-123 Street NW, Edmonton, Alberta, Canada T5M 0C9  
Tel: 780-413-6934 | Fax: 780-413-6935 | www.acc-ltd.ca

*Applied Contaminant Control Ltd. is a Canadian company that specializes in engineered solutions to industrial air emissions problems. ACC and its affiliates offer many years of application experience in the control of air pollution, odor, and particulate emissions from a wide range of industrial processes.*

### Mike Hill, Principal

- Over 35 years experience with contaminant control air handling applications including all aspects of control technology determination, system and equipment design, fabrication and construction, project management, start-up, testing and commissioning
- Field analysis and trouble-shooting of existing emission control systems complete with the determination and implementation of corrective measures to ensure compliance with emissions and occupational exposure standards, system reliability, reduction of maintenance and operating costs
- Has designed and built over 650 successful installations across North America, Mexico and Asia in a variety of industries including; Agricultural and Food Products Processing; Thermal Power Generation; Cement Manufacturing; Pulp and Paper; Oil and Gas; Petro-Chemical; Chemical; Fertilizer; Metals Refining; Plastics Manufacturing; Wood Products; Mining and Material Handling; Municipal and Industrial Waste Water Treatment Plants; Domestic Refuse / Municipal Waste Solids Co-Composting and Animal Manure Composting

ACC has had direct involvement with a number of small and full-scale pilot projects specifically targeted at the development of improved odor and pollution control systems. These include testing of traditional chemical scrubbing, biological oxidation, thermal destruction and particulate and aerosol filtration systems on unproven abatement applications, as well as the application and development of innovative new technologies.







## Selected Projects

Asphalt Refinery and Terminal Pollution / Odor Control .....	4
Hot Mix Asphalt Plant Odor Control .....	4
No. 6 Fuel Oil Odor / Emissions Control .....	5
Food Processing Wastewater System Odor Control .....	5
Canola Processing Facility Odor and Pollution Control .....	6
High Solids Anaerobic Digestion Facility Exhaust System, Humidifier and Odor Control .....	6
Multi-Stage Ammonia Wet Scrubbing System .....	7
Leach Plant Material Feed Dust Collection and Ventilation System .....	7
MSW – Biosolids Composting Facility Odor Control Biofilter .....	8
Fertilizer Plant Granulator Scrubber Emission Control System .....	8
Agricultural Processing Air Pollution / Odor Control .....	8
Animal Feed Supplement Odor Control System .....	9
OSB Plant Dust Collection and General Ventilation System .....	9
Digester Unloading Source-Capture Ventilation .....	9
Manure Composting Facility Odor Control .....	10
Brewery Wort Boiling Odor Control .....	10
Chemical Plant Pollution / Odor Control .....	10
Pulp Machine Source-Capture System .....	11
Water Treatment System Wet Scrubbing System .....	11
Fertilizer Plant Dust Collection Systems .....	11
Food Processing Plant Odor Control Biofilter .....	12
Hard Chrome Electroplating .....	12
Coal Dust Collection .....	13
Lime Dust Collection .....	13
Wood Products Dust Collection .....	13
Industrial Vacuum Systems .....	14
Power Plant Coal Silo Dust Collection System .....	14
WWTP General Ventilation / Odor Control Scrubber System .....	14
Metals Handling Dust Collection and General Ventilation System .....	15
Cement Plant Dust Collection .....	15
Miscellaneous Dust Collection Systems .....	15
Various Mist Separation / Collection Systems .....	16
Control Room Pressurization / Dry Scrubbing Systems .....	16



## Asphalt Refinery and Terminal Pollution / Odor Control

Design, supply and commissioning of many odor control systems utilizing thermal oxidation, dry scrubbers, with sub-micron oil mist pre-filtration.

- Gas volumes from 2000 ACFM to 15,000 ACFM, venting from asphalt tank farm, truck and railcar loading
- Proprietary tank venting process optimizes capture, provides pre-conditioning and does not affect process operation.
- Very high efficiency mist separation using multi-stage mechanical filtration and fiber bed mist eliminators
- Average removal efficiency >98% on inorganic and organic reduced sulfur compounds, high molecular weight hydrocarbons incl. HAP's / TAP's



*Asphalt Refinery Odor Control*



*Asphalt Terminal Odor Control*



*Asphalt Terminal Odor Control*



*Asphalt Terminal Odor Control*

## Hot Mix Asphalt Plant Odor Control

Design, supply, installation and commissioning of system capturing vapors from storage tanks, drum mix plant and associated conveyors and gravity truck loading operation.

- Odor control system captures fugitive emissions from all sources and uses multi-stage mechanical filtration followed by high efficiency thermal oxidation to eliminate perceptible odors within the adjacent neighbourhood.
- Provides continues DRE of 98% + on TRS, VOC's and odorous compounds.



*Hot Mix Plant Odor Control*



## No. 6 Fuel Oil Odor / Emissions Control

Design, supply and installation of system capturing fuel oil vapors from multiple storage tanks as well as from truck loading process.

- System effectively controls fugitive vapor migration during barge unloading, tank to tank transfers, and during truck loading at multiple simultaneous stations
- Odor control system includes sub-micron liquid aerosol filtration as well as high efficiency TRS and VOC abatement utilizing Regenerative Thermal Oxidation system
- Provides continuous 98% + DRE on VOC's including HAP's and TAP's



*HC Storage Tank Vent Hoods*

## Food Processing Wastewater System Odor Control

Design, supply, installation supervision and commissioning of large system for controlling odorous emissions from food processing plant wastewater system.

- Source-capture of vapors from storage tanks, DAF, and aerobic Biotowers to prevent fugitive emission escape to atmosphere
- Consent order project requiring extremely high efficiency control of reduced sulfur compounds
- Successfully maintains 99%+ DRE eliminating odors perceived at residences in close proximity
- System includes custom designed CEM system for TRS compounds



*Food Processing Wastewater System Odor Control*



*Filter Separator /  
Condensate Collector*



*Regenerative Thermal Oxidizer*





## Canola Processing Facility Odor and Pollution Control

Design, supply, mechanical installation and commissioning of odor / emission control systems utilizing packed tower wet scrubbers, with gas stream pre-coolers and upstream particulate / oil removal as well as baghouse duct collection systems on all material handling processes at multiple facilities.

- Odor control system controls fugitive odor migration from plant processing equipment, as well as from plant wastewater system
- Thermal Oxidation System on small volume, high concentration sulfonated VOC stream (5-6% H<sub>2</sub>S)
- Average wet scrubber removal efficiency 99% on reduced sulfur compounds
- Average removal efficiency of Thermal Oxidation System >98% on inorganic and organic sulfur compounds, ketones, aldehydes, misc. VOC's
- Multiple dust collection systems on Pelleting, Meal Handling, Seed Processing
- Source-capture and general ventilation systems for particulate control in all parts of the process including bulk storage and meal handling systems



*Thermal Oxidizer Dispersion Stack*



*Canola Plant Facility  
Wide Odor Control*

## High Solids Anaerobic Digestion Facility Exhaust System, Humidifier and Odor Control

Design, supply and mechanical installation of multiple systems at MSW HSADF. Process and general ventilation exhaust systems, crossflow humidification system, chemical storage and feed systems as well as odor control scrubbers and biofilter.

- Multiple projects executed throughout the facility including system and equipment design, fabrication, mechanical installation, startup, testing and commissioning
- Crossflow wet scrubber installed on large air volume exhaust, source-capture dry scrubber on H<sub>2</sub>S emissions from dewatering process, as well as from transfer station general exhaust. Total installed air volume approx. 160,000 ACFM, total Biofilter capacity approx. 350,000 ACFM



*HSADF Wet Scrubber – Chemical Feed System*



## Multi-Stage Ammonia Wet Scrubbing System

Design, supply, installation and commissioning of multi-stage counterflow packed column with integrated process automation.

- System handles collected vapors from a large number of tank and process vents within an enclosed facility to maintain  $\text{NH}_3$  levels to below OH&S TLV and environmental emissions within regulatory compliance
- 3-stage tower with intermediate cooling to minimize water usage with ammonia-water recycle to plant process
- All 316L SS construction with multi-level access platform and redundant process components
- Atmospheric dispersion stack for residual dispersion complete with CEM



*Ammonia Scrubber System*

## Leach Plant Material Feed Dust Collection and Ventilation System

Design, supply, installation and commissioning of source-capture dust collection system with heated air make-up.

- Large, high pressure pulse-jet baghouse ducted to material handling and process feed system
- Baghouse complete with pneumatic conveyance system for collected material return to process
- General ventilation for temperature and particulate control with heated air make-up system



*Baghouse Dust Collector*





## MSW – Biosolids Composting Facility Odor Control Biofilter

Re-design and construction of general ventilation / odor control exhaust and biofiltration system.

- 3 large Biofiltration cells totalling 330,000 ACFM exhaust volume using 6 x 450 HP exhaust fans
- Complete redesign and construction of Biofilters and ammonia pre-scrubbers
- Performed in-depth plant wide ventilation and process air system analysis as well as odor abatement system cooling, scrubbing and Biofiltration system analysis at co-composting facility
- Large internal volume process building general ventilation system requires that building be kept under negative pressure to prevent fugitive odor migration to atmosphere



*Open Top Biofiltration System*

## Fertilizer Plant Granulator Scrubber Emission Control System

Design, supply and installation of wet scrubber modification to reduce urea emissions from multiple wet scrubber systems operating on Urea Granulator trains.

- ACC performed field analysis of existing system, developed solution, designed and constructed equipment, completed field installation, start-up and commissioning
- System meets or exceeds all environmental regulations for nitrogen containing liquid aerosol emissions
- Total air volume approx. 350,000 ACFM



*Granulator Scrubber Mist Elimination*

## Agricultural Processing Air Pollution / Odor Control

Design, supply and commissioning of 2-stage Packed Tower Wet Scrubbing system from specialty corn fermenting system.

- Collection system from multiple process tank vents
- Direct contact gas stream cooler / pre-conditioner
- Central exhaust fan
- High efficiency counterflow packed column utilizing oxidative reagent
- Atmospheric dispersion stack for residual compounds





## Animal Feed Supplement Odor Control System

Design and supply of 2-stage odor control system on proprietary manufacturing process.

- Includes source-capture from reaction vessels and dryer/cooler system to provide dust and vapor control within plant for personnel protection
- System uses counterflow packed column and Biofiltration combination to effectively abate VFA odors with neighborhood receptors in very close proximity



*Animal Feed Supplement Odor Control Biofilter*

---

## OSB Plant Dust Collection and General Ventilation System

Design, supply and installation of dust collection pneumatic conveyance and general ventilation system on large continuous press OSB facility.

- Multiple Baghouse Dust Collectors, up to 110,000 ACFM and 350 HP
- 250 HP Pneumatic Conveyance system transfers collected material to elevated Dry Fuel Bin storage
- Press Hall General Exhaust system, large volume system with 130' atmospheric dispersion stack
- Electrical Room filtered pressurization systems with cooling
- Individual motor cooling filtered pressurization systems



*Dust Collection and Pneumatic Conveyance*

---

## Digester Unloading Source-Capture Ventilation

Design, supply and installation of large source-capture system capturing vapors from large rotating drum unloading to belt conveyors.

- System mixes MSW and Biosolids as a pre-digestion stage in a major Co-Composting facility
- Multiple large capture hoods effectively control occupational exposure to CO, TRS, heat and water vapor



## Manure Composting Facility Odor Control

Re-design of positive aeration manure composting facility ventilation system.

- Includes capture and containment of vapors within aeration bays, as well as odor control in Biofiltration system

- Performed in-depth field troubleshooting of original system, developed corrective action plan, completed all design and construction of required modifications

---

## Brewery Wort Boiling Odor Control

Capture and treatment of high temperature water vapor stream from Wort kettle boiling process.

- Combination condensing wet scrubber system interlocked with plant process control for batch process odor abatement
- Reduced sulfur compounds, wide range of VOC's including ketones, aldehydes, carboxylic acids
- Fully winterized, automated wet scrubbing system completely integrated into plant process



*Condensing Crossflow Wet Scrubber Odor Control System*



*Remote Scrubber Sump*

---

## Chemical Plant Pollution / Odor Control

Combination phosphoric acid mist / H<sub>2</sub>S removal system utilizing packed tower wet contactor with proprietary Alkanolamine sulfur scavenging chemical.

- Fugitive vapors are drawn from process tanks for personnel protection and scrubbed for odor control

- Acid mist collection and wet scrubber absorber system operate in series
- Gas volume approx. 4500 ACFM, 400-4000 ppmv H<sub>2</sub>S
- Batch process





## Pulp Machine Source-Capture System

Design, supply and installation of Pulp Machine vapor capture system.

- Source-capture of water vapor and heat from pulp machine for personnel protection, visibility and safety considerations
- System is constructed in 316L SS and includes mist eliminator stage and atmospheric dispersion stack
- Design of large localized general ventilation system to capture heat and water vapor with chemical corrosives from large Pulp Machine. Localized general ventilation approach will use large canopy hood arrangement to control and capture vapors within the facility to prevent building component corrosion. All aluminum construction with multiple axial exhaust fans and dispersion stacks. System exhaust volume 330,000 ACFM.

## Water Treatment System Wet Scrubbing System

Source-capture from process tank vents to combination continuous – emergency vent SO<sub>2</sub> scrubbing system on Sodium Bisulfite de-chlorination process

- All 316L SS construction
- 2-stage system with continuous vent fan and emergency vent fan to common wet scrubber
- Combination source-capture / general ventilation system for the purpose of limiting occupational exposure to below TLV



*Water Treatment System SBS Scrubber*

## Fertilizer Plant Dust Collection Systems

Design, supply and installation on a number of dust control systems from Ammonium Sulfate plants.

- Dryers, coolers, granulators
- Dust collection from belt and drag conveyors, bucket elevators, vibrating screens
- Bulk storage building general and source-capture ventilation
- Systems utilizing cyclones, baghouses and wet scrubbers



## Food Processing Plant Odor Control Biofilter

Nut roasting facility odor control project using Biological Oxidation System.

- Odorous air is captured from multiple process vents and treated in a single Biofilter to provide guaranteed minimum 95% odor unit reduction
- Gas volume approximately 50,000 ACFM



*Food Processing Odor Control Biofilter*

---

## Hard Chrome Electroplating

Design, supply and mechanical installation of chromic acid vapor scrubbing systems from electroplating dip tank processes.

- Source-capture systems use side-draft hoods and duct systems constructed in PVC
- Multi-Stage composite pad impingement wet scrubbers recover chrome back to process and provide emission control to US EPA applicable guidelines
- Air volumes up to 90,000 ACFM



*Crossflow PVC Scrubber*



*Wet Scrubber with Crossflow Hoods*





## Coal Dust Collection

Design, supply and mechanical installation of many source-capture dust control systems for coal crushing and transfer facilities for thermal power generation plants.

- Rotary crusher, transfer tower, vibrating screen, silo venting, belt conveyor fugitive dust control
- Systems designed for Class II, Group F hazardous locations, complete with explosion venting and CO<sub>2</sub> or water deluge fire suppression systems in accordance with applicable codes and insurance company requirements



*Coal Plant Dust Collection*

## Lime Dust Collection

Design, supply of many systems to provide fugitive dust control from Lime handling facilities.

- Crushing, drying, and mechanical and pneumatic material transfer dust control at cement plants, mines, slaker systems, silos etc.
- Very large belt conveyor system from mine to cement plant covering 4.5 Km with multiple transfer points. Total of 28 dust collection systems.



*Lime Silo Venting Dust Collection System*

## Wood Products Dust Collection

Design, supply and mechanical installation of a large number of wood products dust collection systems.

- Product recovery and fugitive dust control from chippers, hoggers, hog fuel conveyance, chip screening, belt conveyor systems, log debarking, most types of mechanical conveyance systems
- Many systems complete with duct mounted spark detection / water suppression systems and / or baghouse heat detection / water suppression, explosion relief and inlet blowback prevention
- Installations within OSB, Pulp and Paper sector, Power Generation, Sawmills, Fiberboard manufacturing, furniture, cabinet and window manufacturing



## Industrial Vacuum Systems

Central vacuum systems for industrial applications for plant clean-up and housekeeping, limiting worker occupational exposure to dust while cleaning.

- Pulp and Paper plants (wood chips / dust), Thermal Power plants (coal dust, flyash), Cement Plants, etc.



*Vacuum System Filter Separator*



*Vacuum Unit Filter Separator*

---

## Power Plant Coal Silo Dust Collection System

Design and supply of 50,000 ACFM coal dust collection system from 10 coal storage silos within major power plant.

- System replaced 12 units, complete with direct ducting to silos as well as to traveling shuttle conveyor system
- Material discharge complete with pneumatic conveyance of collected dust return to storage silos
- Fully automated system complete with PLC, Fire detection/suppression, explosion venting, inlet blowback prevention, numerous operating and safety alarm systems
- System provides source-capture and general ventilation of entire Silo floor to reduce occupational exposure and explosion risk from airborne Coal dust

---

## WWTP General Ventilation / Odor Control Scrubber System

Design, supply and commissioning of general ventilation / odor control system using Cross-Flow Packed Bed Scrubber from Enhanced Primary Treatment System. System provides general ventilation for the purpose of limiting occupational exposure to reduced sulfur compounds including H<sub>2</sub>S and provides odor / air pollution control.

- 76,000 ACFM unit
- NaOCl and NaOH chemical reagents
- Fully automated operation





## Metals Handling Dust Collection and General Ventilation System

Design, supply, installation and commissioning of source-capture dust collection system and indirect fired air-make up system.

- High efficiency, pulse-jet baghouse dust collector direct-ducted to nickel handling and briquette manufacturing process
- System designed to limit occupational exposure within MH facility and to maintain atmospheric emissions
- System uses a batch material discharge with automated alarms
- 100 HP exhaust fan and atmospheric dispersion stack with continuous particulate discharge monitoring



*Baghouse Installation*



*Nickel Dust Collector*

## Cement Plant Dust Collection

Design, supply and mechanical installation of several dust control systems at cement plants and premix plants.

- Fugitive dust control from rotary kilns, conveyors, elevators, silos, pneumatic conveyance systems, railcar unloading, truck loading etc.

## Miscellaneous Dust Collection Systems

Design, supply and mechanical installation of a wide variety of dust control systems utilizing filter bag, cartridge pulse, and cyclone systems.

- Grain handling / processing, dockage conveyance systems, Powdered chemical handling, Metals processing / surface treatments etc. (tungsten, cobalt, aluminum), Fertilizer
- Pressurization systems utilizing high efficiency continuous duty filter units to prevent infiltration of particulates into sensitive environments, equipment enclosures, electric motors etc.



*316 SS Pulse Jet Filter Unit*



*Specialized Asphalt Processing Afterfilter*



*Pulse Jet Filter Unit*



## Various Mist Separation / Collection Systems

Wide variety of liquid aerosol filtration systems employing mesh pads, inertial separation mist eliminators, and fiber bed mist elimination systems.

- Includes oil mists, acid mists, wet chlorine mist, compressed gas systems, saturated CO<sub>2</sub> filtration, water mist
- Installations include oil & gas, fertilizer manufacturing, chemical processes, acid plants, agricultural processing



*Roofing Plant Mist Collection System*



*Large Mist Collector*



*Mist Elimination Cooler Vessel*



*Mist Elimination Vessel*

---

## Control Room Pressurization / Dry Scrubbing Systems

Design, supply and installation of many systems to provide ISA G-1 environments for sensitive electronics in Fertilizer Plants, Gas Plants and Pulp Mills.

- H<sub>2</sub>S / NH<sub>3</sub> / SO<sub>2</sub> / Cl<sub>2</sub> filtration, many systems utilizing high efficiency activated carbon providing gas filtration to low PPB levels
- Systems complete with air conditioning and humidity control
- Filtered pressurization using cartridge dust collectors