Integrity
MUNICIPAL SYSTEMS
A cleanwater1 Company

STORAGE SILOS

BULK CHEMICAL STORAGE & FEED SYSTEMS FOR HYDRATED LIME, QUICKLIME, POWDERED ACTIVATED CARBON (PAC), AND SODA ASH

Bulk Chemical Storage and Feed System

CLEAN WATER, CLEAR CHOICE

Bulk Chemical Storage and Feed Systems

Integrity Municipal Systems LLC (IMS) Bulk Chemical Storage and Feed System is used to store and feed dry Hydrated Lime, Quicklime, Powdered Activated Carbon (PAC), or Soda Ash in a silo, dissolve it in a tank, and pump the chemical solution to the point of application. Each system's design is tailored to the project's needs. Systems typically include a storage silo with accessories and an integral chemical feed equipment room with instrumentation and controls to make a complete and functional system.

Silo Storage Benefits

- Pre-Assembled, Piped, Wired and Factory Tested
- Fully Engineered and Integrated Systems
- Single-Piece Welded Silo Construction (up to 14'-0" in diameter)
- Skirted Interior with Insulation, Lighting, Fans, Dampers, Louvers, and Heaters
- Completely Automatic Control System with PLC
- Flexible Configurations and Options for Differing Installation Requirements

Basic Silo Components

- SIZES UP TO 14' DIAMETER
  - Painted Carbon Steel
  - Single-Piece Welded Construction
- LADDER, CLIMBING PROTECTION SYSTEM AND TOP RAILS
  - Galvanized Carbon Steel or Aluminum
  - Per Current OSHA Standards
- TRUCK UNLOADING OPERATOR STATION CONTROL PANEL
- FILL LINE
  - 4" SCH. 40 C/S with Quick Connect and Limit Switch
- TARGET BOX WITH CLEANOUT PORT (ON ROOF)
- MANWAY WITH INTEGRAL PRESSURE & VACUUM RELIEF VALVE (ON ROOF)
- DUST COLLECTOR, AIR PULSE OR MECHANICAL SHAKER (ON ROOF)
- LEVEL SWITCHES
  - High, Re-Order, Low - Rotating Paddle Type
- DEHUMIDIFIER (ON ROOF) - Soda Ash Only

Silo Skirt Interior

- SILO DISCHARGE
  - Bin Activator
  - Solid Cone with Vibrator
- KNIFE GATE SHUTOFF VALVE
- GRINDER/LUMP BREAKER - Soda Ash Only
- ROTARY AIRLOCK FEEDER - PAC Only
- FLEXIBLE FEEDER CONNECTOR
- FEEDER
- SLAKER, GRIT REMOVER AND SLAKER CONTROL PANEL
  - Quicklime Only
- SLURRY TANK WITH MIXER & LEVEL CONTROL
  - Optional for Quicklime System
- FEED PUMP
- WATER SUPPLY PANEL
- MAIN SYSTEM CONTROL PANEL
- SILO SKIRT ACCESSORIES INCLUDING:
  - Double-Doors, Heater, Lights, Convenience Outlet, Vent Fan and Louver

Options

- ANCHOR TEMPLATE
- METAL FLOOR
  - In-floor drain
- INTERIOR INSULATION
- RADAR CONTINUOUS LEVEL DETECTION
- TRANSFER PACKAGE TO REMOTE DAY TANK
  - Surge Hopper, Rotary Feeder, Blower, and Day Tank
- PLC CONTROL
  - Ethernet Communication With Plant Control System - Single Pushbutton System Start and Stop
- STRUCTURAL LEG SUPPORT OPTION

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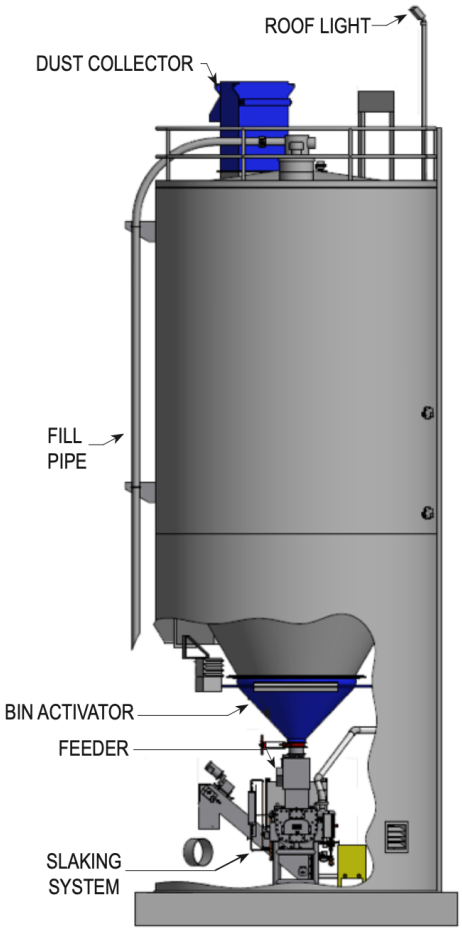
How It Works

The typical operation of the storage silo and solution feed system involves several basic steps:

1. Dry chemical is fed by pneumatic transfer into the silo.
2. Dry chemical is then fed to a solution tank.
3. Water is added to the solution tank for mixing and conversion of the dry chemical into a solution.
4. Chemical solution is pumped to the process as required by the site operating conditions.

*Steps 2-4 are concurrent, and in the case of quicklime, Step 2 includes feeding dry quicklime to a paste-type lime slaking system. There, lime slurry is produced after slaking, then fed to a solution tank for storage.

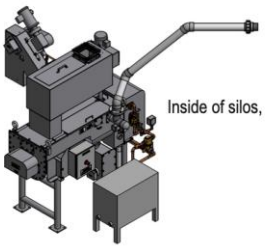


IMS Storage Silo with Lime Slaker

The dry chemical is delivered to the jobsite by self-unloading, pneumatic bulk trucks. The truck connects to the inlet adapter on the silo fill pipe. The chemical is pushed up through the silo fill line by a pneumatic truck to the target box at the top of the silo to ensure even filling. The dust collector runs continuously to discharge the air and filter the dust to prevent dust emissions from leaving the silo.

Rotating paddle-type level switches monitor the chemical material level in the silo (High, Re-Order, Low). A truck unloading operator panel on the exterior of the silo provides controls for the silo fill operation.

The dry chemical is discharged by gravity through the silo. A bin activator at the bottom cone of the silo aids material flow and transfers vibrations to the material column without shaking the silo structure. A knife gate valve on the outlet of the bin activator allows positive cut-off of material flow between the bin activator outlet and the chemical feed equipment.


Inside of silos, showing slaking systems

The feeder meters the dry chemical to the solution tank. The water addition is initiated by the system start signal: the water supply solenoid valve on a water panel opens, the feeder starts operating, and the solution tank mixer starts.

Solution production is controlled by a PLC with operator controls, a touch-panel mounted in the door of the chemical feed system control panel. After the solution has been completely mixed, a feed pump draws solution from the solution tank and meters the solution to the process.

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