

Lime Paste Slakers Odor Control and Emergency Vapor Scrubbers Chemical Feed Systems - Fluoride & Ammonia



Engineering Excellence & Product Innovation

Lime Slaker Systems (A-758 & A-758 Plus)

The IMS Lime Slaker Systems provide continuous high volume lime slurries (up to 8,000 lbs/hour) for industrial and municipal process pH adjustment, flocculation, and chemical reaction. The superior paste-type slaking technology consistently produces a higher strength and more reactive lime slurry resulting in more efficient and more economical use of the quicklime. Systems are factory assembled and tested for quick and easy installation, and include options for lime feed and grit removal.

IMS has built an inventory of 2,000 slaker parts. 90% of incoming orders are shipped within 24 hours.

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Lime Slaker Systems - A-758; A-758 Plus

- 2:1 Water-to-Lime Slaking Ratio
- · Robust Design Built to Last
- Conveyor-Type, Screw-Type, or Vibrating Screen Grit Remover
- Volumetric or Gravimetric Belt-Type, or Volumetric Screw-Type Feeder
- Capacities: 500, 1000, 2000, 4000, 8000 lb/hr
- Manual or Automatic Control
- Continuous or Batch Operation
- Pre-Assembled Water Panel Option
- More than 2,000 Parts in Inventory



Series 31-165 Gravimetric Feeder

- Accurate and reliable feeder operation
- Microprocessor controlled gravimetric feeding
- Accuracy better than 1% of feedrate
- Simple, straightforward man-machine interface
- Easy to install and maintain



Series 32-215 Volumetric Feeder

- Manual or automatic control
- Simple and straightforward volumetric feeding to 840 cu ft/hr (24 m³/hr)
- Easy to install and maintain
- · Self-adjusting belt tracking



Series 32-300 Volumetric Feeder

- Heavy gauge construction
- Simple design
- · Convenient controls and readouts
- Easy to install and maintain
- · Smooth handling of difficult material flows



Conveyor Type Grit Remover

- Specific gravity classification of grit after water introduction
- Grit removal with chain and flight scrapers
- Fine degree of grit size control (10 mesh)
- Slurry concentrations up to 18% achievable
- Simple, reliable, and low maintenance

Screw Type Grit Remover

- Only one moving part
- Fine degree of grit size control (10 mesh)
- Slurry concentrations up to 18% achievable
- Low maintenance and simple service
- Simple and efficient operation

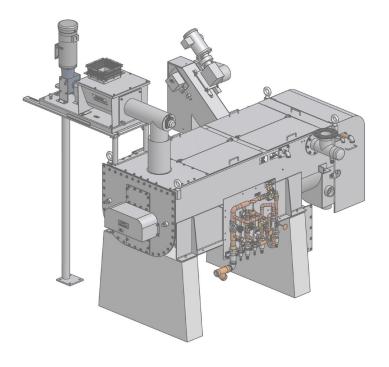
Screen Type Grit Remover

- Vibrating screen separator
- Positive grit removal by size (20 or 40 mesh)
- Slurry concentrations up to 20% achievable
- Optional (high) slurry concentration up to 28% available
- Small footprint and low profile

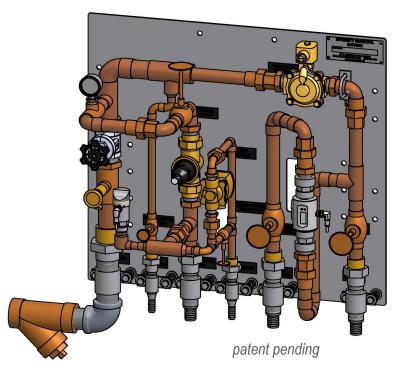




Lime Slaker System: Pre-Assembled Water Panel



PVC or Copper Construction



Pre-Assembled Water Panel

- Minimizes installation time
- Reduces manufacturing lead time
- Enables remote installation of water panel
- Makes maintenance easier
- Eases connection complexity
- Enhances slaker access
- Decreases risk of damage
- PVC or copper construction

Chemical Feed Systems

IMS chemical feed systems are pre-assembled, fully-functional chemical delivery systems for water treatment applications. These compact, user friendly chemical skids include local storage tanks, full secondary containment, dosing pumps, instrumentation and controls. Systems are piped and wired at the factory for easy and quick hook-up.



Fluoride Feed Systems

The IMS Fluoride Feed System is designed with separate saturator and solution tanks to ensure complete saturation, high reliability, low maintenance, and ease of use. All systems are custom designed, with modular systems pre-assembled, factory-piped, -wired, and -tested in a compact design to meet customer requirements. Systems are fully contained with automated saturator operation and integrated control panel.



Fluoride Feed System Benefits

- Reduces or eliminates suspended solids in the solution tank and prevents dosing pump from plugging
- · Very short installation time and low installation cost
- Reduces capital investment because of easy relocation, if desired
- Requires small footprint for installation
- Factory tested before delivery, significantly reducing system start-up time (~2 hrs)
- Meets site specific requirement and provides desired features
- Minimizes risk of sodium fluoride solution entering floor drains
- · Level controls are pre-set for smooth saturator operation
- · Single point of connection by installer



Aqueous Ammonia Feed System

The IMS packaged Aqueous Ammonia Feed System includes a heavy-duty, pressure-rated, aqueous ammonia storage tank, integral ammonia fume adsorber, peristaltic dosing pump, instrumentation and controls in a fully contained, pre-assembled skid.

Optional enclosure, shown below, is ideal for outdoor or remote locations. The FRP shelter houses the equipment in an air conditioned environment and comes complete with lighting, ventilation fan, and breaker panel.



Aqueous Ammonia Feed System Benefits

- DOT authorized 428 kPa (62 psi) pressure rating
- · Heavy-duty cylindrical tank for superior structural integrity
- Built-in ammonia fume adsorber prevents release of ammonia fumes to the atmosphere (no odor complaints)
- · Pre-piped and wired for easy, low-cost installation
- Modular, portable design for easy relocation
- Compact small footprint (7 ft x 4 ft x 5 ft ht)
- · Meets site specific requirements and provides desired features
- Metering pump capable of receiving and sending remote signals (4 to 20 mA input/output, remote start-stop, alarms)
- Robust design (with very low maintenance requirement)
- Fully contained to minimize risk of ammonium hydroxide solution entering floor drains
- High level switch in containment structure for local and remote alarm
- Equipped with ultrasonic level sensor with local display and remote transmission capability
- Integrated control panel with single point of connection by installer

Odor Control Systems

IMS has developed a line of standardized, pre-engineered, factory assembled odor control systems for treating odors at sewage pump stations and wastewater treatment plants. Pre-engineered systems are simple to install, reducing the overall installed cost and delivery time.

Biological Odor Control Systems

The I-BOx[®] Biological Odor Control System (patent pending) uses a two-stage process with a biological stage to remove 99% of the hydrogen sulfide (H₂S), followed by an activated carbon polishing stage to remove residual H₂S and organic odors. Standard models are available to treat up to 5,000 cfm (8500 m³/h) of odorous air.



I-BOx® 350 - 5,000 cfm BIOLOGICAL ODOR CONTROL SYSTEM STANDARD MODEL DESIGN DATA

Airflow Rate Model CFM (m³/h)		Overall Dimension (without stack) L x W x H ft (mm)	Inlet Connection Inches (mm)	Shipping Weight Ibs (kg)	Operating Weight Ibs (kg)	Fan Motor HP (kW)	
I-BOx [®] 4000	Up to 350 (Up to 600)			5,600 (2540)	6,000 (2700)	5.0 (3.7)	
I-BOx [®] 5000	350-580	7.5 x 5.0 x 9.5	6.0	8,000	8,500	5.0	
	(600-1000)	(2285 x 1525 x 2900)	(150)	(3600)	(3850)	(3.7)	
I-BOx [®] 6000	580-850	8.5 x 6.0 x 9.5	7.0	9,000	10,000	5.0	
	(1000-1450)	(2590 x 1830 x 2900)	(180)	(4082)	(4500)	(3.7)	
I-BOx [®] 7000	850-1200	9.5 x 6.8 x 9.5	7.0	11,500	12,700	5.0	
	(1450-2100)	(2895 x 2083 x 2900)	(180)	(5216)	(5760)	(3.7)	
I-BOx [®] 7010*	1200-1700	14 x 6.8 x 9.5	12.0	19,500	21,000	5.0	
	(2100-2900)	(4265 x 2083 x 2900)	(300)	(8845)	(9500)	(3.7)	
I-BOx [®] 7015*	1700-2590	19.25 x 6.8 x 9.5	16.0	28,500	31,000	5.0	
	(2900-4400)	(5865 x 2083 x 2900)	(400)	(12927)	(14061)	(3.7)	
I-BOx [®] 7020*	2590-3500	25.00 x 6.8 x 9.5	16.0	37,500	41,000	7.5	
	(4400-6000)	(7620 x 2083 x 2900)	(400)	(17010)	(18600)	(5.5)	
I-BOx [®] 8000	1200-1500	12.00 x 8.0 x 9.5	12	14,500	16,000	5.0	
	(2100-2550)	(3658 x 2439 x 2900)	(300)	(6577)	(7257)	(3.7)	
I-BOx [®] 8010	1500-2000	14.00 x 8.0 x 9.5	16	19,000	21,000	5.0	
	(2550-3400)	(4265 x 2439 x 2900)	(400)	(8618)	(9525)	(3.7)	
I-BOx [®] 8015	2000-3000	19.25 x 8.0 x 9.5	16	28,000	31,000	5.0	
	(3400-5100)	(5865 x 2439 x 2900)	(400)	(12700)	(14061)	(3.7)	
I-BOx [®] 8020	3000-4000	25.00 x 8.0 x 9.5	16	37,000	41,000	7.5	
	(5100-6800)	(7620 x 2439 x 2900)	(400)	(16783)	(18600)	(5.5)	
I-BOx [®] 8025	4000-5000	29.75 x 8.0 x 9.5	18	47,000	52,000	7.5	
	(6800-8500)	(9068 x 2439 x 2900)	(457)	(21319)	(23587)	(5.5)	

*The I-BOx® 7010, I-BOx® 7015 and I-BOx® 7020 are for use outside the USA.

I-BOx[®] Biological Odor Control System Benefits

- Two-stage, non-hazardous odor control process for H₂S and organic odor removal
- Airflow rate up to 5,000 CFM
- Compact footprint design
- "Plug & Play" installation
- · Quiet & easy operation
- Single-piece construction
- Inert, non-hazardous media
- Superior non-corrosive materials
- Pre-assembled & factory tested
- Suitable for outdoor installation optional weather enclosure



I-BOx[®] 75 - 250 cfm (125 - 425 m³/h)

I-BOx® 75 - 250 cfm BIOLOGICAL ODOR CONTROL SYSTEM STANDARD MODEL DESIGN DATA

Model	Airflow Rate CFM (m³/h)	Overall Dimension ^(without stack) Φ x H ft (mm)	Inlet Connection Inches (mm)	Shipping Weight Ibs (kg)	Operating Weight Ibs (kg)	Fan Motor HP (kW)	
I-BOx [®] 30	Up to 75	2.5 x 7.6	4.0	1,600	1,900	0.5	
	(Up to 125)	(762 x 2316)	(100)	(726)	(862)	(.37)	
I-BOx [®] 42	75-150	3.5 x 7.6	4.0	2,400	2,700	0.5	
	(125-255)	(1067 x 2316)	(100)	(1089)	(1226)	(.37)	
I-BOx [®] 54	150-250	4.5 x 8.0	6.0	3,400	4,100	1.0	
	(255-425)	(1067 x 2438)	(150)	(1542)	(1860)	(.75)	

Carbon Odor Control Systems

The IMS carbon systems are designed to work with a wide selection of media: virgin activated carbon media for low odor level, and high capacity carbon for higher H₂S concentrations.



MCS Benefits

- Superior non-corrosive material
- · Easy to operate
- Suitable for outdoor installation
- Fan sound enclosure available
- Compact, skid-mounted design
- Pre-assembled and factory tested

MCS System

The MCS odor control systems are single stage, skid-mounted, dry media systems, designed for relatively lower odor levels and organic odors. The media may be virgin activated carbon or any of a number of specialty catalytic carbon media. Standard models are available to treat up to 1,400 cfm (2400 m³/h) of odorous air.

MCS CARBON ODOR CONTROL SYSTEM STANDARD MODEL DESIGN DATA

Model	Airflow Rate CFM (m³/h)	Overall Dimension L x W x H ft (mm)	Inlet Connection Inches (mm)	Shipping Weight Ibs (kg)	Carbon Weight Ibs (kg)	Fan Motor HP (kW)
MCS-0150	Up to 130	4.3 x 3.2 x 5.0	4.0	940-1010	130-200	1.0
	(Up to 220)	(1300 x 975 x 1500)	(100)	(426-458)	(60-90)	(.75)
MCS-0200	105-235	5.3 x 3.5 x 5.0	6.0	1225-1350	235-360	1.0
	(175-400)	(1600 x 1000 x 1500)	(150)	(555-612)	(105-160)	(.75)
MCS-0250	185-365	5.8 x 3.8 x 5.0	6.0	1570-1770	370-510	1.5
	(315-620)	(1700 x 1100 x 1500)	(150)	(710-805)	(170-260)	(1.1)
MCS-0300	290-530	6.3 x 4.1 x 5.0	8.0	1940-2230	530-820	2.0
	(490-1290)	(1900 x 1200 x 1500)	(200)	(880-1012)	(340-370)	(1.5)
MCS-0350	420-720	7.7 x 4.9 x 5.50	8.0	2525-2925	720-1120	2.0
	(715-1225)	(2300 x 1500 x 1700)	(200)	(1145-1327)	(325-510)	(1.5)
MCS-0400	575-940	8.3 x 4.9 x 5.50	10	3095-3605	940-1450	3.0
	(980-1600)	(2500 x 1500 x 1700)	(250)	(1404-1635)	(425-665)	(2.2)
MCS-0450	750-1190	8.8 x 5.2 x 5.50	10	3835-4495	1190-1850	3.0
	(1275-2025)	(2500 x 1600 x 1700)	(250)	(1740-2040)	(540-840)	(2.2)
MCS-0500	950-1400	9.1 x 5.6 x 5.50	12	4455-5285	1470-2300	3.0
	(1615-2380)	(2700 x 1700 x 1700)	(300)	(2020-2397)	(670-1045)	(2.2)



BCS System

The BCS odor control systems are larger bulk media systems, designed for higher air flow rates. The media may be virgin activated carbon or any of a number of specialty catalytic carbon media. Standard models are available to treat up to 6,800 cfm (11600 m³/h) in a single carbon stage and up to 20,000 cfm (34000 m³/h) in a dual bed system.

BCS Benefits

- Superior non-corrosive material
- Easy to operate
- Suitable for outdoor installation

Model	Carbon Bed(s)	Airflow Rate CFM (m ³ /h)	Overall Dimension L x W x H ft (mm)	Vessel Diameter ft (mm)	Shipping Weight Ibs (kg)	Carbon Weight Ibs (kg)	Fan Motor HP (kW)
BCS-600	Single	1000-1700 (1700-2900)	11 x 8 x 8 (3300 x 2400 x 2400)	6 (1800)	3500 (1600)	2600 (1200)	5 (3.7)
BCS-800	Single	1700-3000 (2900-5100)	15 x 10 x 8 (4500 x 3000 x 2400)	8 (2400)	6000 (2700)	4600 (2100)	7.5 (5.6)
BCS-1000	Single	3000-4700 (5100-8000)	17 x 12 x 8 (5100 x 3600 x 2400)	10 (3000)	9000 (4100)	7100 (3200)	10 (7.5)
BCS-1200	Single	4700-6800 (8000-11600)	20 x 14 x 8 (6000 x 4200 x 2400)	12 (3600)	13000 (5800)	10200 (4600)	15 (11.2)
BCS-1000D	Dual	6800-9400 (11600-16000)	19 x 12 x 13 (5700 x 3600 x 3900)	10 (3000)	17000 (7700)	14200 (6500)	20 (15)
BCS-1100D	Dual	9400-11400 (16000-19400)	20 x 13 x 13 (6000 x 3900 x 3900)	11 (3300)	20000 (9100)	17200 (7800)	20 (15)
BCS-1200D	Dual	11400-13600 (19400-23000)	21 x 14 x 13 (6300 x 4200 x 3900)	12 (3600)	24000 (10900)	20400 (9300)	25 (18.6)
BCS-1400D	Dual	13600-20000 (23000-34000)	23 x 16 x 13 (6900 x 4800 x 3900)	14 (4200)	32000 (14500)	27700 (12600)	40 (29.8)

BCS CARBON ODOR CONTROL SYSTEM STANDARD MODEL DESIGN DATA

Emergency Chlorine Scrubbers

IMS wet emergency chlorine scrubber systems are designed to contain and treat accidental releases of chlorine gas. The scrubber systems are factory pre-assembled, piped, wired and tested. The system design was subjected to the most demanding testing in an actual full scale 1-ton chlorine release and surpassed the requirements of the Uniform Fire Code.



EVS-150

The EVS-150 emergency chlorine scrubber is a multi-stage wet scrubber system designed to treat chlorine vapors from a bank of 150lb (70kg) chlorine cylinders, at leak rates of 28 lbs/min or more, exceeding the requirement of the Uniform Fire Code. The EVS-150 system is designed to maintain negative pressure in the chlorination and chlorine storage rooms, while limiting the atmospheric release of chlorine to less than 1 ppm.

The factory-assembled EVS-150 system is very compact, with low profile suitable for either indoor or outdoor installation.

Emergency Chlorine Scrubber Benefits

- System is assembled, piped, wired and tested at factory
- Easy to transport, handle and install
- · Installation time of less than 8 hours
- Installation requires only provision of concrete pad, inlet ductwork, utility connections and fill of caustic soda
- · Excess liquid to absorb heat of absorption for maximum chlorine release
- · Low pressure recirculation of scrubber liquid enhances safety
- Three-stage chemical process ensures efficiency greater than 99.999%
- · Random packing provides large surface area for gas-liquid contact
- · Low profile with top and side access for easy maintenance
- · Robust design with vertical seal-less pump for low maintenance
- Low horsepower for pump and fan motors
- System can run in manual mode for maintenance purposes and in fully automatic mode for standby emergency operation

EVS-2000

The EVS-2000 emergency chlorine scrubber is a multistage wet scrubber system designed to treat up to three tons of chlorine vapor at leak rates of 100 lbs/min or more, exceeding the requirements of the Uniform Fire Code. The EVS-2000 system is designed to maintain negative pressure in the chlorination and chlorine storage rooms, while limiting the atmospheric release of chlorine to less than 1 ppm.

The factory-assembled EVS-2000 system is very compact, with low profile suitable for either indoor or outdoor installation.



EVS-2000C

The EVS-2000C emergency chlorine scrubber is a multi-stage wet scrubber system designed to treat up to one ton of chlorine vapor, at leak rates of 100 lbs/min or more, exceeding the requirements of the Uniform Fire Code. The EVS-2000C system is designed to maintain negative pressure in the chlorination and chlorine storage rooms, while limiting the atmospheric release of chlorine to less than 1 ppm.

The factory-assembled EVS-2000C system is very compact, with low profile suitable for either indoor or outdoor installation.

EVS EMERGENCY CHLORINE SCRUBBER STANDARD MODEL DESIGN DATA

Model	Design Capacity Ibs/ton (kg)	No. of Cylinders Online	Airflow Rate cfm (m ³ /h)	Caustic Volume Gallons (Liters)	Dimensions L x W x H ft (m)	Shipping Weight Ibs (kg)	Operating Weight Ibs (kg)	Pump Motor HP (kW)	Fan Motor HP (kW)
EVS-150-2	300 lbs (135)	2	250 (425)	275 (1040)	7.0 x 3.0 x 4.8 (2.1 x 0.9 x 1.5)	1,000 (450)	4,000 (1800)	3.0 (2.2)	1.0 (0.75)
EVS-150-4	600 lbs (270)	4	250 (425)	550 (2082)	7.0 x 3.0 x 6.5 (2.1 x 0.9 x 2.0)	1,500 (700)	7,500 (3400)	3.0 (2.2)	1.0 (0.75)
EVS-150-6	900 lbs (400)	6	250 (425)	660 (2500)	7.0 x 3.0 x 7.5 (2.1 x 0.9 x 2.3)	2,000 (900)	9,200 (4200)	3.0 (2.2)	1.0 (0.75)
EVS-2000	1 ton (907)	1	3,000 (5100)	2,100 (8000)	13.0 x 7.0 x 8.5 (3.9 x 2.1 x 2.4)	8,000 (3630)	29,500 (13400)	20 (15)	5 (3.7)
EVS-2000	2 ton (1814)	2	3,000 (5100)	3,900 (14800)	13.0 x 7.0 x 11.5 (3.9 x 2.1 x 2.5)	10,000 (4500)	50,000 (22700)	20 (15)	5 (3.7)
EVS-2000	3 ton (2722)	3	3,000 (5100)	5,900 (22350)	13.0 x 9.0 x 12.25 (3.9 x 2.7 x 3.7)	14,000 (6350)	74,000 (33500)	20 (15)	5 (3.7)
EVS-2000C	1 ton (1000)	1	3,000 (5100)	2,100 (8000)	18 x 6.8 x 7.6 (5.4 x 2.0 x 2.3)	8,000 (3630)	29,500 (13400)	20 (15)	5 (3.7)

A-758 Paste-Type Lime Slaker Refurbishment Service

IMS provides A-758 Paste-Type Lime Slaker refurbishment services to restore the slaker to its original condition. The refurbishment consists of reassembling and replacing components to restore the slaker to its originally manufactured state. Refurbishment of an old slaker provides significant cost savings compared to the purchase of a new slaker system. IMS can review a particular application to determine whether the slaker is a good candidate for refurbishment. Please visit our website for project case studies.



BEFORE



AFTER

Slaker Refurbishment Process:

- · Visual inspection of unit
- Photographic documentation of initial condition of unit
- · Complete unit disassembly and tear-down
- Documentation of all reusable parts prior to cleaning
- Preparation of cost estimate for all parts that cannot be reused
- Cleaning, sandblasting, and repainting of reusable parts as needed
- Reassembly of unit using reconditioned reusable parts and new replacement parts
- Reassembly of unit using new hardware, plumbing, and conduit/wiring to match existing unit
- System Testing: complete system testing, if applicable
- QC inspection
- · Supply of shipping crate
- Packaging of unit for shipment
- Shipment of unit to jobsite

BEFORE

Scrubber Acid Wash and Refurbishment Service

With over 30 years of experience in the design, operation, servicing, commissioning, operational testing, performance testing, parts supply and refurbishing of emergency chlorine scrubbers and chemical odor control scrubbers, the IMS field service team has the knowledge and dedication to tackle any issues that arise with your emergency chlorine scrubber and odor control systems. From routine maintenance to full system rebuilds, we get it done. Please visit our website for project case studies.

Scrubber Services:

- System Inspections
- Acid Washing
- Repairs and Upgrades (Refurbishment)
- Replacement Parts
- Monthly, Quarterly, and Annual Service Contracts

Emergency Chlorine Scrubber (1-3 ton capacity) Acid Wash Service and Refurbishment:

- · Removal of the existing caustic
- Disposal of caustic
- · Provision of necessary acid to clean the scrubber
- Disposal of acidic brine
- · Disposal of rinse water
- · Filling of scrubber with fresh caustic
- Scrubber repair
- Gel coat of scrubber
- Painting of main scrubber components

Bulk Chlorine Scrubber (> 3 ton capacity) Refurbishment:

- Total caustic management
- Complete system and tank acid wash
- · Disposal of generated waste
- 3rd party FRP inspection
- FRP repair, re-lining and refurbishment
- 3rd party post-repair FRP inspection as necessary
- · Repair/replacement of scrubber piping and accessories
- · Gel coat FRP components, and painting of fan and recirculation pumps



BEFORE



BEFORE



BEFORE



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Poway Manufacturing Facility



Zeeland Manufacturing Facility



About Us

Integrity Municipal Systems, LLC (IMS) is a specialty engineering company devoted to the design and supply of innovative, preassembled, process solutions for the water and wastewater industry.

With over 25 years of systems engineering innovation and project execution experience, the IMS team has the knowledge and dedication to tackle your odor control and chemical feed needs. IMS has achieved a reputation for producing unique, practical, and cost-effective solutions for our customers. We are committed to providing quality, service, and overall value that exceed your expectations.

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