

Metering units for  
**Hydrated Lime**



# Lime metering

## Custom made installation

Use Tomal's know-how and long experience with engineering and manufacturing of custom made lime metering installations.

Tomal delivers complete installations for both indoor and outdoor use.

Including silos, dust filters, arch breaking devices, shut-off valves, multi-screw feeders, screw conveyors, mixing tanks, electrical cabinets, dosing pumps, pneumatic conveying system etc.

### Application and use

- **Waste Water Treatment:** pH-adjustment of the sludge.
- **Potable Water:** pH-adjustment, added to the water inlet. Post-alkalization, added to the water before the distribution.
- **Flue Gas Cleaning:** desulphurization, where lime slurry is sprayed into the flue gas. Alternatively dry lime is blown into the flue gas channel before the filters.
- **Mining:** pH-adjustment of process water.
- **Pulp and paper:** pH-adjustment of process water.
- Any other custom made application.

### Lime metering direct benefits

- High metering accuracy and reliable discharge with the unique Tomal multiscrew feeder.
- Robust construction ensures a long lifetime and low maintenance.
- A large range of options. Our flexibility enables us to adapt machines to specific requirements.
- PLC with easily operated touch screen display.
- Well-experienced engineering staff.
- Proven design with thousands of units in use.
- Each unit is fully wet tested prior to dispatch from the factory and ready for immediate use.
- High quality product as Tomal is certified according to ISO 9001:2008.
- High quality welding as Tomal is certified according to ISO 3834-1.
- High quality design and manufacturing as Tomal is certified according to EN 1090-1

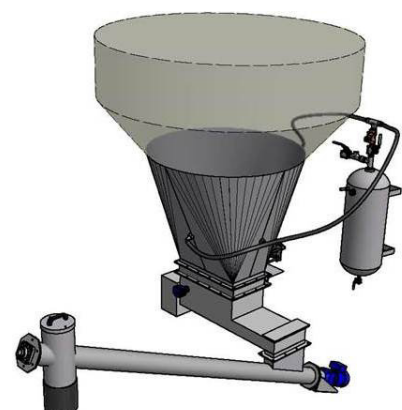
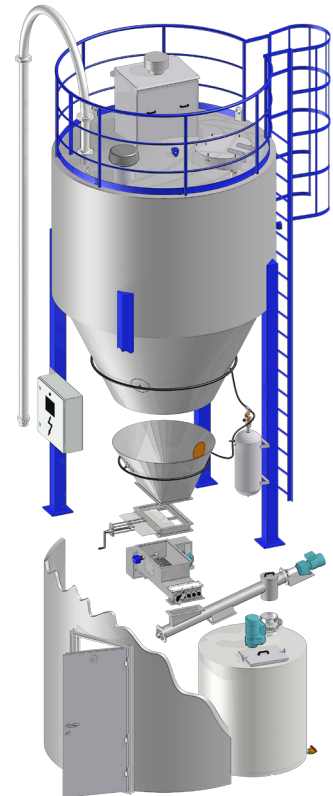
### Tomal smart principle of metering

Instead of using expensive fluidisation/vibrating bottoms, that gives an uncontrolled emptying of the silo, use our unique metering unit with a large active area.

The chemical will then keep a constant bulk density which gives a high accuracy without any interruption.

There is no, or very seldom, need for an arch breaking device. And if needed, as an extra safety, it is only running when the empty level indicator in the feeder gives a signal.

There is not normally a need for a weighing hopper as the accuracy is very high.





# Lime metering

## Features and technical data

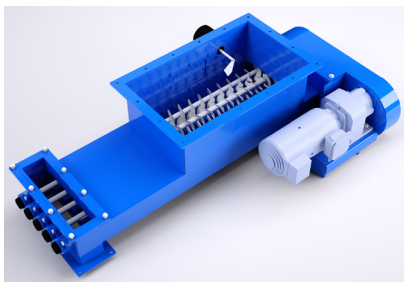
### Lime metering features and options

- Silo for outdoor and/or indoor use.
- Dust filter pneumatic cleaned or shaker cleaned.
- Pressure relief valve.
- Level indicator.
- Arch breaking system.
- Shut-off slide gate valve.
- Screw conveyor.
- Preparation tank in stainless steel including agitator, water armatures, level indication and dust arrestor.
- Dosing pump skid.
- Insulation of silo mantle and/or insulation of machine room.
- Automatic function test of the pressure relief valve.
- Weighing system for silo consisting of load cells and weighing instrument.
- Pneumatic operated hose valve on the filling pipe for stop of filling at high level in silo.
- Butterfly valve at screw conveyor outlet to prevent moisture reaching the screw.
- Flush system for pump and pipework to prevent sedimentation.
- Dosing tank for extra buffer capacity, including transfer pump for transfer of lime slurry from the preparation tank..
- Pneumatic conveying system.
- Electrical cabinet and wiring
- Any other custom requirements.



### Multiscrew feeder

The unique Tomal multiscrew feeder is always included with at least 2 cooperating feeder screws. This large active area results in a safe and reliable silo discharge at the same time as it provides a very high metering accuracy.



The unique design of the Tomal multiscrew feeder gives:

- High metering accuracy
- Safe and reliable silo discharge
- Linear discharge curve
- Self-cleaning feeder screws
- Low wear
- Low maintenance

This will reduce the production costs by providing highly reproducible discharge and precise metering.

### Lime metering technical data

Standard sizes.

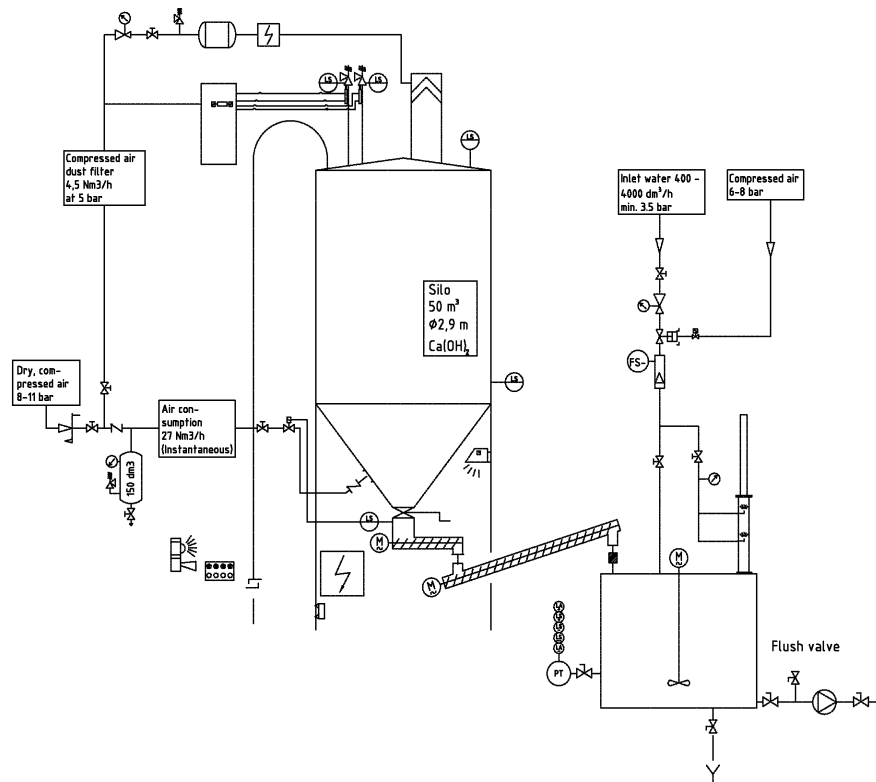
Component	Size	Remarks
Silo	5-250 m <sup>3</sup>	Ø2,4m Ø2,9m Ø3,2m Ø4,5m
Dust filter	10-30 m <sup>2</sup>	Pneumatic cleaned or shaker cleaned.
Shut-off valve	470-1250	Crank or Chain operated
Multiscrew feeder	475-1254	5-120 000 kg/h
Screw conveyor	Ø150, Ø190, Ø230, Ø350	
Mixing tanks	0,5 m <sup>3</sup> - 15 m <sup>3</sup>	Including agitator, inlet water and dust arrestor.

\*Other customer requirements are also available.

# Lime metering

## Flow diagram and basic function

Typical flow diagram for storage, metering, mixing and transfer of final lime slurry.



### Lime metering unit basic function

At powder low level, the silo is refilled from a bulk truck via the filling pipe. At high level a signal horn or flash light indicates the operator to stop filling. If a hose valve is included in the delivery, it will close the filling pipe to prevent overfilling.

A dust filter on top of the silo is in operation during filling, to evacuate the conveying air. In addition, security pressure relief valves are included.

If the silo is empty or bridging has occurred, an arch/empty indicator mounted at the inlet of the feeder, gives a signal to the arch breaking system, to run until the arch is broken.

Preparation cycle:

The metering of lime from the multiscrew feeder and adding of preparation water starts at low level in the preparation tank. The screw conveyor runs at the same time as the feeder.

When the high level in the tank is reached, the feeder, screw conveyor and water stops. If an outlet butterfly valve is included it is closed to prevent moisture reaching the screw conveyor outlet.

The agitator in the mixing tank provides a homogenous slurry and to prevent sedimentation.

A dust arrestor with spray nozzles, cleans the evacuated air from lime dust.

The dosing pump is continuously running, including a frequency inverter in the electrical cabinet. Clean flush water is added at a set sequence to prevent sedimentation in the pipe.

If a dosing tank is included, a transfer pump transports the lime slurry from the preparation tank..

# Lime metering

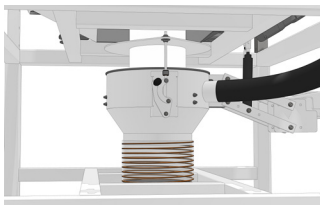
## Big bag and small bag handling

### Lime metering big bag system

Tomal offers a wide range of big bag handling systems. Whether a crane, forklift or our integrated telfer lifting hoist is utilized, Tomal big bag handling systems ensures that handling will be fast and efficient.

Tomal big bag handling systems contribute to smooth operation of the lime metering unit by ensuring that the big bag is safely supported and firmly secured to the feeder hopper.

Use of our dust-free stainless steel docking device keeps your working environment even more clean and dust free.



### Dust free docking device

The dust free docking device ensures a clean, dust-free environment by providing a secure attachment of the big bag outlet spout to the powder hopper.

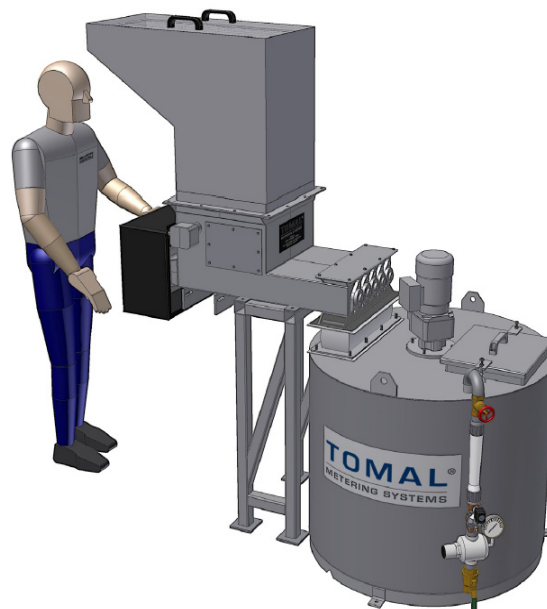
### Lime metering low capacities

Features:

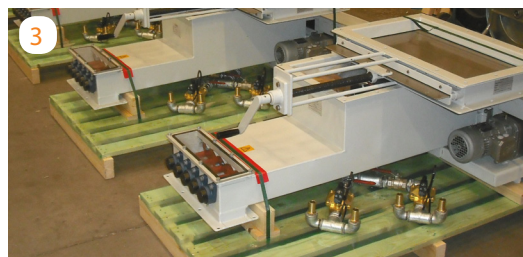
- Powder hopper 100 L. including hatch for filling of small bags.
- Low level indication.
- Tomal multiscrew feeder type 405.
- Preparation tank in stainless steel AISI304.
- Electrical equipment with PLC.

Advantages:

- Easy manual filling of chemical into the powder hopper.
- Safe discharge from the hopper into the preparation tank.
- Very accurate metering from the multiscrew feeder.
- High quality stainless steel mixing tank.



## Interesting reference units



- 1 Project Garpenberg  
Water treatment in Mining industry. 180m<sup>3</sup> silo including preparation and dosing tank.
- 2 Project Säverstaverket  
Flue gas cleaning using lime for neutralization. 80m<sup>3</sup> silo including pneumatic conveying.
- 3 Projekt Kangping Power: Metering equipment including 4 nos multi-screw feeder type 475 for pH adjustment.
- 4 Project Gäddviks VV: pH-regulation for Potable Water Treatment Plant.
- 5 Project Rexham Mäntsälä. 50 m<sup>3</sup> silo with metering equipment and preparation tank.

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