



**SPIRAC®**

Solid Handling Solutions

# SILOS AND SILO SYSTEMS

**LIVE-BOTTOM SILOS,  
SLIDING-FRAME SILOS &  
TRUCK RECEIVAL BUNKERS**

SPIRAC® has been the leading supplier of silos since the 1980s. Hundreds of successful installations are in operation around the world, with many having been in service for several decades.



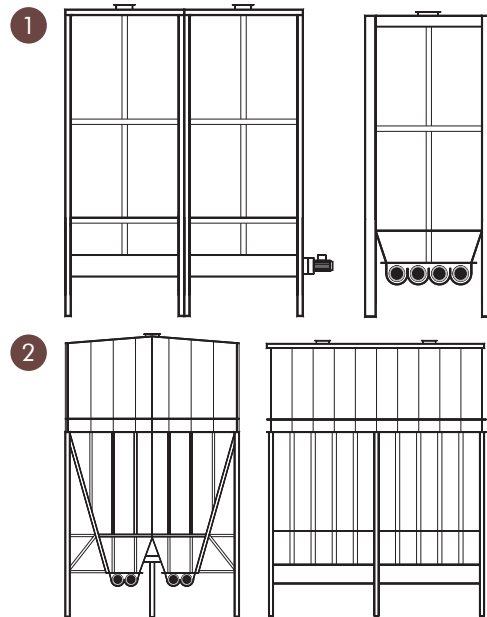
SPIRAC® is able to provide an optimized solution to suit most applications. We offer two outloading system solutions, live-bottom and sliding-frame, coupled with rectangular or round silo systems and truck receival bunkers.

Specialized selection will lead to the most cost-effective arrangements to suit your needs.

### RECTANGULAR SPIRAC® SILOS

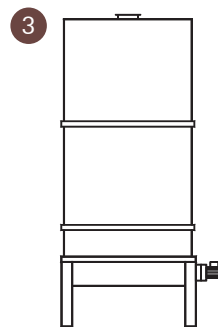
There are two types of rectangular silo solutions:

1. Flat panel construction which is suitable for capacities of 25yd<sup>3</sup> to 200yd<sup>3</sup>.
2. Block section construction which is used for capacities of 25yd<sup>3</sup> to 650yd<sup>3</sup>. This sophisticated design is mainly used for taller profiles and larger volumes.



### ROUND SPIRAC® SILOS

3. Round silos can be designed for capacities ranging from 40yd<sup>3</sup> to 800yd<sup>3</sup>. These constructions are cost-effective, light and simple and are mainly used for small to medium storage solutions.



### TRUCK RECEIVAL BUNKERS

Custom designed to suit the particular site and customer requirements, these bunkers employ either live-bottom or sliding-frame technology. Both systems are designed to handle a wide range of sludge consistencies and flow rates.

# SILOS AND SILO SYSTEMS

## SLIDING-FRAME SILOS' FEATURES AND BENEFITS



### SPIRAC® SLIDING-FRAME SILOS

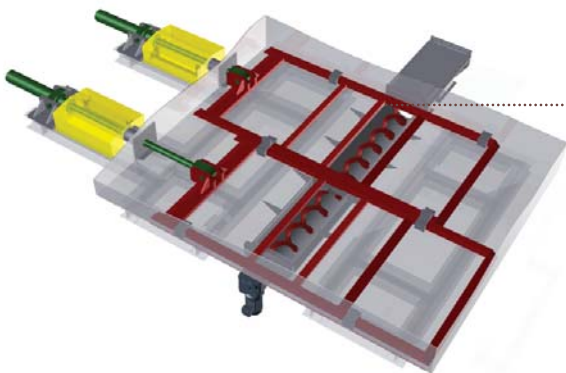
A sliding-frame is used for an extremely efficient extraction system that allows non-free-flowing material to be discharged from a flat bottom silo. It avoids bulky materials blocking the bottom of the silo by forming a bridge of material.

The sliding-frame's action breaks any bridges that may form over the extraction screw and pushes and pulls the material towards the centre of the silo so that it can be discharged.

The sliding-frame silo is suitable for non-free-flowing materials such as dewatered sewage sludge, wood chips, cellulose, gypsum and waste.



*Available in high-capacity truck outloading, low flow-rate pump or conveyor feed options.*



### FEATURES OF A SPIRAC® SLIDING-FRAME SILO

- ❶ A slowly reciprocating, hydraulically driven steel frame pushes or pulls sludge toward a central extraction screw.
- ❷ Speed controlled to provide outloading rates suitable for fast truck filling down to pump feed.
- ❸ Allows for vertical walls and cylindrical silo construction, optimizing volume utilization with capability of reducing height or footprint.
- ❹ Eradicates any opportunity for bridging, arching or flow hang ups – material flow is first in, first out.
- ❺ Reliable, quiet and simple operation.
- ❻ Can also be applied to rectangular silos, concrete bunkers, and truck receival bunkers.

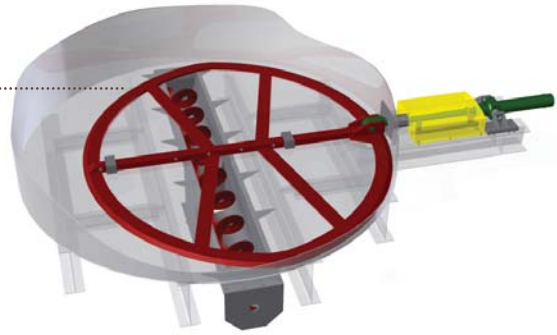


# SILOS AND SILO SYSTEMS

## ROUND & RECTANGULAR SLIDING-FRAME SILOS

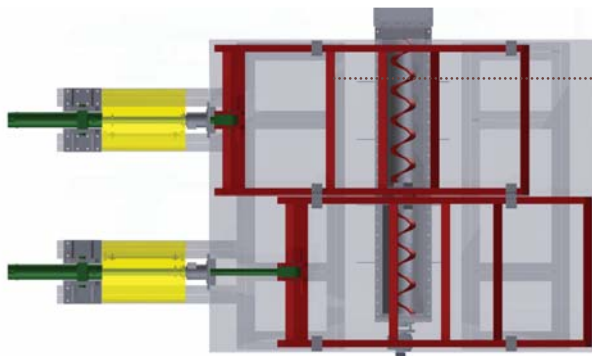
### SPIRAC® ROUND SLIDING-FRAME SILOS

The sliding-frame is built as an elliptical frame that is made of solid steel bars profiled to a wedge shape. The wedge profile of the elliptical framework pushes in one direction and draws the material towards the discharge opening thereby allowing near total emptying of flat-bottom silos.



	Diameter	Height	Volume	Outloading capacity
Round Sliding-frame Silos	9 - 30 ft	9 -50 ft	50 - 530 yd <sup>3</sup>	0 - 250 yd <sup>3</sup> /h

Different diameters are available on request.



### SPIRAC® RECTANGULAR SLIDING-FRAME

Rectangular silos – the sliding-frame is constructed in a rectangular “ladder” shape, and it transfers material from one wedge-shaped “step” of the “ladder” to the next as it oscillates back and forth. This design is suitable for steel or concrete silos or bunkers.

	L x W	Height	Volume	Outloading capacity
Rectangular Sliding-frame Silos	As required	9 -50 ft	50 - 1300 yd <sup>3</sup>	0 - 250 yd <sup>3</sup> /h

Different sizes are available on request.

## WHAT IS A LIVE-BOTTOM SILO?

These live-bottom systems ensure the elimination of arching, rat-holing or any bottle-neck type losses in flowability, even for the stickiest or driest of sludges. The basic silo design incorporates aesthetic considerations through symmetry, consistency and fabrication precision.

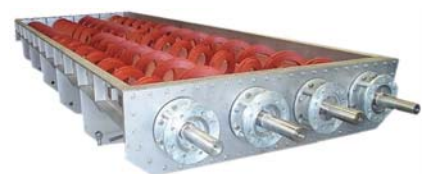
SPIRAC® live-bottom silos and hopper systems are custom designed for application in the wastewater industry, especially for the storage, transfer and outloading of dewatered sludges.

While the silos and hoppers follow standardized design features, the sizes and orientations can be customized to suit most customer requirements.

Three standard configurations are available to provide a wide range of cost-effective designs. These silos are top loaded, typically by shaftless spiral incline or vertical/horizontal conveyors, and outloaded by large diameter/large pitch live-bottom shaftless screws.

## FEATURES OF A LIVE-BOTTOM SILO

- ▶ Multiple spiral screws (typically 2-8) form a rectangular bed of moving screws to eradicate bridging or blockage of the stickiest sludges.
- ▶ Large diameter, large pitch spirals are capable of high torque and fast but controllable outloading rates, or very low outloading rates for pump feed.
- ▶ A very low RPM ensures minimum wear of the trough liners.
- ▶ Simple operation, direct drive and few moving parts ensure that maintenance is near zero. Inspection of the interiors of these silos is recommended at 5 -10 year intervals.







## SILOS AND SILO SYSTEMS

# LIVE-BOTTOM SILO & TRUCK RECEIVAL BUNKER

### Storage capacity

32-1,300 yd<sup>3</sup>

### Outloading Capacity

0-260 yd<sup>3</sup>/hr

– truck bay (high capacity) or pump/conveyor feed (low capacity).

Discharge via multiple knifegate controlled large diameter outlet ports to suit truck dimensions.

### Suitable sludge types

Dewatered sludges from centrifuges, plate or belt press, DS range from 15-40% Dried sludges up to 90% DS (special considerations may apply).

### Available materials of construction

Silos and hoppers can be manufactured from high spec mild steel or stainless steel, with standard structural elements including I-beams, columns, PFC, angles, hollow sections, flat bar and plate steel. Silos can be shop painted to extreme corrosion protection levels or primed for site painting.

### Corrosion Protection

A range of paint specifications is available to suit the requirements of different regions and climatic environments. These kinds of silos are generally located in corrosive, industrial environments and therefore corrosion protection is critical to the long life-expectancy of these silo systems.

## TRUCK RECEIVAL BUNKER

SPIRAC® has extensive experience and expertise in the design and supply of truck receival bunkers for the receival of imported dewatered sludge at central processing facilities.

Features include:

- ▶ Precise flowrates.
- ▶ Easy passage of foreign objects.
- ▶ Simple and reliable operation.
- ▶ Low RPM, high torque spirals to prevent blockages.
- ▶ No product bridging.
- ▶ Near zero maintenance.



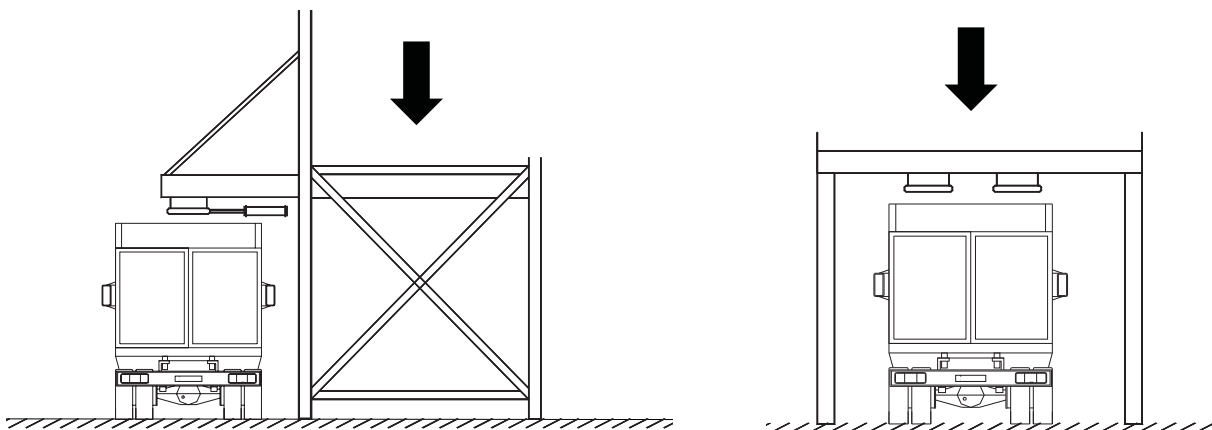
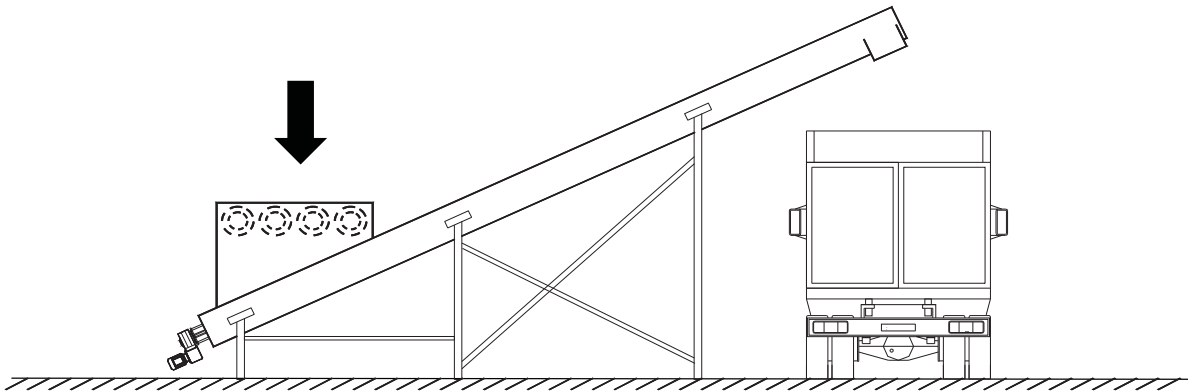
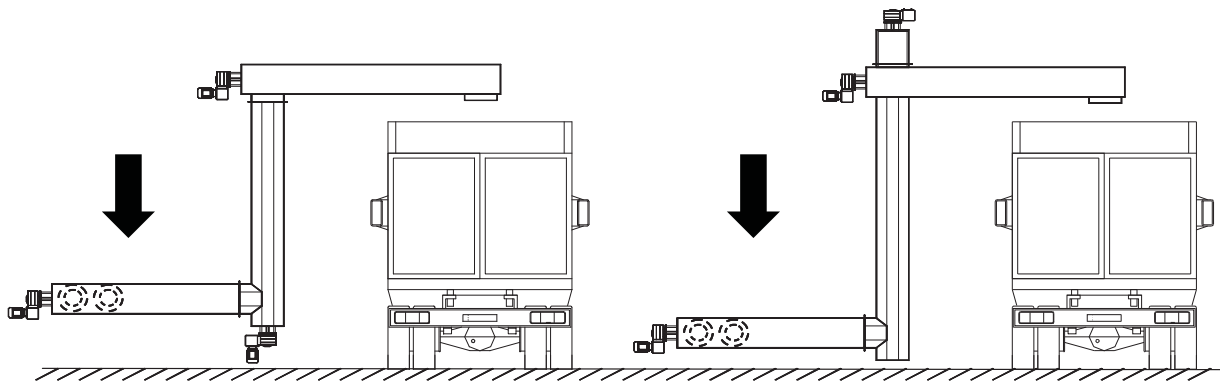
# SILOS AND SILO SYSTEMS

## TYPICAL OUTLOADING ARRANGEMENTS



### TYPICAL OUTLOADING ARRANGEMENTS

(For clarity, structural supports and silos are not shown.)





1. SLUDGE CONVEYING AND STORAGE IN A LIVE-BOTTOM SYSTEM.
2. LIVE-BOTTOM SLUDGE SILO UNLOADING (40 M<sup>3</sup>).
3. SLUDGE SILO FOR FEED TO PC PUMPS (360 M<sup>3</sup>).
4. SLUDGE DRYING PLANT WITH A TRUCK UNLOADING HOPPER AND CONVEYING TRAIN SILO STORAGE SYSTEM (2 X 200 M<sup>3</sup>).
5. TRUCK UNLOADING HOPPER WITH 4 X LIVE-BOTTOM SPIRALS.
6. LIVE-BOTTOM SLUDGE RECEIVAL BUNKER.

## ABOUT SPIRAC®

SPIRAC® is all about screening, grit and sludge handling solutions. With SPIRAC® solids handling solutions, you can have total confidence in a global leader. SPIRAC® enjoys more than 40 years of worldwide success and long-standing partnerships with customers, a prestigious status we didn't earn overnight. The SPIRAC® network of engineers is on hand to collaborate with you right from the start of your project – wherever you are located. This way we understand your requirements enabling us to deliver the right solution for you. Professional Project Managers and Design Engineers will ensure that products and systems are manufactured, installed and maintained to the most exacting standards, in compliance with local specifications and best global practice. And don't forget, full after sales support is part of SPIRAC's® outstanding service.

## WE SPECIALIZE IN

### SCREENINGS HANDLING

- ▶ Screens
- ▶ Screenings washing
- ▶ Dewatering & compaction
- ▶ Conveying
- ▶ Containment & transport

### GRIT HANDLING

- ▶ Grit capture & separation
- ▶ Grit washing
- ▶ Conveying
- ▶ Containment & transport

### SLUDGE HANDLING

- ▶ Conveying
- ▶ Storage (silos)
- ▶ Receival (bunkers & hoppers)
- ▶ Outloading (sliding-frames & live-bottoms)
- ▶ Containment & transport



AUSTRALIA  
SPIRAC Pty Ltd

Western Australia (Perth)  
+61 8 9434 0777

New South Wales (Sydney)  
+61 2 8811 4100

Victoria (Melbourne)  
+61 3 9717 1199

Queensland (Brisbane)  
+61 7 3482 4230

info@spirac.com.au

NETHERLANDS  
SPIRAC BV

Maarheeze  
+31 (0) 495 430 203  
info@spirac.nl

UNITED KINGDOM  
SPIRAC Limited

Banbury  
+44 (1) 295 270 335  
conveyors@spirac.co.uk

SWEDEN  
SPIRAC AB

Limhamn  
+46 40 36 22 00  
info@spirac.se

USA  
SPIRAC (USA) Inc

Newnan GA  
+1 770 632 9833  
sales@spirac.com

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