

# CEMENT AND BULK MATERIAL TERMINALS

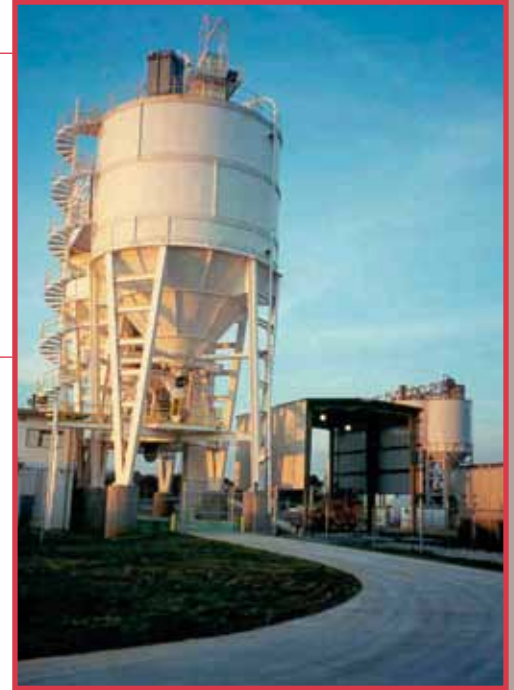
CEMENT LIME SLAG SAND COKE FLY-ASH READY-MIX CEMENT LIME

## Rail, Truck and Ship Systems

Besser shares a common heritage with North America's building materials industry. In the late 1800s Besser had its beginnings manufacturing silo stave barrels for the fledgling cement industry. Since these humble beginnings, Besser has grown to encompass a complete line of machinery and equipment for the building materials industry including bulk material terminals that are a benchmark of quality and performance.

## Innovative Design

Besser bulk material handling and storage systems are designed to satisfy your specific needs. Whether cement, lime, slag, sand, coke, coal, fly-ash or other bulk solid, Besser designs the entire material handling and storage system to the specific characteristics of the product being stored. The overriding goal is to design and manufacture a system that provides long life and optimum operation. Besser bulk material handling and storage systems can be entirely prefabricated for quick and easy installation on-site. Storage systems can utilize bolted, full seam welded, bolted and welded or lined construction.



A typical cement terminal

A bulk material distribution center

## Superior Engineering

The engineering and design team at Besser conducts complete material handling and storage analysis to make sure that your system meets your requirements. Besser engineers design for specific conditions utilizing our standard structural and tank live bottom designs whenever possible. Besser offers mass-flow and live bottom designs which can be adapted to suit your specific needs. Additionally, typical 50-degree aerated cone, aeration and fluidization systems as well as 15-degree fluidized cone designs can be utilized.

The unique inverted V-type taper support structure will handle the most severe climatic and environmental conditions. Current designs exceed requirements for seismic areas and severe weather. The need for complete ground-up design is accomplished through the use of computer modeling and analysis systems – the most advanced in the material handling industry.

The logo for Besser, featuring the word "BESSER" in a bold, blue, sans-serif font with a yellow swoosh underneath.

*Quality, Durability and Flexibility*

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## EasyTanks

The name says it all – these tanks are made to set-up in a very short time frame, and can be filled either pneumatically or by an internal bucket elevator.

### Multiple Applications

Besser EasyTanks combine to create a unique system used by cement, fly-ash, pigment, livestock feed marketers, oilfield service contractors, road builders and ready-mix producers.

Whether stone, powder, sand, mineral, wood or plastics Besser EasyTanks can handle the chore. The heavy-duty design of the EasyTanks provides reliable performance for ship unloading operations.



Easy tanks are easily moved from site to site by truck

Additionally, the Besser EasyTank system can load or off-load rail cars, tanker trucks or barges.

### Configuration

Besser EasyTank terminals can be comprised of a single or multiple tanks. An internal bucket elevator, combined with a false bottom load-out arrangement, allows the EasyTank system to provide predetermined load-out capabilities. Truck loading 6000 - 8000 pounds per minute using a DCL loading spout with a 2x2 positioner.

### Silo Design

Each standard EasyTank silo is 12'-9" in diameter and has up to 5350 cubic feet of storage capacity. Each tank is equipped with a support structure, base, roof mounted silo bin vents and a truck or rail loading spout with an in-line dust filter module. Besser provides full access ladders, crosswalks and handrails on all installations.



Easy tank cement load-out terminal

## Intermediate Diameter Silos



Besser has applied its expertise and resources to design material handling silos that set the industry standard for quality, durability and reliability. Highly skilled staff follow the stringent Besser Quality System during entire design, manufacture and assembly process.

Besser can design, manufacture and install any size storage system you require. Multiple compartments, blending systems, mixing systems, cooling, heating, re-screening and classifying systems are available. Fully automatic truck loading, volumetric filling, packaging, bagging and dust collection are also available.

Bulk material handling systems

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Besser EasyTanks can utilize either a rugged skid mounted design, as shown on the drawing to the right, or a self enclosed fully skirted 15-degree fluidized cone design. The fully skirted option is a valuable feature in areas with severe weather conditions. The skirting around each tank's discharge bottom creates enclosed rooms with passageways connecting to all tanks.

Each silo is delivered to the jobsite assembled, ready to set into place and operate within a few days. Only the roof bin vents and the load-out assembly need to be field installed.

Whatever your specific requirements, custom design of one, two or three silos is a Besser specialty.

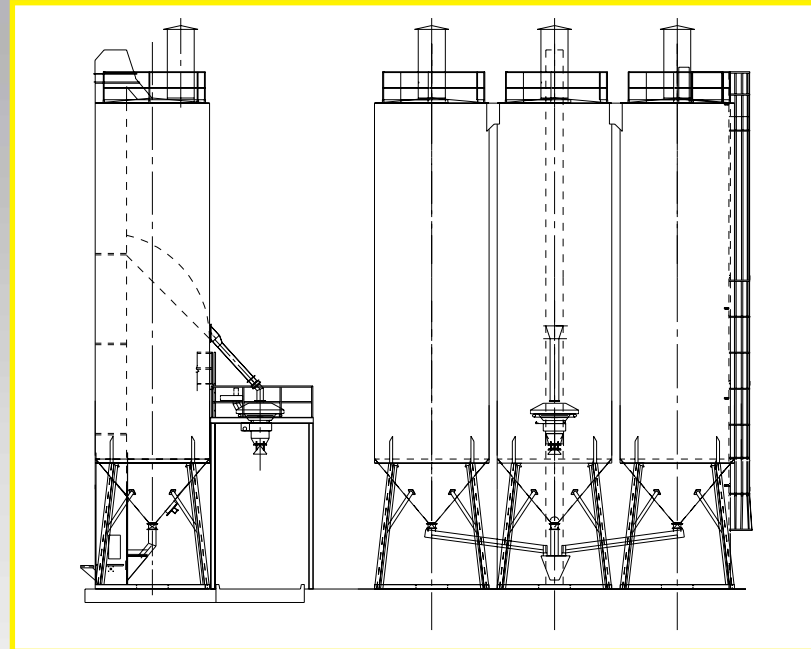
## Portable or Stationary

EasyTanks are portable and can be used to follow projects or markets or installed permanently on-site. In many cases the design of the EasyTanks means that foundations are not needed.

## Loading and Discharging

A bucket elevator is built into the center silo, with a capacity of 150 - 175 tons per hour, for loading from the outside storage silo by airslides. Silos can be loaded from rail cars using a pit with either a belt conveyor or a screw conveyor and from trucks by a pneumatic fill pipe into one or all three silos. Typical filling of the outside silos is accomplished through a connection overflow intervent chute.

A discharge chute from the center silo loading pocket has an in-line dust collector and a loading spout. The aeration



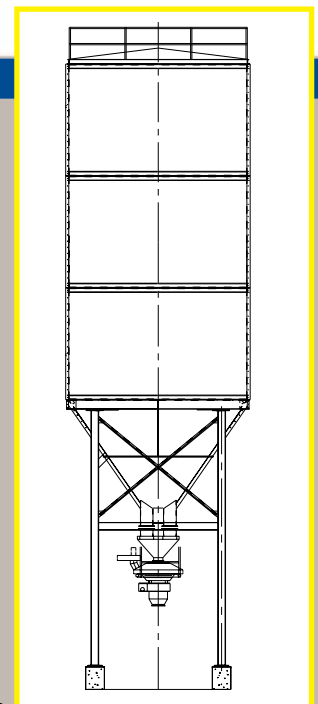
Side view of center EasyTank

Three non-skirted EasyTanks with bucket elevator and truck load-out

airslides are piped at the factory and supplied with an aeration blower. Besser also offers a low profile truck scale.

The latest design uses a 15-degree fully aerated bottom to increase storage capacity and provide a mass-flow type of silo, versus the standard funnel flow type of silo. The mass-flow silo offers the ability to completely withdraw all the material from the silo, a significant advantage to operators.

- Standard silo diameters are 19'-3" and 25'-3"
- Individual silo capacity ranges from 200 – 800 tons
- Silo design incorporates one to four compartments for storage of multiple materials within a single structure
- The structural design of the silo features a standard four-leg support with a compression ring, stiffeners and service platforms
- Silos are prefabricated and shop fitted for efficient bolt-together assembly in the field
- Interior aeration troughs within the cone are standard
- Structure is designed for seismic conditions as required
- Optional enhancements: Dust collection system and fully automated DCL truck loading with continuous driver access to loading facility, includes a DCL 2x2 positioner



Intermediate diameter silo

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CEMENT

LIME

SLAG

SAND

COKE

FLY-ASH

READY-MIX

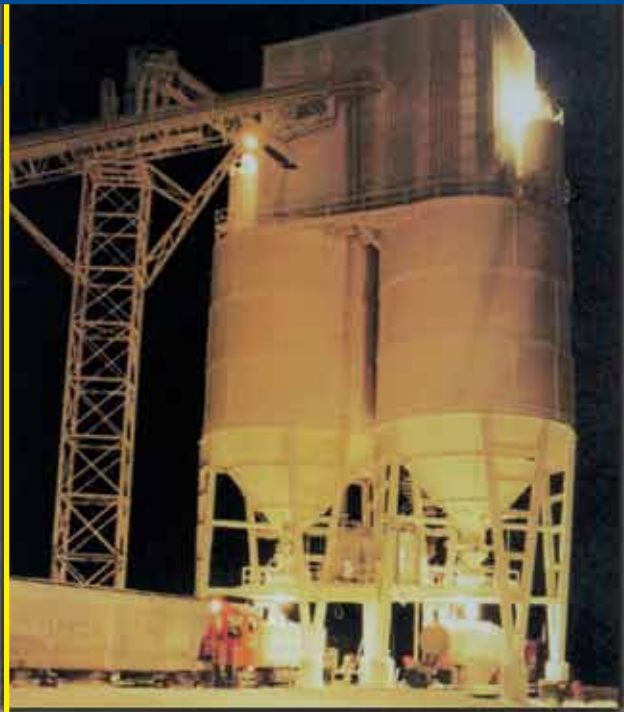
CEMENT

LIME

## Large Diameter Silos

- Standard large diameter silos are 31'-0" and 35'-0"
- Individual silo capacity ranges from 500 – 3000 tons
- Silo design incorporates one to four compartments for multiple material storage within a single structure
- The unique, V design leg structure accommodates eight support points at the compression ring of the shell, yet rests on only four base plates. This design allows for increased access under the silo and reduces foundation costs

35' diameter terminal silos



Lime bulk storage and load-out silos

- Roof structure can be designed to accommodate screening and crushing equipment as well as belt or screw conveyors
- Silos are prefabricated and shop fitted for efficient bolt-together assembly in the field
- Interior aeration troughs within the cone are standard
- Full length skirting is available
- Structure is designed for seismic conditions as required
- Optional enhancements: Dust collection system and fully automated DCL truck loading with continuous driver access to loading facility, includes a DCL 2x2 positioner

## Turnkey Services

Through the Besser/DeVere Joint Venture complete turnkey and design build services are available. Utilizing these services will allow you to focus on operating your business instead of handling the time consuming process of constructing your new project.

You can be confident that our experience in the concrete industry will translate into a project that will be completed on time and within budget.



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