BUYING GUIDE

Silo Selection Guide for Cement Plants

Complete guide to selecting silos for cement plants: raw material, clinker, additive, and product storage requirements and options.

Doc. No.	Version	Issued	Category	Website
MX-BG-001	Rev 1.0	October 2026	Buying Guides	www.manxingstorage.com

A cement plant stores many different materials, each with its own flow behavior, temperature and wear profile. Selecting the right silo type for each storage point protects continuity, quality and operating cost. This guide summarizes Manxing recommendations for the main storage points in a cement plant.

1. Storage Points and Selection Matrix

Storage Point	Recommended Silo Type	Key Features	Typical Capacity
Raw meal / raw material powders	Welded silo, flat bottom, homogenization	Aeration + blending; continuous level and level; optional homogenization (CF) silo	5,000-40,000 t
Limestone and corrective materials	Stockyard or large welded silo	High capacity, stacker-reclaimer or aerated bottom	10,000-50,000 t
Coal / petcoke	Welded silo with inerting and monitoring	Explosion venting, CO/temperature monitoring, sealed handling	5,000-20,000 t
Clinker	Welded silo, cone or flat bottom	Hot material handling (up to 150 degC), refractory or air-cooled cone	10,000-60,000 t
Gypsum and additives	Bolted or welded silo	Standard aerated discharge; wear plates for abrasive additives	1,000-5,000 t
Slag / pozzolana / limestone filler	Bolted or welded silo	Moisture-tolerant aeration; optional heating	1,000-5,000 t
Finished cement	Bolted or welded silo, multiple compartments	Fast changeover between cement types; load cells; dust-tight dispatch	2,000-20,000 t

2. Raw Material and Raw Meal Storage

- Choose stockyards for large limestone/clay storage; silos for controlled extraction
- Raw meal silos with aeration and blending guarantee kiln feed homogeneity (+/-1-2% LOI variation)
- Continuous level and average level measurement prevents over/under-filling
- Consider future expansion when sizing foundations and aeration capacity

3. Coal and Petcoke Storage

- Safety first: explosion venting, inerting, CO and temperature monitoring
- Silo volume sized for 15-30 days of kiln consumption at design capacity
- Grounded and sealed handling; no dust escape at filling or discharge
- Dead storage minimized with steep cone or flat-bottom aeration to avoid self-heating pockets

4. Clinker Storage

- Design for hot clinker (100-150 degC) with refractory-lined cone or air-cooled bottom
- Typical storage 7-14 days of production for kiln continuity and cement dispatch
- Heavy impact loading at inlet; wear-resistant throat design
- Multiple extraction points with apron or belt feeder for uniform drawing

5. Additive and Finished Cement Storage

- Multi-compartment silos allow parallel storage of gypsum, slag, limestone and pozzolana
- Finished cement silos: fast, dust-tight loading of tankers or wagons with weigh batching
- Load-cell weighing provides inventory and dispatch control
- Aeration with dry air is essential to keep cement free-flowing

6. Bolted vs Welded Construction

Criterion	Bolted Silo	Welded Silo
Typical capacity	50-3,000 t	500 t to 60,000 t
Erection speed	Fast (panel assembly)	Slower (site welding)
Coating	Galvanized / enamel panels	Painted plate
Relocation	Possible	Not practical
Cost per tonne	Higher (small sizes)	Lower (large sizes)
Best for	Plants, terminals, grinding stations	Large clinker / raw meal storage

7. Sizing Rules of Thumb

- Clinker: 7-14 days of production at design capacity
- Coal: 15-30 days of consumption (subject to safety limits)
- Finished cement: 7-10 days of dispatch demand
- Gypsum / additives: 10-20 days of dosage rate
- Always add 5-10% capacity margin for production growth

8. Common Pitfalls to Avoid

- Undersized aeration leading to bridging and rat-holing
- Ignoring material temperature (hot clinker) or moisture (wet additives)
- Insufficient dust collection at filling, causing emission and health issues
- No expansion margin in foundations and utilities
- Skipping safety design for coal and combustible dusts
- Choosing bolted silos above the economical size range

Contact Manxing

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