

Steel Silos : Modern and Improved Grain Storage Facility

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A silo is a cylindrical, hermetically sealed vertical structure constructed with galvanized steel sheets or RCC shell used to enhance food security and thereby safeguard agro-ecosystem. The traditional storage practice of food grains - in bags horizontally stacked in warehouses or in open, is associated with many losses, including spillage, rodent attacks, bird droppings, theft/pilferage, etc. Food Corporation of India, responsible for ensuring country's food security, estimated the post-harvest loss due to inadequate storage infrastructure at around 6% of the total losses. They chalked out plans to phase out the traditional storage system and modernize food grain storage with Steel Silos by 2025.

The futuristic steel made silos with optimized space and bulk handling facilities offer an economic solution over traditional storage operations with long-lasting performance. Silos require approximately 1/3rd land compared to conventional storage warehouses and can be operated round the clock, enhancing flexibility and improving overall efficiency in storage, handling, and transportation of food grains. With proper control of moisture content and other required parameters, steel silos ensure better preservation of food grains by enhancing the shelf-life.

While the steel silos are ideal for storing food grains and fermented feeds, concrete made silos are suitable for storing cement and other ash materials used for concrete/mortar production. There are a few distinct advantages of steel silos over concrete made silos, as stated below. Concrete-made silos are preferred where the stored materials are prone to corrosion, abrasion and electrolytic effects.

Parameters	Steel Silos	Concrete Silos
Capital Cost	Lower Capital Cost	Higher Capital Cost
Speed of Construction	Faster to build in 10-12 months	Takes more time – 14 months
Scale of Capacity	Bins of upto 20,000 MT	Bins of Up to 3000-4000 MT
Requirement of Soil Quality	Can be mounted where the soil quality is not optimum	Requires very good soil quality to erect concrete silo
Industrial Life	25-30 Years	50 Years
Risk Against Earthquake	Less prone to earthquake	More prone to earthquake
Mobility	Can be dismantled from one place and erected again somewhere else	Cannot be erected again with same material, once dismantled

Types of Steel Silos

		
Flat Bottom Silos	Conical Bottom Silos	Horizontal Silos
Most suitable for grains and fermented products and used for long duration storage	Generally smaller than Flat bottom silos, elevated and used for temporary storage	Suitable for storing cement, lime, fly ash and other industrial powder materials

Steel Requirement

Pre-Galvanized plain and corrugated steel sheets of minimum 350 GSM coating, thickness 0.87 mm to 3.10 mm and minimum 350 MPa yield strength.

Steel producing capability

Indian Steel producers have the capability of supplying all the grades with thicknesses with the required galvanization of any quantity.

Government Plans for Storage of Food and Non-Food varieties

Food



The pilot project on rice silo executed National Commodities Management Services Limited (NCML)

FCI plans to augment storage capacity with Steel Silos under the Hub & Spoke model in phased manner. 108.375 LMT of storage capacity by construction of wheat silos at 247 locations in 12 states is envisaged under Phase – I of Hub and Spoke model, with 232 projects having a capacity of 100.75 LMT to be undertaken under DBFOO (Design, Built, Finance, Own and Operate) mode and the remaining 15 projects having capacity of 7.625 LMT under DBFOT (Design, Built, Finance, Operate and Transfer) mode.

Non-Food

Effect of Ethanol Blending Policy in Storage Scenario

The proposed plan of augmenting storage facility through steel silos is expected to get a major boost as Govt of India mandated 20% blending of ethanol in petrol by 2025-26, which currently stands at 8.5%. The proposed plan will require a doubling of ethanol production and storage from sugar and a quadrupling of the same from grains in the coming 4 years.

Food aggregators may look forward to the greater prospects of storage of food grains in Steel Silos.