

Light asset strategy for terminal construction

The last decade has seen a shift in approach to capital expenditure (capex) projects in the cement sector. 'Low-cost', 'phased' and 'flexible' appear as the new capex buzzwords in an increasingly austere world.

■ by *Javier Martinez Goytre, GlobBULK, Spain*

There has been a recurring trend in the cement industry in the past to invest in new greenfield cement plants or add additional kiln production lines in brownfield projects. Massive capital expenditure (capex) investments were being made until 2008-10. However, the global economic crisis, starting in 2007, had a severe impact on those projects and such investment decisions came under question.

The current global cement market scenario, with production imbalances in many regions of the world, excess capacity of cement and clinker readily available for distant distribution and seaborne trade, and financial constraints of cement groups to invest in new cement plants has led many companies to capture business opportunities with a different approach. Low-cost projects, phased projects and flexible concepts now seem to be the new norm.

Light assets strategy

To cope with capex austerity programmes many cement companies are facing the



Figure 1: bagged cement unloading operations

dilemma of keeping their traditional approach to capex projects, considering long-term depreciation and payback, or considering innovative approaches to build new low-cost production and distribution facilities. In terms of the latter route, called 'light assets strategy', GlobBULK is able to deliver its full potential.

Project phases

Penetrating new domestic or import markets can be achieved in different stages as implemented by Cementos Colón (a joint venture of Holcim Trading and Cementos Argos in Dominican Republic). Operations started with bagged cement imports with very low financial exposure to consolidate its position before building a clinker grinding plant near Santo Domingo four years later.

Phase 1 – import of bagged cement

A new entrant in the Dominican cement market, Cementos Colón started its cement import operations with bagged cement with low financial exposure in fixed assets, allowing to introduce the brand 'Cementos Colón' in Santo Domingo area. Over a period of 12 months, the company imported some 7000t/pm, unloading cement into a leased warehouse in the Port of Haina. The rental cost of the warehouse was about US\$200,000pa.

No investment was required and

Figure 2: temporary bulk cement import terminal – road-mobile packer (right) and second-hand steel silo (left)





Figure 3: Haina clinker unloading and storage facilities (left) and Najayo grinding plant (right)

therefore there was no capex in this phase.

A temporary bulk cement import terminal was built to operate during the design, procurement and construction of a clinker grinding plant in Najayo.

Phase 2 – temporary bulk cement import terminal

A site was leased in the Port of Haina to build a bulk cement import terminal in Phase 2 and a clinker storage and dispatch facility in Phase 3 of the project.

Built in eight months, the terminal consisted of a second-hand 1000t steel silo for bulk cement and a Ventomatic road-mobile packing machine container size. The terminal was in operation for two years until the grinding plant was ready for commissioning.

The terminal was fed with a pneumatic self-unloading vessel (the 4000dwt M/V Granelero). Terminal throughput was 120,000tpa, while capex required for this phase was US\$1.6m, including civil works, mechanical and electrical equipment and erection.

Phase 3 – construction of a clinker grinding plant

Some 12km from the Port of Haina, Cementos Colón built a clinker plant in the third stage. The unit's throughput capacity was 450,000tpa and included the following facilities:

- Port of Haina: clinker unloading facilities (two eco-hoppers) and an 8000t clinker storage hall and bulk truck loading station for clinker dispatch
- Najayo grinding plant:
 - 35,000t clinker storage
 - 60tph Humboldt Wedag ball mill, operating in closed circuit
 - 4000t + 1500t cement silos
 - Haver & Boecker eight-spout rotary packer and palletiser

- bulk truck loading station.

Due to draught restrictions at the port of Haina, incoming clinker vessels were limited to a 20,000dwt capacity.

Clinker unloading equipment at the port was designed to handle 6000-7000tpd.

Capex, including the Haina discharge and storage facilities at the Najayo grinding plant, stood at US\$25m.

Low-cost and modular grinding plants

Recent years have seen the development of low-cost grinding plants based on the 'bare bones' concept designed for small throughputs of about 0.25Mta, ideal to capture or supply niche markets.

The GlobBULK team has thoroughly analysed such concepts that are already available in the market, reviewing bids and completing its own concept including all the elements required to build a fully-fledged low-cost grinding plant.

The scope of supply of a greenfield low-cost modular grinding plant is expected to include the following:

- clinker and raw materials storage

(capacity defined by size of incoming vessels in case of seaborne supply)

- mill feed bins (2-3, depending on additives)
- 35tph closed-circuit mill
- cement silos (1-2, depending on qualities)
- bulk and bags dispatch
- power supply and distribution
- civil works (including provision for piling of certain elements, depending on soil conditions)
- internal infrastructure (including roads, sewage, water supply, fencing, lighting, office and workshop).

A sound and reliable project cost structure comprising all elements of a greenfield project under EPC contracting approach should be presented as shown in Table 1.

Key elements of a clinker grinding plant project that should not be forgotten when considering the total plant proper include clinker storage facilities, transport of equipment to site destination, execution of civil works, erection of electromechanical equipment, commissioning and training

About GlobBULK

GlobBULK was launched 1 January 2016 as an independent spin-off from Holcim Trading Technical Services (HTR). Its staff have been providing services to the cement industry for over 25 years via Cementos Asland SA (Spain), BMM Group (Spain), HTR and LafargeHolcim Trading.

The Spain-based company provides international consulting and project management services on the technical aspects of seaborne trade in cementitious materials, including marine logistics, port handling of bulk products, design and construction of export and import terminals, grinding plants and clinker production lines. This includes optimisation of operational costs and rationalisation of capital expenditure (capex).

Table 1: pro-forma capex summary

Mill project EPC capex (price cost summary)			Date:	R00 PPB
	Description	US\$	Comments	
1	Civil works plant layout and infrastructure		Including buildings for admin, workshop, changing rooms...	
2	Steel structure supply		Transport included	
3	Mechanical equipment supply		Transport included	
4	Electrical and automation supply		Transport included	
5	Site facility/temporary water and power		For construction purposes	
6	Erection and commissioning			
7	Engineering		Civil, structure, mechanical, electrical and process	
8	Project management			
	Total plant proper	0	Supply, transport, erection, construction	
9	Preproduction expenses		No	
	Taxes and duties (civil works, mechanical and electrical)		Client	
	Prefeasibility study/feasibility study/tender document		Client	
	Topological and soil investigations		Client	
	Environmental impact		Client	
	Other fees for professional services		Client	
	Insurance premiums (ARI, etc)		Client	
	Client project administration		Client	
	Site expenses		Client	
	Other miscellaneous expenses		Client	
	Subtotal preproduction expenses	0		
10	Project management		GlobBULK	
11	Escalation		Client	
12	Contingencies			
	Total project cost	0		
13	Interest/financing charges		Client	
14	Financing charges		Client	
	Total project investment	0		

of production staff until the plant's production ramps up to reach the expected levels (see Table 1).

When considering total project cost, preproduction expenses, project management, price escalation and contingencies should also be taken into account. Total project cost is the key figure for the client when designing the financing structure of a project.

GlobBULK has taken into account all those aspects requested by a client and together with CBMI (China) has conceptually developed a fully-fledged low-cost and modular concept for grinding plants. All elements of the grinding plant are considered, resulting in a very competitive cost and no hidden surprises when a technical and/or financial department builds up a request for an investment approval.

Conclusions

The light asset strategy is a sound option to rationalise new capex projects to cement or clinker import operations.

The development of low-cost and modular terminals and grinding plants allows for fast implementation of production facilities at a reduced cost. However, all elements of a grinding plant need to be taken into account and properly budgeted for.

Splitting the project into phases – ie, starting with bagged (or whenever possible bulk) cement distribution and building a clinker grinding plant in the final stage – allows a company to split capex exposure as well as giving it the opportunity to gain a better understanding of the market and its conditions during the different phases of the project. ■

Figure 4: typical layout of low-cost and modular grinding plant by CBMI and GlobBULK