
AHEAD OF



THE PACK

**Ricardo Gonzalez,
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examines mobile and
modular packers for
cement.**

One can get a measurement of where the interests of the packaging industry lie at their exhibitions – and there are a number of those! Focusing on the manufacturers of packers for bulk solids, and cement in particular, interest falls on the following categories: larger throughputs, the flexibility to use different sizes and types of bags, better integration with other machines, further automation, increased weigh accuracy or traceability, adaptation to smaller batches and customisation, improved reliability, etc.

There is little doubt that these are worthwhile features – but there is also a relevant market that deals with more basic problems and requires specific solutions. Consider the following three typical cases, developed around real problems/projects.

Modular

In recent years, modular grinding plants have entered into the worldwide cement scene. They often address unattended demand in the market coverage provided by larger plants, the overall size advantage of which does not offer enough attention in some areas. These markets are typically of between 100 000 tpy and 500 000 tpy in size; the main players are Cemengal, Gebr. Pfeiffer,



and CBMI-Sinoma. Their solutions play the lever of a lower investment cost and reduced time-to-market through design simplification and modularisation.

Within these requirements, it is even possible to install the packing machines in containerised modules, so that onsite construction is reduced to the assembly of the modules, including the piping, cabling, and interconnections of chutes.

Without reaching the containerisation extreme, Haver & Boecker provides its Smart Plant Concept (Figure 1), a complete and compact packing line in a standardised and prefabricated modular design. Relevant features of this solution are the low overall height needed and the minimisation of the supporting structures: tall elevator towers and ancillary structures can thus be reduced, allowing for the use of (more) conventional warehouses. The bolted design also facilitates construction, as well as disassembly, if required. Although the system is designed around a 120 tph rotary packer, it can be adapted to lower output requirements.

Haver & Boecker's long-standing alternative supplier, FLSmidth Ventomatic, also provides compact packers that require low eaves, with its VentoCompact line (Figure 2). Several other companies offer tailor-made designs to install in-line



Figure 1. Haver & Boecker Smart Plant.



Figure 2. Ventomatic VentoCompact.



Figure 3. Ventomatic packer on wheels.

packers into containers, as presented in the following sections. Various types of projects can use these solutions, not only modular grinding plants.

Mobile

In this case, an operator identifies a market in the range of between 100 000 tpy and 200 000 tpy. Entry time is key and even more important than operational efficiency, perhaps due to a change in regulations that critically favours the first mover. The project promoter can bring a mobile packer, literally mounted on wheels, and practically the only thing it requires to start the dispatch is a suitable warehouse to store the bulk cement.

FLSmidth Ventomatic has been providing such mobile packers for more than two decades. Mounted on a trailer, they just need to be jacked-up or laid on a concrete platform, plugged in to a power connection, and fed with cement. This ease of use is achieved by using in-line spout packers, so their design throughput does not exceed 60 tph, which is good enough for manual truck loading (Figure 3).

In the UK, RM Group manufactures containerised portable packing equipment in different arrangements, which even includes palletiser robots within the container (Figure 4).

Modular and mobile – to the extreme

The infrastructure that is needed to pack can be further reduced. When a ship with bulk cargo arrives, the conventional solution is to provide storage at the port. This can be in transit sheds (temporary) or in dedicated storage buildings (longer term). The logic is that the discharge operations need to be done quickly to release the ship (which can easily cost US\$15 000/day), but the fact is that these storage facilities can be scarce.

One solution to this constraint is provided by receiving hoppers and packers installed in containers, which can be transferred to the port. The bagging and truck loading is done simultaneously to the ship unloading, and when the discharge is completed the containers are removed, leaving the quay free.

There are several manufacturers operating in this specific niche, although it is a method most commonly used for work with cereals, fertilizers, aggregates, and similar products, rather than cement. Discharging bulk cement from ships with grabs requires serious dust control measures, but GlobBULK does not see any critical reason why the idea could not be transferred to cement in bulk.

Portpack, also from UK, manufactures a 'containerised mobile bagging' unit, consisting of two 20 ft containers, that can be quickly assembled onsite. The upper unit holds the receiving hopper and ancillary equipment, while the lower container has an in-line packer that includes the transport belts to the trucks.



Figure 4. RM Group palletiser robot.

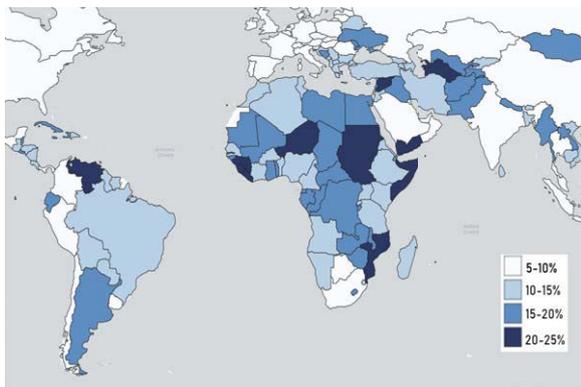


Figure 5. Cost of capital.

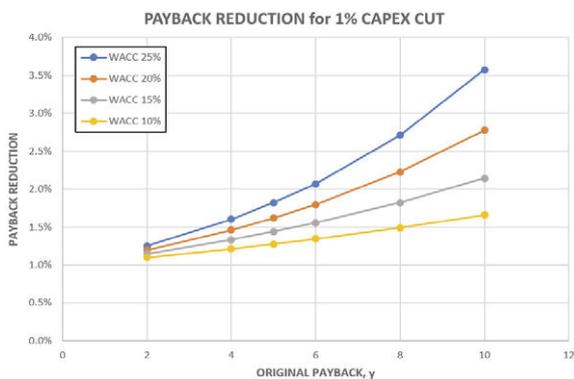


Figure 6. Effect of CAPEX reduction on payback period.

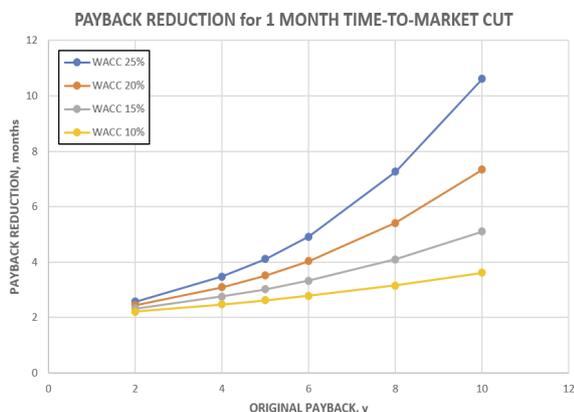


Figure 7. Effect of time-to-market time reduction on payback period.

What is in efficiency?

Grinding 200 000 tpy in a modular unit will likely have larger operational costs than grinding 1 million tpy. A market served by a mobile packer cannot grow beyond approximately 200 000 tpy, and discharging a vessel directly to a hopper-come-packer will probably be more expensive than using a suitable ship unloader and a silo, at least on the freight side.

But, still, these operations can thrive if they manage to compensate their technical efficiency disadvantages. Nobody should expect them to be better or worse in all regards! The following are some of the basic factors that can incline the balance towards low CAPEX projects.

The cost of risk – the advantages of lean

The weighed average cost of capital (WACC) exceeds 10% in many countries (Figure 5). From a financing perspective, the streamlined investment strategy allowed by the light-asset solutions described in the previous sections plays in the companies' favour.

All projects need to contain their investment, but that is even more the case at locations with high WACC or fringe markets. At a WACC of 5%, every 5% CAPEX reduction shortens the payback period by roughly 5%. But if the WACC is at 20%, the same CAPEX cut amounts to an 8% reduction of the project payback period. This is assuming an original payback of five years (Figure 6).

Time-to-market is king, as the cases presented above have shown. In addition to other advantages, an early physical presence in the marketplace creates large financial gains. A cut in the project execution time of one month causes a reduction of more than one quarter in the original five year payback period if the WACC is at 20% (Figure 7).

Project sales projections in standard feasibility studies tend to be routinely over optimistic. Approaches with smaller risks also tend to have an intrinsic advantage and can still benefit from market growth. This is especially true when a master plan has been prepared that allows for a staged and rational capacity growth.

Conclusion

Lean, agile, time-to-market, customer centric, cost conscious: these are business ideas whose importance relative to other 'harder' values is emphasised these days. Modular and mobile packing plants can provide an answer to these requirements, especially in small- to medium-sized markets and where financial constraints are higher or very quick action is needed. The packing manufacturers have developed an ample range of solutions that can fit into these markets, and have, in fact, helped to develop them. ■

About the author

Ricardo Gonzalez is Senior Consultant at GlobBULK, with 20 years of experience in the cement industry.