

CONTAINERISATION

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Abstract

The definition and principles of a container are outlined. The particular application at Hulett's Refineries, Rossburgh, is cited. Overseas developments are briefly outlined.

Introduction

With the increasing use of containerisation as a means of packing goods for transportation overseas, as well as in South Africa, it was thought that a worthwhile investigation would be to determine the effect of the introduction of this method of packing at the Refinery. The results obtained were sufficiently promising to warrant a more detailed study. It is hoped that this short paper will arouse sufficient interest to enable the Industry to be adequately prepared when containerisation arrives.

Definitions

Before attempting to outline the effects of containerisation, it would be as well to define the subject matter.

The definition of a freight container according to the International Organisation for Standardisation¹, is as follows:

"Freight container shall mean an article of transport equipment:

- (a) Of a permanent character and accordingly strong enough to be suitable for repeated use.
- (b) Especially designed to facilitate the carriage of goods, by one or more modes of transport, without intermediate reloading.
- (c) Fitted with devices permitting its ready handling, particularly its transfer from one mode of transport to another.
- (d) Or designed as to be easy to fill and empty."

The term "freight container" includes neither vehicles nor conventional packing.

Definition of general purpose of freight container

"Freight container of rectangular configuration, weatherproof, for transporting and storing a number of unit loads, packages or bulk materials, that confines and protects the contents from loss and damage, then can be separated from the means of transport, handled as a unit load, and trans-shipped without rehandling the contents."

There are at present two series of containers which have been standardised upon by the international committee, and these are shown in Table I and II.

Applications

These can be summarized by three major functions:

1. To provide weatherproof storage.
2. To confine and protect packs.
3. To be transported by various means as a unit load.

The advantages of weatherproof storage are more than obvious, especially when one is dealing with a perishable product like sugar. Far too often we have heard of cases in which a sudden storm caught a crew unloading a railway truck unawares or a vehicle driver forgot to take along a tarpaulin or the ship's hold could not be closed in time to prevent damage to sugar.

To confine and protect 20 metric tons of refined sugar from Durban to Walvis Bay or Durban to the Reef is no small undertaking. However, the following uncontrollable hazards no longer exist with containers:

- (a) Theft, at present very prevalent.
- (b) Multiple handling, an ever-present hazard.
- (c) Rain and weather hazard.

The only hazard which is still present is, of course, bad hystery driving when loading and unloading, and this is surely controllable.

Hysters capable of handling 20 metric ton loads have been developed and the advantages of transporting 20 pallet loads with one lift are self-evident.

Specific Advantages to the Refinery

Apart from the cost of raw sugar, one of the biggest expenditures at the Refinery is packing materials and this at present exceeds R1 million rand per annum.

A considerable amount of this is necessary in order to ensure that the package is strong enough to withstand the rigours of the South African distribution system.

With the introduction of containerisation, the need for this strength requirement is greatly reduced. The saving in packing materials that would be realised by the reduced strength requirements is of the order of R200,000 per annum. This is the maximum and is based on the assumption that a 2-ply valve sack and baler bag would be sufficiently strong to contain refined sugar on a container journey.

Claims involving damage to pockets and packed sugar at present cost the Refinery in excess of R20,000 per annum. When one considers that 45 per cent of the Refinery's inland despatches are trans-

ported at railway risk and that all shipments coast-wise are covered separately by insurance, the total cost of damage to packed refined sugar must be enormous. In addition, the current trend is towards an increasing pre-pack tonnage and as all pre-packs are carried at Refinery risk the value of the claims on the Refinery can only increase. The total cost should be reduced by at least 80 per cent by using containerised traffic.

The time-consuming practice of loading railway trucks and motor vehicles unit by unit would also be greatly reduced and with corresponding saving of labour costs.

Limitations

With all these advantages, there are of course drawbacks. Containers are not cheap items to produce, and neither is the equipment to handle them. They cost approximately R2,000 each and a typical cost of a fork-lift truck is approximately R41,000. An example of the cost involved in using containers overseas is as follows:

The hiring charge for a 20-ton container shipment between depots costs R270. A period of four days loading time is granted free of charge, thereafter R2 per day or part thereof.

Overseas Development

To present a brief summary of overseas developments is extremely difficult, owing to the fact that the container concept is so widespread. However, it would suffice to list some of the major overseas commitments:

- (a) The Port of London Authority R51.4 million.
- (b) Britain/Australia weekly service R154 million.
- (c) In America 80 steamship companies have to date invested \$2.5 billion and some 250,000 containers are at present in daily use.
- (d) In Europe the Port of Rotterdam's weekly volume of containers in 1968 was 2,500 compared with 1,600 in 1967.
- (e) The shipping subsidiary of Tate & Lyle Limited has invested R40,000 in 20 containers solely for use by the Refinery for the shipment of bulk sugar to customers.

A typical cost reduction schedule showing the effect on overseas traffic is enclosed as Appendix A.²

Before concluding, it should be noted that a modification of the container concept has been introduced with a fair amount of success in Australia. This system, called the Canetainer System, involves the use of 10-ton containers for the transporting of cut cane from the field to the factory.

Acknowledgement

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References

- 1. ISO/TC 104 (secretariat - 61) 138 F/F draft 150 recommendation No. 1055.
- 2. Proceedings International Container Symposium London - 1968.

TABLE I

Container Designation	Height	Width	Length	Rating
	mm	mm	mm	m Tons
1 A	2440	2440	12200	40.640
1 B	2440	2440	9150	30.480
1 C	2440	2440	6100	20.320
1 D	2440	2440	3050	10.160
1 E	2440	2440	2032	7.112
1 F	2440	2440	1175	5.080

TABLE II

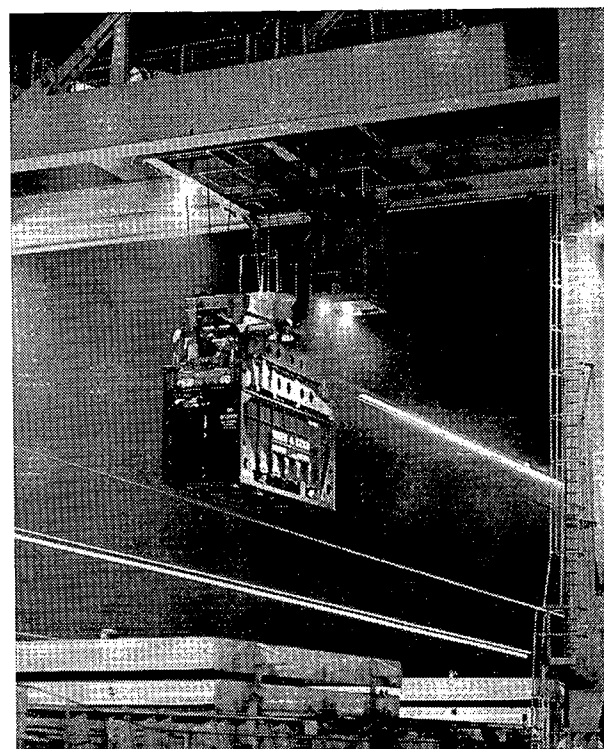
Container Designation	Height	Width	Length	Rating
	mm	mm	mm	m Tons
2 A	2100	2300	2920	7
2 B	2100	2100	2400	7
2 C	2100	2300	1450	7

RATING = MAX GROSS WT.

APPENDIX A

Comparison of Conventional and Container shipping costs on International trade routes to and from the United Kingdom port to port excluding inland transport.

World Zone	Conventional R. per ton	Container R. per ton
South America	43.4	23.2
North America	38.0	17.0
Africa	46.4	21.6
Middle East	39.2	24.6
Far East	46.6	27.0
Australia	58.8	33.8
India	48.0	29.8
Soviet Bloc	33.2	16.2



Photo—Tate & Lyle Times.

Discussion

Mr. Collingwood: Would a container in this country belong to the railways or to the manufacturer?

If a twenty tone container requires twenty pallets to load it, do the pallets remain in the container?

Mr. Wilkes: The general manager of the South African Railways says that the S.A.R. will provide the containers, including the pallets.

The actual packing must be done by the consignor.

Mr. Hoekstra: Does the type of container used for sugar limit its suitability for use for other products, i.e. for return freight?

Mr. Wilkes: Tate and Lyle used containers for bulk sugar but at this stage I think we should restrict ourselves to containers for bagged sugar, packed on pallets.

We are not responsible for filling a container for return freight.

Mr. Renton: Was containerisation in Britain developed by British Railways or by private enterprise and when are the railways in this country likely to introduce such a system?

Mr. Wilkes: British Railways do not operate in the same manner as South African Railways.

The Port of London Authority started containerisation between U.K. and U.S.A. and savings were such that British Railways quickly followed suit.

The South African Railways are interested in containers but no date has yet been set for their introduction.

I understand "Bosal" exhausts are using containers for exports, but only from the dockside.

Mr. Francis: How does containerisation affect storage problems?

Mr. Wilkes: Containers do assist with storage. Using straddle trucks, they can be stacked three high.

The trucks can handle up to 42 tons and the time spent in handling freight is reduced considerably.

Mr. Alexander (in the chair): The cost of containers is so high that a container would be a rather expensive method of storage.

Dr. Matic: A small manufacturer may not have the equipment to unload these containers.

Mr. Wilkes: The standard container is 8 feet by 8 feet and has large doors at one end through which can be driven a hyster complete with pallet.

Mr. Allan: If the container arrived on a trailer would the trailer be left at the factory? It would be quite a problem to lift the container off the trailer.

Mr. Wilkes: There is a system in America where the container, using the truck's pneumatic system, is lifted a few inches off the truck and is supported on legs while the truck drives off.

Mr. Poree: If the consignor wants the container back he is presumably responsible for the return journey, so must he try and develop a return trade?

Mr. Wilkes: As both containers and transport will belong to the railways, there will be simply a demurrage problem, as at present.

An outside private organisation might be used for loading containers and bringing them to a railway depot.