CHAPTER 6

FINDINGS, SUGGESTIONS AND CONCLUSION
Introduction:

Materials Management is the science of planning and programming, purchasing, inventory management and inventory control. The objective of materials management is to maximise the profit by reducing the cost of materials by purchasing the right quality, right quantity at the right time and at the right price.

The aim of any materials manager or business is to increase profitability of his company by either increasing the sale or decreasing the materials cost respectively. Now the number of cement factories in Gujarat is about 50. The cement plants range from big factories to small ones and the competition is very high in the market. As a result, to increase the sale is not an easy task, the easier thing is to reduce the cost of production and the cost of materials. A saving of one rupee in the procurement of materials is equivalent to profit obtainable by a ten rupee increase in sales revenue.

The study has covered various aspects of materials management and has examined them in case of cement factories in Gujarat for the period from 1987-88 to 1994-95. These factories were established in various years, some of them during 40s such as Shree Didgvijay cement, others during 50s and the last factory was established in 1994 and the L & T plant in 1995.

These cement factories selected for study have been categorised as large manufacturers.
All the factories are functioning under the company Act, 1956.
From the study, it has been observed that the cost of materials accounts for more than 60 percent of the total cost of expenditure.

The progress of any society or nation is directly related to the nature and extent of constructional activities which in turn means the use of cement. The first attempt to manufacture cement in India was in 1904 in Madras by the South India Industrial Company Limited. After this effort, a factory was established in "Porbander" Gujarat by The Indian Cement Company Ltd. during 1912-13 though it started production in October, 1914. The installed capacity in the year 1994-95 was 82.3 million tonnes.

The present per capita consumption is at an extremely low average level of 64 kg. of cement per person in India as against about 693 kg. in Italy, 591 kg. in Japan, 442 kg. in South Korea, the world average being 210 kg. The highest per capita consumption in India is in Gujarat with about 106 kg. and the lowest is in BIHAR with about 13 kg.

Until the late 70s, the cement industry was always characterised by rampant shortages, necessitating regulation by way of price and distribution controls. It was only towards the late 70s that cement growth picked up when the Government of India announced its policy of assuring 12 percent post-tax return on net worth. This awakened the industry to new vistas of growth. Encouraged by the above policy announcement, a shot in the arm was provided by announcing the policy of partial decontrol in the early 80s. This
pragmatic policy of the government enabled the industry to improve its fortunes with heavy increase in the installed capacity to 39 million tonnes in the year 1988-89 from a low of 27.9 million tonnes per annum in 1980-81.

Since then, the industry has been growing at a very reasonable pace and has reached an installed capacity of 79 mtpa per annum and is likely to break the 100 million tonnes per annum barrier by the end of the century.

Cement decontrol (partial 1982, total 1989) provided the first experiment in economic liberalisation of the Indian economy. The experiment has produced excellent results. Till date, cement production has increased over two and a half times, after the introduction of partial decontrol and then full decontrol.

The use of cement in India increased rapidly by four times from 13.6 million tonnes during 1969-70 to 60.9 million tonne by 1994-95. However between 1969-70 and 1981-82, the year of introduction of partial decontrol, the growth was slow, the average growth was only 4.4 per cent. Between 1981-82 and 1989-90 the rate accelerated to 8.9 per cent as the consequence of decontrol and high demand.

The latest statistics reveal that India has 54 large companies having 106 plants in all. The installed capacity is 77 million, while the actual cement production comes to 58.3 mt. And India today is the fourth largest cement producing country after China, Japan & USA. Capacity wise, the western region dominates the rest of the country with 40.5 percent followed by the southern
region with 26.9 percent, northern region 20.6 percent and the eastern region by 10 percent. India's contribution to the world cement production is about 5 percent. But the equilibrium between demand and supply of cement has never been achieved in India. Till the end of the VI Five Year Plan, the requirements were partly met by imports from Japan, Romania, Poland and Korea. In the year 1988-89, cement industry started having surplus of around 1.75 million tonnes. The exports have gone up to 3.17 million tonnes during 1994-95 and the government has fixed a target of five million tonnes by 1996-97. Most of the exported cement goes to Bangladesh, Nepal, Thailand, Sri Lanka, Pakistan, UAE and Qatar.

Basically, in the cement industry, there are two main processes – dry and wet. Since the wet process is considered to be obsolete, most of the companies are converting their plants into dry process plants. At present, 84 percent of the total capacity comprises of dry process, 12 percent wet process and two percent semi-dry process.

The main inventory in cement companies comprises of limestone, breeze coke, gypsum, clay, laterite, chemicals, stores and spare parts, loose tools, fuel, clinkers, work-in-process, finished goods, wastage scrap and other materials.

Cement industry is recognised as the parameter of industrial development of a region. Gujarat has been in the forefront in cement production because of the availability of raw materials like limestone and lignite. High grade limestone is available in
Saurashtra and Kutch regions. The long coastal line helps in speedy transportation of the product.

Ahmedabad Electricity Company (AEC), has started manufacturing lime pozzolana cement. It is made from fly ash acquired as the by product of the AEC power plant. A landmark in waste utilisation and pollution control, the lime pozzolana cement is highly cost effective substitute to ordinary portland cement and is used for masonry, plastering, flooring and foundation.

The consumption in Gujarat is estimated to reach 5381 thousand metric tonnes per annum in the current year and expected to reach 8644 thousand metric tonnes per annum by the year 2000. At present there are 103 plants belonging to 53 companies and majority of these have capacity of one million tonne or more.

The industry is facing high tariffs - high excise duty, sales tax, royalty on limestone and coal etc. The effective burden on cement amounts to as much as 35 percent of the retail price of cement and 47 percent of the ex-factory price excluding excise, sales tax and freight. The levies abroad are far less, eg. only 20 percent in Taiwan, 10 percent in South Korea and 5 percent in Sri Lanka. Also the transportation and distribution cost is 11 percent of total cost of production of cement.

Gujarat is a major cement producing state with about 9 percent of the total capacity of Indian Cement Industry. There are 8 major cement plants in Gujarat.
Materials Management Control:
The selected cement factories have introduced numerical codes for materials identification.

The various classification techniques - ABC, HML, VED, etc. are being used by these factories. The ABC technique is not being used in its true spirit. What these companies are doing in the name of ABC analysis is, in fact, HML classification based on unit price of a item.

The selected companies have been developing standards and thereby reducing varieties and inventories. None of the factories has adopted international classification for goods and services. The VA technique is one of the most important accounting techniques of inventory control and widely applied for cost reduction and quality improvement. In order to achieve better results, ABC analysis may be synthesised with VA specially for A and B category items.

Purchase Management:
Purchasing management is the most important department as every rupee saved in purchasing is like a new rupee of profit. Purchasing management has a good potential of becoming responsible for increasing profit in cement factories.

The lead time in the selected cement factories was considerably long. The administrative lead time can easily be reduced with the help of purchase files.
Inventory Management:

The scientific management of inventory in the selected cement factories can reduce inventory investment thereby increasing the profitability and liquidity. The 25 cement factories in India have inventory worth Rs. 503 crores at the end of the year 1990-91 which represented more than 20 percent of the total income and more than 61 percent of the current assets. At the same time inventories absorbed more than 80 per cent of the net working capital of these companies.

The main factors which considerably affect the inventory management in the cement industry are: Inventory operating costs—ordering costs, carrying costs and stock-out costs; lead time; operational need or demand property; nature of the product, availability of funds, government restrictions, etc.

Inventory ordering cost is the cost of placing an order which is considered to be independent of the size of the order. None of the cement companies in Gujarat calculates ordering cost.

Inventory carrying costs are those costs which are incurred in keeping the inventory in store until used for production or sales. These costs vary from concern to concern depending upon the kind of materials stored, the personnel employed in stores, the equipments used in stores, etc. But none of the companies are calculating the inventory carrying costs. But it is estimated that the cost varies between 20-45 per cent per annum.

Lead time is the interval between the time an item reaches the order level and the actual receipt of the material. Lead time has two parts, administrative time and delivery time. The lead time
in cement factories under study is considerably long. The administrative lead time can easily be reduced by expediting the movement of purchase files. The management should try to reduce it by taking followup action specially for vital and high consumption items.

The basic method of controlling the size of inventory is the fixation of levels for various items of inventory. These levels are minimum level, maximum level, safety stock level, re-order level, buffer stock level, replenishment level, optional replenishment, etc. These levels are noted on inventory records and are used as indicators of the proper time when some action is necessary. It should also be noted that these levels are not fixed on a permanent basis but are liable to revision in accordance with the changes in the factors determining the levels.

The key factor in developing an inventory model (EOQ model) as suggested by F. Hanis in 1916 is that management is confronted with a set of opposing costs. As the inventory size increases, the carrying charges will increase, while the ordering costs will decrease. On the other hand, as the inventory size decreases, the carrying costs will decrease, but the ordering costs will increase. Economic order quantity (EOQ) is that size order which minimizes total annual cost of carrying inventory and cost of ordering. But while applying an EOQ formula, a great care should be taken regarding the units used in calculating order quantities.
The cement companies do not fix the EOQ on any scientific basis from the concern's overall standpoint and the decisions concerning order quantities are dominated by the standpoint of some particular interest such as transportation, Government restrictions on stock limits, etc. The companies under study observe that determination of EOQ for each and every item is an exercise in futility because of a large number of inventory items used in production process, non-availability of required information at a proper time, regular fluctuations in prices, ever changing policies of the management as well as of the government etc.

The proportion of raw materials as the percentage of aggregate inventory in selected cement companies had increased from 7.41 percent in 1987-88 to 22.18 percent in 1995-96. The stores and spares inventory in the selected companies was of the order of 13.67 months' consumption at the end of the year 1987-88. The percentage of stores and spares was less in the aggregate inventory of S.D.C and S.B.C. Compare with B.A.C. and B.C.C.

The percentage of work-in-process inventory to aggregate inventory in selected companies had risen from 12.99 in the year 1987-88 to 19.20 in the year 1993-94 and no serious steps were taken to arrest this mounting trend till 1995-96 came down to 12.06 percent.

Though the percentage share of finished goods to aggregate inventory in the selected companies had declined from 21.84 in 1987-88 to 15.84 percent in 1995-96 and still it is high
percentage, because no use to keep finish goods in cement industries.

Suggestions:

i) Inventory ordering and carrying costs should be calculated by all the cement plants under study on a regular basis.

ii) The EOQ, order point and stock levels should be fixed scientifically for all types of inventory items after taking into consideration all the relevant factors.

iii) Inventory levels and ordering point for A & B category items should be reviewed and revised on regular basis in all the concerns under study.

iv) No need to keep finished goods in inventory.

Store Management:

In cement factories, stores play a vital role and it is directly related with user department in its day-to-day activities and provides uninterrupted service specially to manufacturing department.

The cement factories working in Gujarat have followed the closed system of storage except for raw materials and other bulky items like limestone, coal, grinding media, clay, gypsum, oil drum, etc., which are stored either in the open area or in the stock yard. Effective organisational set-up of stores, situation and layout of store-room, ability and number of store-keepers and security measures are the foundations upon which the success of stores management depends in a concern.
On the spot study, we observed that the cleaning and sweeping was not done in some of the stores regularly. Space for keeping inventory items in stores was not sufficient and more than one item were stored in single bin. There is no proper Kardex system for recording of store items due to which a lot of time is wasted in locating the item.

Spare parts in cement companies present some peculiar problems. The major problem with spare parts is the uncertainty with regard to demand. A part may go on working for years without a problem or a new part may suddenly fail for no obvious reason.

Suggestions:

1. More room is required for storage with necessary facilities, for stocking in B.S.C.

2. Training from time to time is required for store-keepers in inventory management.

3. Also they should train the staff working in stores and in plants in fire-fighting techniques.

4. Proper and scientific Kardex System should be implemented.

5. Spare parts inventory in all the concerns under study should be reduced to six months consumption.

6. They should verify their stores at least once in a year.
CONCLUSION:

At the end, it may be concluded that the existing system of inventory management in cement industry is not satisfactory and needs improvements in all directions without delay. The inventories available with the companies are not properly utilised or exploited to their maximum consumption capacity. It is quite likely that the companies under study could have contributed more to their cost control and cost reduction programme than they have, had they been equipped with modern tools and techniques of inventory management and control, proper inventory accounting and recording and scientific inventory control.

The present study has tested fully its hypothesis that the cement industry can boost its profitability and productivity through scientific inventory management system, and that the effectiveness of inventory management depends on cost control and cost reduction which in turn increases the profitability and productivity. Had the Cement Companies in Gujarat managed inventories in an efficient and scientific manner, they would not only have generated resources for their own expansion but would also have contributed towards the economic growth of the country. Modern techniques of inventory management are now-a-days being followed by several cement companies in Gujarat.

Now a days pollution control is being improved widely in cement plants in Gujarat and devices have been imported and installed to control air pollution. G.S.C., and G.A.C. have been awarded the ISO 9002 certificate for adopting an eco-friendly approach.