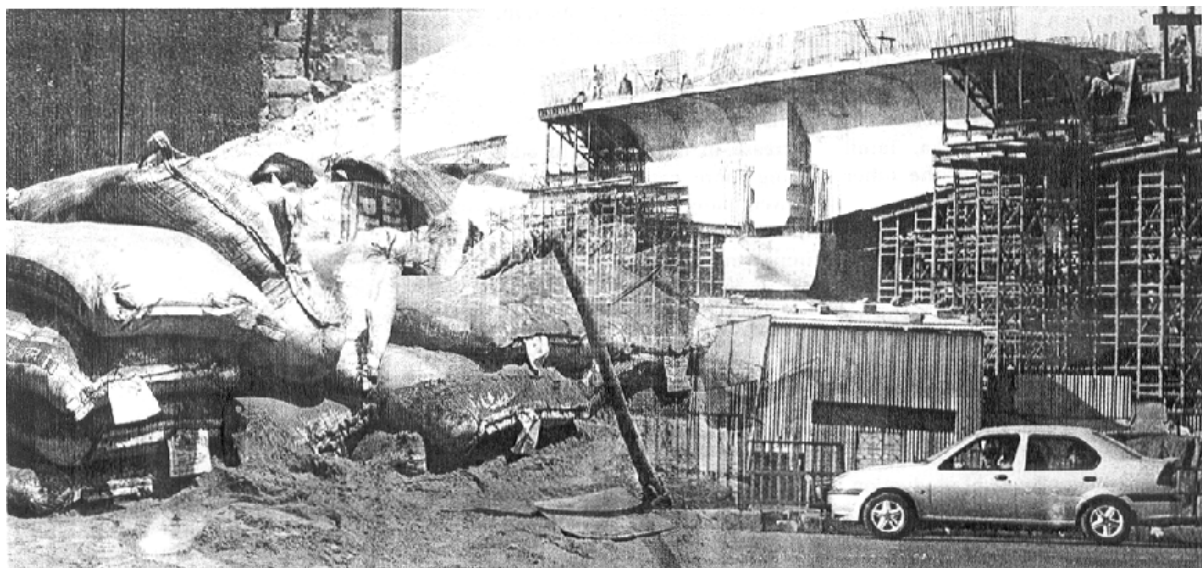


Expanding Cement Capacity



The cement industry today has the second highest growth rate in the country after steel among infrastructure related industries. Evidence of this comes from the capacity expansions, higher production and dispatches taking place, and rising cement prices.

The growth in the cement sector is being driven by various factors. These include an increase in industrial production, large infrastructure investments, expansion in the manufacturing sector, greater construction activity, and growth in exports.

Yet, the average yearly growth rate of about 7 per cent is still below the 20 per cent level achieved in 2000. Industry indicators point towards further growth in the cement sector in the coming three to five years. These indicators are: cabinet approval of 100 per cent foreign direct investment in the construction sector; a number of infrastructure projects coming up, especially in power, energy, ports and roads; continuing growth in the manufacturing sector; higher demand from the housing development sector; the Commonwealth Games 2010 in Delhi; and the ambitious Mumbai urban development plan.

Cement industry's captive power capacity (by fuel)		
Fuel	MW	% share
Steam	917	38.0
Diesel	1,419	58.8
Gas/ Naphtha	3	0.1
Hydel	4	0.2
Wind	67	2.8
Unclassified	6	0.2
Total	2,415	100.0

Cement industry's captive power capacity (by fuel)		
Size range (MW)	MW	% share
1-5	136	5.6
5.1-10	154	6.4
10.1-25	921	38.1
25.1-50	864	35.8
50.1-100	340	14.1
100+	340	14.1
Total	2,415	100.0

Cement companies can meet this growing market demand through either capacity expansion or acquisitions. While acquisition, as already executed by two large companies in the sector, may have helped achieve faster and more cost-effective expansion, additional growth will require new capacity. At a demand growth of about 8 per cent, industry observers expect new capacities to come up in north India.

The cement companies are fairly well distributed across all four geographical regions of the country. There are about 130 large plants with an installed capacity of 152 million tones. Some of the large cement manufacturers are the Aditya Birla Group, the Gujarat Ambuja Group, Madras Cements, ACC and India Cements.

While Rajasthan, Madhya Pradesh, Andhra Pradesh, Tamil Nadu and Maharashtra lead in production, Uttar Pradesh and Maharashtra consume far more cement than the other states. These two states have a larger number of infrastructure and manufacturing projects under planning or construction. Hence, they are expected to contribute the most to the demand for cement in the coming years. Karnataka, Tamil Nadu and Gujarat will be the other major contributors.

Electricity is one of the major costs of cement production. It is expected that the captive power base of the industry will increase along with capacity expansion. Depending on the extent of use of captive power in the cement manufacturing process, the cost of electricity is anywhere between 20 per cent and 35 per cent of the total cost of production. In the last three years, the captive power capacity of the cement industry has increased by at least 500 MW and accounts for about 20 per cent of the total estimated growth in captive power.

The use of grid power versus captive power varies from 100 per cent to 5 per cent. In cement units where captive power is used only for standby purposes and is most often a diesel generation unit, the cost of grid power is lower than captive power by about Rs 1 per unit. However, in units where captive power caters to the base load, the cost of captive power is cheaper than grid power by Rs 2 to Rs 3 per unit. The higher the dependence on captive power, the lower is the unit cost of electricity as compared with the state-supplied power.



The cost of cement production can be significantly reduced if the cost of electricity decreases marginally. A 5 per cent decrease in the cost of electricity can translate into a 15 per cent to 20 per cent increase in net profits. In addition to using more captive power than grid power, many companies employ energy management strategies for not only improving operating efficiency but also for power plant output.

Some of the common energy management measures taken for improving process efficiencies relate to the raw mill, coal mill and feeding systems in the cement mill. These measures include replacing the inlet venturi to the raw mill with a straight line duct to remove DP, removing the coal mill damper, modifying the hot air cyclone dust transport system in the coal mill, removing the PH WHR fresh air fans' suction box to increase fan flow by 3 per cent, introducing high efficiency fans for clinker cooling, installing higher efficiency separators in the coal mill, and installing an alternative fuel feeding system at the cement mill booster fan.

Cement industry's captive power capacity (by state)	
State	MW
Andhra Pradesh	380
Assam	4
Bihar	2
Chhattisgarh	90
Delhi	-
Gujarat	360
Haryana	10
Himachal Pradesh	40
Jharkhand	40
Karnataka	368
Kerala	3
Madhya Pradesh	342
Maharashtra	118
Meghalaya	-
Orissa	20
Punjab	61
Rajasthan	320
Tamil Nadu	229
Uttaranchal	-
West Bengal	11
Total	2,415

In addition, while some companies have set up new captive power plants to reduce production losses due to inadequate power supply, others have improved power plant operations by measures such as replacing existing fan blades with higher efficiency ones, and installing VVVF drives for FD fans. The average energy savings derived from operations efficiency and power plant improvements have been in the region of 11-13 per cent.

Electricity being a major cost of production in the cement industry, capacity expansion in this sector does not only mean more power requirement but also better energy management practices to decrease the overall cost of cement and improve profit margins. Most of the large units already have committed yearly investments to improve the energy efficiency in their cement manufacturing process.

Reference book:

Power Line, May 2005