PROFILE OF CEMENT INDUSTRY IN INDIA:

Till the early 80's cement production capacities were much less than the demand. Even after independence, until 1982 the stringent controls imposed during the World War II had continued. The government, being the largest buyer of cement for infrastructure projects found the price controls convenient. The cement price was kept low under controlled economy. To address to the problem of mismatch in demand and supply, the government imposed stringent controls on distribution of cement. Cement was scarce and commanded a high premium in the black market. In February 1982, there was partial decontrol. A proportion of the production was treated as levy cement and bought by the government at a fixed price. The left over was allowed to be sold at market prices. The environment for the liberated cement industry turned competitive. During 1980's, the technology in the production of cement changed. This can be attributed to two important factors. Manufacturers of cement moved away from the wet process technology to dry process technology.

1. Manufacturing units moved from small kilns of 600-1200 tons per day (tpd) to huge of 3000 tpd.

Industry Features

It is important to mention special features for the growth, significance and development of cement industry in India. They are mentioned here under. It is location-specific. The plant has to necessarily located closest to the main raw material viz. limestone deposits. Being location specific, there has been a concentration of cement plants in certain states...
like Gujarat, Karnataka, Tamilnadu, Rajasthan, Madhya Pradesh and Andhra Pradesh.

With no limestone deposits the eastern states have practically no plants.

a. Cement is stored at plants in silos with capacities of 8 to 10 days production.
   When the silos are full, production has to be curtailed and limited to the quantity that could be dispatched.

b. Transportation costs has an important bearing on the final price of cement, road transportation in turning more and more uneconomical with increasing loads.

c. Cement industry caters to local market needs. Only a small portion of production is exported. Demand for cement varies with the tempo of construction of housing, real estate and infrastructure projects in the country.

d. For Indian cement industry, import is not a threat. Very few Indian ports have bulk cement handling facilities. The $ 53 per ton price of local cement is competitive. Again with strong brand loyalty for indigenous cement, foreign cement sellers have to have an extensive and expensive distribution network.

e. Another peculiar feature of the industry is there is significant variation in price volume sensitivity and those changes have differential impact on profitability of different companies. Profitability of a company is more sensitive to changes in price than to changes in volume.

Cement Sector Update:

In the month of November 2005, the cement industry, which operated at nearly 85% capacity utilization, witnessed a healthy 8.1% yoy production growth and 7.1% yoy dispatch growth. Production and dispatch for the period April – November 2005 grew at robust 8.5% yoy and 12.6% yoy respectively. The strong demand in northern and southern regions kept the growth momentum intact with dispatches growing by robust
17.9% yoy and 11.1% yoy respectively. However, the southern region witnessed a fall in production and dispatch by 6% mom and 9% mom sequentially due to heavy rainfall during the month in states of Andhra Pradesh and Tamil Nadu that account for nearly 80% of total installed capacity in the region.

November turned out to be a mixed bag for the cement industry as the major cement companies reported production and sales numbers for the month. The largest cement manufacturer ACC registered the highest sales growth while the AV Birla Group posted a decline in sales. Sales of Gujarat Ambuja (GACL) picked up pace in November and the growth figures showed improvement after remaining subdued in September and October.

In the month of November 2004, ACC, the largest cement company in terms of capacity, operating at nearly 99% capacity utilization produced 1.51MT and dispatched 1.48MT of cement. Sequentially, company’s production grew by 2% mom while sales dipped by 2.1% mom. The growth was driven by strong demand in Himachal Pradesh and Karnataka that accounts for nearly 46% of company’s installed capacity. Capacity in Himachal Pradesh has reached a saturation point as the state is operating at over 100% capacity utilization.

GACL posted a modest 4% yoy growth in production operating at 86% capacity utilization. Dispatches of the company showed signs of revival after remaining subdued in September and October as it moved up by 4.9% yoy. Ambuja Cement Eastern Limited, which has ceased to be a subsidiary of GACL, posted a robust 9% growth in dispatches in November while the growth in production remained flat.
### EXHIBIT – 3.1A

Production and Dispatches figures for November 2005

<table>
<thead>
<tr>
<th></th>
<th>Production (MT)</th>
<th>Dispatches (MT)</th>
<th></th>
<th></th>
<th>yoy (%)</th>
<th></th>
<th>Dispatches (MT)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nov-05</td>
<td>Nov-04</td>
<td>yoy (%)</td>
<td>Nov-05</td>
<td>Nov-04</td>
<td>yoy (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>1.51</td>
<td>1.43</td>
<td>5.6</td>
<td>1.48</td>
<td>1.38</td>
<td>7.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grasim-Ultratech</td>
<td>2.24</td>
<td>2.22</td>
<td>0.9</td>
<td>2.19</td>
<td>2.23</td>
<td>(1.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GACL</td>
<td>1.05</td>
<td>1.01</td>
<td>4.0</td>
<td>1.07</td>
<td>1.02</td>
<td>4.9</td>
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</table>


### EXHIBIT – 3.1B

Production and Dispatches figures for April – November 2005

<table>
<thead>
<tr>
<th></th>
<th>Production (MT)</th>
<th>Dispatches (MT)</th>
<th></th>
<th></th>
<th>yoy (%)</th>
<th></th>
<th>Dispatches (MT)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Apr-Nov05</td>
<td>Apr-Nov04</td>
<td>yoy (%)</td>
<td>Apr-Nov05</td>
<td>Apr-Nov04</td>
<td>yoy (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>11.40</td>
<td>10.81</td>
<td>5.5</td>
<td>11.42</td>
<td>10.76</td>
<td>6.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grasim-Ultratech</td>
<td>17.94</td>
<td>16.76</td>
<td>7.0</td>
<td>17.86</td>
<td>16.78</td>
<td>6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GACL</td>
<td>8.42</td>
<td>8.28</td>
<td>1.7</td>
<td>8.45</td>
<td>8.28</td>
<td>2.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The decline in volumes of Ultra Tech Cement by 9.6% yoy resulted into fall in overall volumes of Grasim – Ultra Tech combined by nearly 2% yoy. However, dispatches of Grasim grew by 6.4% yoy. During the month Grasim operated at over 100% capacity utilization while that of Ultra Tech was at 72% lower than the industry average of 85%. Shree Cement commissioned a 1.2MTPA cement plant at Pali district of Rajasthan during the month. The total capacity of the company post commissioning of this plant has reached to 3.8MTPA.

With the third and fourth quarters being the peak season for the cement industry as the construction activities are back on track after monsoons, the off take for cement is likely to move up. For the full year we expect the industry to grow by 8.5-9% yoy. With no fresh capacity additions coming up except the 1.2MTPA plant of Shree Cements, which was commissioned in November 2005 and any Greenfield project commencing from this point would get operational only after 18-20 months, supply for cement is likely to remain tight. The continuous increase in demand and incremental demand from disaster hit areas might lead to hike in prices of cement coming times. Overall, the outlook remains positive.

PRODUCTION PROCESS IN CEMENT MANUFACTURE

Cement is produced in four basic stages, i.e., quarrying and crushing, grinding and blending raw materials, clinker production, and finish grinding. In the dry process, the ground and blended raw materials are fed to the combustion zone of the kiln. The retention time and the heating temperature are one hour and 1300-1400 degree centigrade respectively. Coal is crushed and pulverized for efficient use. The product from the kiln consists of dark hard nodules called clinker, the nodules are cooled in the clinker cooler prior to storage, and there after ground in a cement mill with a small amount of additives,
which retard the cement setting time. Finally the cement is packed in bags for transportation. With marginal variations all manufacturers of cement use the same standardized process. Cement is in a sense, commodity. Manufacturers have however tried to differentiate their products by variations in quality of their inputs. Cement production is power intensive. With bulk production and distribution of cement infrastructure set up of power, roads and railways influence the viability of individual manufacturing units. With universal technology, access to technology is easy. Cement plants are capital intensive and have relatively long gestation period. The accepted norm is the estimated cost of 85-90 per ton for putting up a new plant and at least two years of gestation period.

PERFORMANCE OF CEMENT INDUSTRY

Cement industry has gone through its ups and downs is over eighty five years of its existence. Till 1982, with government control on pricing and distribution, industry remained unattractive to investors. Associated Cement Company (ACC) dominated the industry. Partial decontrol in 1982 and total decontrol in 1982 provided the opportunity for rapid expansion of the industry. A number of new players entered the field. Installed capacity increased from 29 million tons in 1982 to 58 million tons in 1988. With expanded capacity chronic problem of cement shortage was solved. However, as it often happens with the process of decontrol, the industry experienced spurt in investment that could not be justified by market forces. Investments were made in the belief that price realization would be such as to provide a minimum of 12% post-tax return on net worth, which the government had declared as a fair return for the industry, as far back as 1977. However, cement marked moved into a surplus situation. As a consequence, there was cut throat competition leading to non-remunerative price and a deepening financial crisis.
According to the statement of the president of the CMA in 1990, “Sagging financial health and poor/ negative rate of returns for most units do not make investment in cement an attractive propositions”\textsuperscript{9}.

With liberalization process initiated in July 1991, the industry witnessed another spurt in capacity creation \textsuperscript{10}. The stock market in 1991-92 registered euphoric rise. Major initiatives in de-licensing, privatisation and deregulation of industry, prompted an anticipation of major private initiatives in infrastructure sector. With easy access to primary issues in capital markets, and relatively easy access to technology, a number of business groups joined the already over expanded cement sector. Sentiments overpowered fundamentals. ACC, despite its lack lustre performance raised substantial financial resources, over Rs. 110 crores, from the market by issue of right shares at a grossly over valued price of Rs. 4,000 per share. Cement company shares became favourite scripts for bull runners. The industry witnessed spurt in investment resulting in creation of substantial additional capacity \textsuperscript{11}. As against 67.7 million tons capacity in 1994, the year ends capacity for 1999-2000 is estimated at 114.2 million tons. The second half of 90s has witnessed far reaching structural changes in the Indian cement industry \textsuperscript{12}. The demand for cement has been sluggish. Partly due to budgetary constraint and partly due to the policy of liberalization, the government had reduced its commitment to new infrastructure projects. After the defeat of ruling congress party in 1996, the country has had three-coalition government s in three years. Elections in 1998 failed when the Vajpayee government was voted out by a single vote in April 1999. The ensuing election in Septemeber – October 1999 gave a mandate of sort to BJP led 24 party coalition government of Mr. Vajpayee. Depressed urban housing market of 1999-2000 however has seen a revival of industry in general and cements industry in particular.
with volumes and prices indicating upward turn \(^{13}\). In face of falling prices and falling revenue, many of the cement companies faced financial ruin in recent years. In 1997-99, the cement industry underwent a major structural change through consolidation \(^{14}\). Mergers and acquisitions became order of the day. Smaller players who used debt to fund expansion of capacity found it difficult to survive the industry down turn in last three years. With depressed cement prices, acquisition of smaller units by larger companies dominated the consolidation efforts because:

- Such acquisition was cheaper alternative to creating new capacity.
- No gestation period was involved
- Unlike new capacity creation, acquisition did not accentuate demand and supply mismatch.

The price of acquisition has varied from \$35-45\ per ton for weaker cement units (like Mode and Shree Dig Vijay) to \$7-75\ per ton for stronger cement units (like Raasi and TISCO). This compares favourably with \$85-90\ per ton cost for putting up a new plant and at least two years of gestation period\(^{15}\).

An important aspect of the recent acquisitions is that multinational giant cement companies have indicated interest in but out of Indian Cement companies. Their acquisitions have been guided by the fact that next to China, India is the second biggest Asian market for cement. It is also pertinent to note that despite sluggishness, growth of demand for cement has remained positive and that in today’s situation, the low valuation of cement units has been favourable for the buyers. With 35 players and many more mini-cement plants producing 91 million tons, India remain the most fragmented market not only in Asia but even in the world.
The acquisition and consolidation of capacities is the dominating feature of the industry in 2000. Besides Lafarge, Blue Circle, Italia Cement, Cemax have looked seriously at the acquisition possibilities. A commentator in Economic Times listed the following strategic shift in Indian cement industry in recent years.

- Small cement units look out for joint ventures or disinvestments.
- International cement giants eye Indian market.
- Companies are on war footing to increase market share, even sell at loss.
- Large cement companies enhance capacity by acquisition.
- North based companies look out for entry in insulated southern markets.
- South based companies try to capture lucrative own markets.

With consolidation and structural changes, the relative position of leading cement companies in the industry has changed. Exhibit 3.2 gives the relative ranking of four Indian companies in the cement sector. It is pertinent to note that two of the top four companies, L& T and Grasim are conglomerates and their cement interests account for limited proportion of their total revenue, while for remaining companies, ACC, India Cement and Gujarat Ambuja Cements Ltd, cement is their only or predominant business activity. It is also to be noted that after purchase of 10.4% of L&T equity from RIL by A.V. Birla group’s Grasim, L& T and Grasim’s combined capacity will exceed that of GACL. L & T Ltd. has demerged its Cement Business with effect from July 2003. Hence L & T Ltd., and Grasim Co Limited put together, the capacity stood at 28 MTPA.
**EXHIBIT – 3.2**

**INDIA'S LARGEST CEMENT COMPANIES POST-ACQUISITION**

<table>
<thead>
<tr>
<th>Company</th>
<th>Capacity Metric ton per annum</th>
<th>Cement as % of sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>GACL - ACC</td>
<td>21</td>
<td>95</td>
</tr>
<tr>
<td>L &amp; T</td>
<td>16.5</td>
<td>20</td>
</tr>
<tr>
<td>Grasim</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>India Cement</td>
<td>6.6</td>
<td>92</td>
</tr>
</tbody>
</table>

GENESIS AND GROWTH OF ULTRA TECH COMPANY (P) LIMITED:

UltraTech was started initially by the L & T Limited. Later the cement division of the company was acquired by the Aditya Birla group in July 2004 and renamed the brand as UltraTech\textsuperscript{18}. APCW at Tadpatri in Andhra Pradesh, the respondent organisations, was a part of this acquisition process. Hence, it is necessary to mention the organization profiles of both the companies.

L&T LIMITED:

Founded in 1938, Larsen & Toubro Limited (L&T) is one of Asia's largest vertically integrated Engineering & Construction conglomerate with additional interests in Information Technology and electrical business. A strong, customer-focused approach and the constant quest for top-class quality have enabled the company to attain and sustain leadership position for over seven decades\textsuperscript{19}.

Serving the core sectors and infrastructure of the economy, L&T has pioneered spectacular achievements in Indian industry. Many of the engineering and construction projects executed by L&T have set new benchmarks in terms of scale, sophistication and speed. So do many buildings, ports, highways, bridges and civil structures around the country, which are widely regarded as landmarks.

Indian Multinational:

In line with its strategy of aligning capabilities to meet emerging trends, L&T recently initiated a mega-transformation process, internally to ensure that it emerges, as a knowledge-based Indian multinational. Over the years the company has proactively
created the necessary infrastructure for its global initiative with office locations in USA, Europe, Middle East and Japan.

The Engineering & Construction Division made significant progress during the year in increasing its presence in the overseas markets. The Division secured orders from international clients located at Malaysia, USA, UK, Brazil, Saudi Arabia, UAE, Qatar, Bangladesh, Sri Lanka, etc. The export earnings of the Division amounted to Rs. 4840 million during the year. The customer profile includes leading names such as Samsung, Chevron, Bechtel, Kvaerner, Pirelli, Siam Michelin, Goodyear, etc. The Electrical & Electronics Division too has increased its thrust on exports and has trebled the export revenues to Rs. 210 million during 2000-2001. L&T believes that progress must necessarily be achieved in harmony with the environment. A commitment to community welfare and environmental protection constitute an integral part of the Corporate Vision.

Larsen & Toubro Limited is India’s largest engineering and construction conglomerate with additional interest in IT, cement and electrical business. A strong, customer-focused approach and the constant quest for top-class quality have enabled the Company to attain and sustain leadership position for over six decades.

Larsen & Toubro Limited is a technology driven company with leading edge capabilities in fields related to infrastructure and basic industries. In terms of main stream criteria viz., sales, profit, assets and market capitalization, L & T ranks among top ten in India’s private sector. The company is also ranked high by less tangible yardsticks such as intellectual capital and brand-worth.
L & T has manufacturing facilities at 20 locations in India. Almost all the factories have secured ISO-9000 and other certificates of the highest order. L&T's distribution and services out-reach underlines its strong customer orientation. The network extends to virtually every district in the country. A concern for the environment is an integral part of the company's vision. L & T is committed to growth in consonance with the ecology and the needs of the communities it serves. L & T is India's largest cement producer, with a manufacturing capacity of over 16 million tones per year. L & T manufactures and markets:

- Ordinary Portland Cement
- Portland Blast Furnace Slag Cement
- Portland Pozzolana Cement
- Rapid hardening Portland Cement
- Sulphate resistant Cement

A dream of two Danish Engineers is today's India's largest multidimensional engineering and construction company. In 1958, Henning Holck Larsen and Soren Kristian-Toubro set-ups a partner-ship firm in a small office in downtown Mumbai. They were marketing Danish dairy equipment. A year later, when World War II broke out, the fledging Company's genius for innovation came to the fore. It began to make the products it's used to import.

In 1945, L & T was appointed as dealers for Caterpillar, the American Earthmoving Machinery giant. In 1946, the firm became a Limited Company. Soon a nation-wide network of offices was set-up. The wheels of growth, which would propel the company to its position of distinction, had been set into motion. And before mission statements became Industry buzzwords, L&T has set out a character for itself. The company would
meet the needs of India's emerging core sector, side by side, the business philosophy laid emphasis on customer service. "People –The Prime – Movers" is the corporate byeline.

L & T steadily climbed the list of the top 200 Indian Companies from 72 in 1966 to 25 in 1973. By then it had developed a vast repository of skills and a reputation of high quality goods and services manufacturer. Over next decade, most of L & T’s activities had developed a vast repository of skills and a reputation of high quality goods and services manufacturer. Over next decade, most of L&T’s activities had crystallized into products and services involving high technology and advanced product development programs. L&T now ranks among the top 10 industrial establishments in India. As for L&T’s founders, Mr. Toubro passed away in 1982. Mr. Holck Larsen now Chairman Emeritus recently celebrated his 92nd birthday. He still takes keen interest in the company’s growth.

**Organisation Structure of L&T:**

The structure of a system is the arrangement of its subsystems and components at a given moment of over time. Thus the concept of structure and process can be viewed as the static and dynamic features and both of these aspects are related rather than opposite. Thus organisation structure can be viewed as established pattern of relationships among the components of their organisation. In large and complex organisations, structure is set forth initially by the design of the major components or subsystems and then by establishing relationships among these subsystems. It is the patterning of these relationships with some degree of permanency, which is referred to as organisation structure.
Organisation structure refers to the differentiation and integration of activities and authority, roles and relationships in the organisation. Thus, there are two considerations in organisation design problem: differentiation and integration. Differentiation is defined as 'the differences in cognitive and emotional orientations among managers in different functional departments, and the differences in formal structure among these departments,' and integration as 'quality of the state of collaboration that are required to achieve unity of effort by the environment.'

The organisation structure of L & T has been prepared on the basis of the flexible yet consistent philosophy it had developed over the years. The organic structure of L & T has been one of the pioneering and oldest being followed by many professional organisations today. The structure of the corporate conglomerate is explained in Chart 3.1. In addition to this Chart 3.2 describes the organisation’s structural chart and the relationship among various key positions in Andhra Pradesh Cement Works (APCW). The organisation chart shown in Chart 3.2 is the latest after the cement plant was acquired by the Aditya Birla Group in 2004.

Profile of Aditya Birla Group and Ultra Tech Limited:
- “Excellent product quality and customer care are the hallmarks of Ultra Tech”, emphasized Mr. Birla. The Ultra Tech Cement continues to be manufactured in the erstwhile L&T cement division’s state-of-the-art plants, which have now been acquired by the Aditya Birla Group. They are located in Gujarat (Kovaya and Jaffarabad) and Maharashtra (Awarpur) in western India, Chattisgarh (Hirmi) in central India and Andhra Pradesh (Tadipatri) in southern India.
• The plants continue to be supported by the grinding units in West Bengal (Durgapur), Uttaranchal/ Orissa (Jharsaguda), Tamil Nadu (Aarkonam), Gujarat (Magadalla) and Maharashtra (Ratnagiri), and the packing terminals at the western seaports of Mangalore in Karnataka and Mumbai in Maharashtra, and an overseas unit in Sri Lanka.

• The business synergies between Ultra Tech Cement Ltd., and the Aditya Birla Group have resulted in the creation of the eighth largest cement business globally. The two companies have a combined manufacturing base exceeding 31 million tones per annum through 11 composite cement plants, 6 ready mix concrete plants, 7 split grinding units, 3 bulk terminals in Indian and 1 in Sri Lanka.

• Since Ultra Tech Cement’s plants complement those of Grasim Industries Ltd., the Group has strengthened its national positioning, with leadership in the cement industry in several states. The Aditya Birla Group is among the top three players in 17 states which aggregate 75 per cent of the industry volumes. For the quarter ended 30 September 2004, Ultra Tech Cement reported revenues of Rs. 587.8 crore with profit after taxes of Rs.2.3 crore. The year-on-year growth in exports was 22 per cent.

• With the low per capita consumption of cement in India – 102 kg compared to the global average of 260 kg (China: 429kg, Malaysia: 529kg and South Korea: 951kg) – and the emphasis on infrastructure development, Ultra Tech has ample opportunity to ride the growth curve.

L & T Cement Plants & Grinding Units:

The Exhibits 3.3 & 3.4 show various cement manufacturing plants and cement grinding units and their locations under the control and management of L & T Ltd.
Andhra Pradesh Cement Works (APCW):

The Ultra Tech Ltd. is located 360 kins South of Hyderabad and in the town of Tadipatri in Anantapur district of Rayalaseema region in the state of Andhra Pradesh in South India. Along with the grinding unit at Arakonam it has a capacity of 3.6 million tones of cement per annum. The plant is ideally suited to cater to markets in Andhra Pradesh, Karnataka, Tamil Nadu and Kerala.

Ultra Tech selected Tadipatri for setting up its Andhra Pradesh Cement Works (APCW) because there is a huge limestone deposit and the quality of limestone is considered to be extremely good. Also, other corrective/additive materials such as iron ore, laterite and gypsum required in cement production are available nearby. In addition, Tadipatri is well connected by railway line and roads. The Chennai, Mumbai railway lines runs close to Ultra Tech's plant. A peculiarity of Ultra Tech's APCW is that its mines fall in Kurnool district while the plant is in Anantapur District.

The cement plant's installed capacity is 2 million tones per annum (mtpa). L & T started APCW project with a prospecting licence in March, 1992 followed by a mining lease in June 1993. When various formalities were completed, action shifted from the drawing board to the project site with the first association commencing in November, 1995. Due to excellent co-operation from the Government of A.P, Ultra Tech did not face much problems while setting up APCW.

Even the acute shortage of power in the state did not hamper the construction activities. The construction was completed totally with the help of diesel generating sets. In view of the expected power shortage, APCW is provided with two diesel generator sets of 24.6
CHART 3.1
ORGANISATION CHART - L & T CORPORATE

CHAIRMAN & MANAGING DIRECTOR

Engineering & Construction

Cement & Others

Electrical & Electronics

Finance & H R

President (Operations)

CEMENT

DIVERSIFIED BUSINESS

Sr. Vice-President

Executive Vice-President

Executive Vice President

Andhra Pradesh Cement Works Vice President
Awarpur Cement Works Vice General Manager
Hirni Cement Works General Manager
Gujarat Cement Works General Manager
Narmada Cement Works C E O

CHART 3.2
ORGANISATION CHART – AP CEMENT WORKS
ULTRATECH CO Ltd., TADIPATRI, AP

UNIT HEAD
VICE-PRESIDENT

FH - Technical

FH - Mines

FH – HR/P&A

FH – F & C

HOD – Mech, Packing & Civil

HOD – Operation

HOD – Personnel & ER

HOD – E & I

HOD – Maintenance

HOD – Administration

HOD – Personnel & ER

HOD – Process

HOD – CPP & EM

HOD – Security

HOD – Personnel & ER

HOD – Human Resources

HOD – Personnel & ER

HOD – QC

WCM Cell

Security Officer

EXHIBIT 3.3
CEMENT MANUFACTURING PLANTS UNDER THE MANAGEMENT OF L & T COMPANY Ltd LOCATED IN INDIA

<table>
<thead>
<tr>
<th>Name of the Plant</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awarpur Cement Works.</td>
<td>Awarpur, Maharashtra</td>
</tr>
<tr>
<td>Hirmi Cement Works.</td>
<td>Hirmi, Madhya Pradesh</td>
</tr>
<tr>
<td>Gujarat Cement Works.</td>
<td>Kovaya, Gujarat</td>
</tr>
<tr>
<td>Andhra Pradesh Cement Works</td>
<td>Tadipatri, Andhra Pradesh</td>
</tr>
<tr>
<td>Narmada Cements</td>
<td>Gujarat</td>
</tr>
</tbody>
</table>

EXHIBIT 3.4
GRINDING CEMENT UNITS UNDER
THE MANAGEMENT OF L & T COMPANY Ltd LOCATED IN INDIA

<table>
<thead>
<tr>
<th>Name of the Unit</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jarsuguda</td>
<td>Orissa</td>
</tr>
<tr>
<td>Arakkonam</td>
<td>Tamil Nadu</td>
</tr>
<tr>
<td>Magdalla &amp; Ratnagiri</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>Durgapur</td>
<td>West Bengal</td>
</tr>
</tbody>
</table>

MW (i.e., 2 x 12.3 MW), which is around 60% of total power requirement of the plant. APCW caters to the cement users in the southern part of India. It is ideally located as far as the market is concerned. This Plant has been set up by Ultra Tech itself with the coordinated efforts of all its business groups, which minimized the problems during the execution stage.

**Unique Features of A P C W:**

Only cement plant in Ultra Tech with a split location of entire main plant on top of hillock and the packing plant down the hill. One of the plants using minimum energy for cement manufacturing. Only plant where the entire cement loading rake of 40 wagons can be placed on one stretch constructed on engine on load concept. The RCC chimney at the plant is the tallest in the Indian cement industry. It has two raw mills having a roller diameter of 5m ATOX 50 mills. These are the two biggest mills in the country. First unit to implement computerized billing for cement loading. The topographical and other details of the company are mentioned in *Exhibit 3.5.*

**Cement Machinery:**

- Complete range – from crushing to packing plants are supplied by Ultra Tech machinery division in Collaboration with F. L. Smith & Co., Denmark, extends over three decades over 50 plants supplied – a major market share in India.
- Presently the largest capacity 7500 TPD in a single line cements production in India.
- Vertical roller mills for raw materials and cement grinding
## EXHIBIT 3.5
LAND AREA AND NUMBER OF EMPLOYEES OF ULTRA TECH COMPANY LIMITED AT TADIPATRI

<table>
<thead>
<tr>
<th>Name of the Unit</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Size</td>
<td>549.86 acres</td>
</tr>
<tr>
<td>Mines</td>
<td>2587.00 acres</td>
</tr>
<tr>
<td>STP</td>
<td>9.00 acres</td>
</tr>
<tr>
<td>Railway lines</td>
<td>169.00 acres</td>
</tr>
<tr>
<td>Township</td>
<td>140.00 acres</td>
</tr>
<tr>
<td>Plant Capacity</td>
<td>7500 TPD</td>
</tr>
<tr>
<td>Total Employees</td>
<td>359</td>
</tr>
</tbody>
</table>

Source: Annual Reports, Ultra Tech Co Ltd., 2005.
Fuel-efficient pyro-processing systems

- High-pressure roller, presses for cement mill for cement grinding.
- Modern Duoflex burner for efficient flame control.
- Hydraulic drive coolax cooler with new generation CIS cooler inlet.
- Efficient Pollution control equipments like ESP, Reverse air Bag House and reverse air bag house at appropriate locations.
- CEM scanner for kiln refractory management.
- QCX for meal blending and quality control.
- Fuzzy logic system for plant optimisation.
- Cool scanner for monitoring coolax cooler.

The plant is certified by DNV of Netherlands as an ISO 9002, ISO 14001 and OHSAS 18001 companies. APCW manufactures Ordinary Portland Cement, Portland Pozzolona Cement and Portland Blast Furnace Slag Cement which is distributed throughout a wide network of Authorized Stockists.

Mines: Raw material used for manufacture of cement is limestone. The mines of this raw material are present at Tummala Penta, Kurnool district. These are of about 844.3 hectares in area. Mining is the extraction of mineral from the layers of the earth. Mining follows the following path:

Geological Surveying → Exploration → Approval → Traverse Surveying → Drilling → Blasting → Transportation

Mines are of two types underground and open cast mines. Mines here are open cast mines. Open cast mines consist of different layers, which are called benches like first
bench, second bench and so on. According to the layers quality of limestone changes.
The collection of the raw material consists of the following process. Drilling, blasting and
transporting.

Drilling: Drilling is made by drilling machine. The hole is about 150 mm in diameter
and depth 9m (according to bench height). The holes are made in two different patterns.
They are staggered pattern and square patterns. They are shown below. The space
between burden and hole is 4m and the space between 2 holes is called spacing and is 9m.
The cost for drilling in 2002-2003 is Rs. 1.5 and the cost up to now is Rs. 1.52 per m.

Blasting: The explosives used for blasting are Ammonium Nitrate mixed with 6% Diesel
and Rice husk. Charged explosives with electrical sludge are used. Detonating chords
consisting of PETN (Penta Erythrol Tetra Nitrate), non-electric detonating chords with
separate timing for each explosion so as to reduce the ground vibrations and to increase
the push are used. In rainy seasons the Slurry explosives are used for effective blasting.
The Department of Explosives must approve the explosives used, Ministry of Commerce.
The obtained limestone is transported using excavators and dumpers to the limestone-
crushing yard where the size is reduced to 75mm. The cost for blasting is Rs. 1.5 per
meter.

Transporting: After the blasting the raw material is transported to the Crusher by
Bulldozers, Wheel Loaders and Dumpers, the limestone is crushed with crushers before
sending it to the limestone stacker.

Stacker: It is used to stack the limestone, which comes from crusher. The limestone
coming from crusher has different limestone factor (LSF). In order to have homogeneous
effect mixing of LSF to obtain average LSF, the stacker is moved on the rails, which is at centre. So that material can be Stacked on both sides.

**Raw Mills:** The limestone from the crusher is transported to the limestone storage through conveyor belts. The limestone is stored in the limestone stacker and reclaimed there with the limestone reclaimer. The other raw materials required for preparation of cement are iron ore and Bauxite. For manufacturing cement the required size should be around 90 microns. In order to obtain this product size, the raw materials are mixed proportionally and grinded in the raw mills (1&2). ATOX 50 mill is a vertical mill design for grinding and drying of raw materials. The table has a diameter of 5 mtrs, the grinding capacity is 330 Tons per hour. These are the biggest raw mills with a capacity of 400 Tons each and main motor is of 4100 KW. Each mill comprises of 3 rollers under hydraulic pressure of 150 bar. Hot exhaust gases from rotary kiln are used to dry the raw materials. The air separators suck the grinding materials. Raw meal get separated in the cyclones and air sent through chimney through bag house filter. Then raw meal is stored in the C.F. Silo. Transfer of materials takes place by RBCs. The production process and the material and other things required for the production are mentioned in Chart 3.3.

**Controlled Flow Silo:** It is a continuously operating blending and storage silos and its capacity is around 31000 T. In order to attain a high degree of homogeneity, which is required for smooth operation of the kiln the raw mix passing through the silo is having different retention time. This is attained by the operation principle of the C.F. Silo, which extracts raw mix on the different rates from 7 point in the silo bottom. The raw mix is fed into the top of the pre heater through a kiln feed weigh bin, fluxo slides and belt bucket conveyor.
## CHART 3.3
THE PRODUCTION PROCESS AND METHODS USED
IN ULTRA TECH CO Ltd., TADIPATRI

<table>
<thead>
<tr>
<th>KPOV</th>
<th>UOM</th>
<th>BASE</th>
<th>TARGET</th>
<th>MTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM 1 Production</td>
<td>TQM</td>
<td>387</td>
<td>400</td>
<td>402</td>
</tr>
<tr>
<td>RM 2 production</td>
<td>TQM</td>
<td>388</td>
<td>400</td>
<td>401</td>
</tr>
<tr>
<td>Power RM 1 K Whr/MT</td>
<td></td>
<td>15.19</td>
<td>14.7</td>
<td>14.63</td>
</tr>
<tr>
<td>Power RM 2 K Whr/MT</td>
<td></td>
<td>15.26</td>
<td>14.7</td>
<td>14.88</td>
</tr>
<tr>
<td>RM 1 MTBF Hrs</td>
<td></td>
<td>37</td>
<td>50</td>
<td>41.19</td>
</tr>
<tr>
<td>RM 2 MTBF Hrs</td>
<td></td>
<td>30</td>
<td>50</td>
<td>42.90</td>
</tr>
<tr>
<td>Spares Consumption</td>
<td>Lakhs</td>
<td>43.75</td>
<td>76</td>
<td>37.74</td>
</tr>
<tr>
<td>General Stores</td>
<td>Lakhs</td>
<td>49</td>
<td>21</td>
<td>0.99</td>
</tr>
<tr>
<td>Lubricants</td>
<td>Lakhs</td>
<td>6</td>
<td>5.75</td>
<td>0.07</td>
</tr>
<tr>
<td>Manpower</td>
<td>Lakhs</td>
<td>33</td>
<td>28</td>
<td>21</td>
</tr>
</tbody>
</table>


KPOV = Key Process Output Variables
UOM = Unit Operating Method
MTD = Metric Tonnes per Day
**Pre-heater:** APCW is provided with two strings of six-stage pre heater system called kiln string and calciner string. With the kiln, about 35% of the clinker capacity can be produced. When the calciner string is brought into the production circuit the production rate goes to 100%. The calciner string includes one stationery vessel called Calciner, where about 60% of the total coal requirement will be fired when the calciner is in circuit, the raw mix from both the strings are fed into the calciner where 95% of the calcinations is achieved before the material enter into rotary kiln.

**Kiln:** The Kiln is termed as the heart of the cement plant. At APCW, the kiln is 75m long and 4.75m in diameter and they are supported by tyre rollers 3 girth gear rotating at a speed of 4.5rpm with an inclination of 4%. This kiln has a capacity of 8000 tons per day. The burning zone temperature is around 1400-1500C. In burner, pulverized coals are used as fuel whose burning flame can be adjusted by control over primary air. In the kiln 95% calcinated raw mix is a sintered into dark grey nodule called clinker, which is at the temp of about 1400-1500C.

**Cooler:** This cooler is known as Coolax cooler. The clinker enters at a temperature of 1400C in to the cooler. The job is achieved by blowing the atmospheric air through a series of fans. The pre-heated air is used in the kiln and calciner strings. The excess air is taken into an ESP and thus a negative draft is maintained in the cooler and at the same time all the fine clinker dust is collected in the ESP. To reduce the size of the clinker, it is crushed in hammer crusher and transported to the clinker silos by means of Deep Drawn Pan Conveyer (DDPC).
Coal Mill: Presently APCW is receiving coal through imports. This imported coal is at a
size of 50mm and this coal is stored in load cell hopper located above coal mill. This is
also a vertical roller mill similar to raw mill. Hot gasses from the kiln are used for drying
the coal. The coal is pulverized to a size of 15% residue retained in 90 micron size and
stored in fine coal bins. From there the coal will be transported to kiln and calciner to be
used as fuel.

Quality: Quality of material is tested at different places by collecting the samples for
every hour. In this they will test the composition of the particles. The sample is collected
by the auto sampler at LSS, raw mill, cement mill and coal mill. This is send to the lab.
There this sample is made into a tablet by applying some force. This tablet is kept in
QCX analyser for testing the material. The size of the particle should be 45 to 80 microns
when it is kept in analyser. Pneumatic sampler is used to collect the sample from raw
mill. The composition of samples collected when drilling is undertaken is mentioned in
Chart 3.4.

Blaine Apparatus
This used to know the size of the particles of the cement. To find fineness of cement take
OPC, PSC = 2.8388g. PPC = 2.7486g. The size of the particle is calculated according to
the time taken by the air to pass through air permeability cell. To test the strength of the
cement cubes are made. For the cube 1:3 ratio of cement and sand is used.

Cement Mill:
APCW is provided with two cement mills, the process starts from clinker silo where
clinker of size 2 mm is stored. In order to obtain fine power, it is sent to cement mill.
During this process, clinkers are sent to steel hoppers by means of DDPC & RBC and
CHART 3.4
THE COMPOSITION OF SAMPLES COLLECTED DURING DRILLING OPERATIONS IN ULTRA TECH CO Ltd., TADIPATRI

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>12.04</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>0.86</td>
</tr>
<tr>
<td>Fe₂O₃</td>
<td>0.11</td>
</tr>
<tr>
<td>CaO</td>
<td>45.39</td>
</tr>
<tr>
<td>MgO</td>
<td>0.62</td>
</tr>
<tr>
<td>P₂O₅</td>
<td>0.15</td>
</tr>
<tr>
<td>K₂O</td>
<td>0.20</td>
</tr>
<tr>
<td>Na₂O</td>
<td>0.05</td>
</tr>
<tr>
<td>SO₃</td>
<td>0.79</td>
</tr>
<tr>
<td>Cl</td>
<td>0.003</td>
</tr>
<tr>
<td>Na₂O₃</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Source: Production Manual, UltraTech Co., Ltd., Tadipatri, 2005
weighed using dosimat feeders. The cement additives like gypsum, pozzallana and fly ash are weighed and added with clinkers proportionally and sent to feed bin by means of RBC and bucket elevator. From feed bin clinker is crushed in roller press and sent in Grit separator. The fine powder from the Sepax separator collected in the four cyclones and sent to cement silo to grit separator. The waste particles are separated and put into ball mill for grinding. The product from the mill for further grinding by means of bucket elevator and fluxo sides. The cement mill consist the following equipments they are

**Roller Press:** Clinker from feed bin is fed into roller press uniformly by using vibro feeder. Roller press consists of two heavy rollers in which one of them is fixed and other is a morable hydraulic cylinder. The pressure inside the cylinder is maintained up to 210 bar. The gap between two rollers is adjusted in the range of 0-30 mm. There is separate drive arrangement for each roller. While rolling it crushes the material and sends it to the grit separator through RBC.

**Ball Mill:** Ball mill consists of a chamber used to grind the coarse material coming from grit separator. The material is grinded by means of grinding media and sent to the Sepax separator by means of screw conveyor, bucket elevator and air slides. To control the temperature, mill is provided with water spray and to control dust-laden air ESP is to prevent setting of moisture content in cement around the filter, which causes serious damage to the filters.

**PACKING AND DISPATCH**

The main function of the packing plant is to receive cement from cement mill and pack it in bags and dispatch them. The average target of the packing plant is 6500 metric tons
per day and 22.4 lakh metric tons per year. This target depends on the market requirement. There are six storage silos each of 6000 metric tons for the storage of cement. Two silos each for OPC, PPC and PSC cements. Total storage capacity = 36000MT. Packing plant consists of six packers each of 90MT/hr- 110MT/hr capacity. The type of the packer is ventomatic electronic. Total capacity of the packer is 90*6*24 = 12960MTD. But the target is 6500 MTD. Therefore only 60% of the capacity is being utilized.

**Wagon Loading and Truck Loading Machines:** To load the cement bags from RBC into wagon or truck, wagon or truck loader is used. In APCW 8 Wagon Loading Machines & 6 Truck Loading Machines serve the process of loading. The manpower utilized in the pacing plant is:

- 150 loaders
- 40 cleaners
- 20 wagon cleaning & checking
- 20 stampers
- 70 mechanical
- 6 officers & supervisors

**WORKING OF WAGON LOADING MACHINES:** From the packers the packed bags are transferred to WLMs through Rubber belt conveyors.

Feed conveyor -> Intermediate conveyor -> Telescopc conveyor -> Wagon

**CAPTIVE POWER PLANT:** DG (Diesel Generator) powerhouse is one of the sources for generating the electricity privately in a manufacturing plant for its own consumption. In a cement plant power and energy being one of the major factors affecting the cost of the final product, it is necessary to produce electricity in the plant itself for the fact as
back up strategy for the emergency operations like in the kiln. The fuel used in the production of the energy is Heavy fuel furnace oil (HFO) which is used for combustion in a four-stroke engine. Two engines are used to produce a total energy of 24 MW consumed every day in the cement plant. The engine consumes 50 kl. of fuel each day for the 24mw of power. Since the engines produce the power by combustion, the engines liberate heat and it is required to cool these engines regularly. So the engines are cooled by water. Water is supplied continuously and cooling is done by direct and indirect contact the engines. Water at a temperature of 40°C is sent, and by contact the temperature is raised to 90°C and this water is sent to plate heat exchanger for cooling. Once this is finished the water comes out at a temperature of 50°C. This water is cooled in cooling towers to 40°C and is recirculated. By these engines the unit cost comes down to 2.80 rupees, which is a major economic factor for the industry.

**DG Description:** The engine is a single acting four-stroke engine of trunk piston design with exhaust gas turbocharger and charge air cooler (inter cooler). The two cylinder banks in V-form include an angle of 50 degree. Each engine is 4-stroke engine with 12 cylinders. The model of the engine used in V 48/60, 480-mm diameter, 680 mm stroke length V type, this is imported from MAN B&W. Under conditions to sudden power failure in emergency DG set with 380 KVA. The engine starts at atmospheric pressure of 30 bar with allow speed of 500 rpm. Each DG generates a power of 11.87 MW. 25-35% cost involved in power consumption. This plant gets a power supply of 25 MVA on contract demand from the grid (APSEB). Earlier 10MW of gas power was supplied from the APGPCL.
**RO Plant:** The water required for the boilers and separators is supplied from the RO plant. The process of Reverse Osmosis takes place here. It consists of the following filters.

a) MGF  
b) Softener Filter  
c) MCF  
d) HPP

MGF → Softener → MCF → HPP

**MGF:** The Multi Grade Filter is a sand filter, which is used to remove the turbidity of the water.

**Softener filter:** This is a sodium resin filter, which removes the hardness in the water due to dissolved calcite & silicates.

**MCF:** The Micron Cartridges Filter consists of 5 cotton filters, which allows only particles of less than 5-micron size to flow in the water. Reverse Osmosis is carried out in the membrane array using backpressure of 14 bar. The water is pumped from the top, allowing the air from the bottom thus removing CO₂. Continuous removal of the hardness of water, after every 20 hrs or when the pressure difference between HPP & MGF is 0.7 bar. Chemical cleaning of the tank removes the biological deposits.

**UTILITIES:** Utilities consists of water management system, condition monitoring, sewage treatment plant, electrical and mechanical workshop. Compressor is of two types reciprocating and screw and in these two types there are oil free and oil lubricating. Oil lubricating is used here. Process: Atmospheric air is taken as input and gives the
compressed air as per requirement. It is costly process. Seventy per cent of “life cycle costing” is spent on energy remaining on maintenance.

Applications  
a) Diverting gates  
b) Bag cleaning in JPFs  
c) Removal of coatings in preheater

Sewage Treatment Plant (STP)

Sewage from township → screen channels → git channels → aeration tank → clarifier → chlorine contact chamber

Treated off pump → treated sewage disposal (for gardening)

MATERIALS

Supply Chain Management:

Supplier → Plant → Customer

The basic duty is to buy at right time, from right source, at right place, for right quality.

Inventory:

Any buffer stock at the interface of supplier process and customer is called inventory.

Stores: Stores consists of

1) General consumables
2) Common spares
3) Production spares.
Man Power:

Based on requirement of each individual department head of that department is asked to give information to man power department regarding the number of persons required the departmental heads assess his requirements based on the available departmental job description to ensure role clarity and to avoid role ambiguity. The total employees in APCW are 367 covering all departments. The grades of employees and the department wise manpower distribution are mentioned in Exhibits 3.6 & 3.7. There are nearly 900 contract labourers working every day.

Personnel Department Details:

Ultra Tech probably is the first organization in India to introduce an integrated HRD system in the year 1975 with the introduction of “Performance Appraisal Feedback & Counselling System”. For performance appraisal a task force under leadership of T.V.Rao & Uday Pareek worked up to 1979 in L & T. P.A. includes sub-systems like:

- Potential Appraisal
- Training & Development
- Employee counselling and
- Career Planning and Development

People Management at Ultra Tech:

“Employee Delight is the key to Customer Delight” is the conviction of Ultra Tech’s residential management development centre at Lonovala, Mumbai offers employees the opportunities for knowledge enhancement and learning through self-study and introspection. The faculty is drawn from India’s premier management institute i.e., AIMA, IIM etc., Ultra Tech has also found a place for itself as the only “Asian member
EXHIBIT 3.6

GRADES OF EMPLOYEES OF ULTRA TECH COMPANY LIMITED AT TADIPATRI

<table>
<thead>
<tr>
<th>Group</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>Monthly Rated</td>
<td>I to VII</td>
</tr>
<tr>
<td>Daily Rated</td>
<td>E to A</td>
</tr>
<tr>
<td>Supervisory (S)</td>
<td>S1 to M1</td>
</tr>
<tr>
<td>Officers</td>
<td>M2 to M4</td>
</tr>
<tr>
<td>Deputy Manager, Senior Managers</td>
<td>M5 to M7</td>
</tr>
<tr>
<td>AGM – Sr. DGM</td>
<td>M8 to M10</td>
</tr>
<tr>
<td>JGM, GM, VP</td>
<td>M11 to M13</td>
</tr>
</tbody>
</table>

EXHIBIT 3.7

DEPARTMENT WISE MANPOWER DETAILS OF EMPLOYEES OF ULTRA TECH COMPANY LIMITED AT TADIPATRI

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Department</th>
<th>Total</th>
</tr>
</thead>
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<td>1</td>
<td>Vice President's Office</td>
<td>03</td>
</tr>
<tr>
<td>2</td>
<td>Personnel &amp; Administration</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>Finance &amp; IT SET</td>
<td>23</td>
</tr>
<tr>
<td>4</td>
<td>SCM SET</td>
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<tr>
<td>5</td>
<td>Mines AET</td>
<td>89</td>
</tr>
<tr>
<td>6</td>
<td>Raw Mill AET</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>Kiln AET</td>
<td>32</td>
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<tr>
<td>8</td>
<td>Quality AET</td>
<td>37</td>
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<tr>
<td>9</td>
<td>Cement Mill AET</td>
<td>23</td>
</tr>
<tr>
<td>10</td>
<td>Packaging &amp; Despatching AET</td>
<td>23</td>
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<tr>
<td>11</td>
<td>Despatch SET</td>
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<tr>
<td>12</td>
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<td>13</td>
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<tr>
<td>14</td>
<td>WCM Cell</td>
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</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>359</strong></td>
</tr>
</tbody>
</table>

Source: Company Statistical Data, Ultra Tech Co Ltd., 2005
of benchmarking forum for American Society for Training & Development (ASTD). Self-learning facility comprising of programs on CD-ROMS enables employees to work at their own place.

**Recruitment & Selection:**

Recruitment source include advertisements given in newspapers and data banks, depending upon the manpower requirements as stated by departmental heads depending upon the number of applicants received, the qualification may be generalized (in case of very few applications). Then, the person with required qualification is interviewed. The interviewing panel comprises of personal officials in the department. If the applications are in large number they will be shortlisted according to the norms of the organization.

The wage board employees are assessed on factors like:

⇒ Technical Aptitude
⇒ English and
⇒ Critical Reasoning

Monthly rated employees are kept under a probation period for 6 months. The O & S cadre will be assessed on factors like:

⇒ Management Aptitude
⇒ Leadership Behaviour

The recruitment of Diploma Engineering Trainees (DETs) and Graduate Engineering Trainees (GETs) are done in Central Personnel Department once in a year through advertisements in famous newspapers. The recruited candidates are kept under probation for a period of 2 years and then are absorbed to suitable cadre in the organization. During the probation period the absorbed candidates are sent to each department to collect the
information about the department and then they are sending to the other units of Ultra Tech cements.

**Performance Appraisal:**

Two consultants Udai Preek and T.V.Rao were appointed in 1975, got the survey report that the people working in Ultra Tech needed the feedback regarding what they are doing.

**Need for Performance Appraisal:**

- PA was providing adequate feedback
- PA was evaluating future potential
- Self Appraisal was implemented in 1979

Performance Appraisal by job rotation & rewards implemented in 1974 for the evaluation of the performance of the employees. Performance Appraisal is done at the end of every financial year. The employees are informed of the results and training is given based on the needs to perform. In Ultra Tech the performance Appraisal is done by

- Immediate Superior
- Next Superior
- Self Appraisal

**Performance Appraisal is done in three areas:**

- Result Area
- Process Area
- Attributes Area
Training and Development:

Training and Development in Ultra Tech is given a lot of importance. It covers all the employees of both the officers and supervisors’ cadre and the Wage Board. There are some special safety training programs being conducted by the Safety officer. Some employees are being sent to external training programmes. The head of department of Personal & Administration is responsible for establishing procedure of training and it is he, who nominates the persons for training. He is responsible for, establishing this procedure for its subsequent implementation. He is also responsible for reviewing these procedure intervals, and at least once in every 12 months.

Induction Training for New Entrants:

HOD (P&A) draws up a suitable induction program for the new entrants i.e., GETs DETs and also persons transferred from other Ultra Tech units. Such induction programs include training on quality policy, objectives and the applicable elements of the Quality Assurance System for his department function. HOD (P&A) communicates the induction-training programme: the concerned HOD’s shall put their remarks indications of their evaluations of training.

Identification of training opportunities and Deputation of Employees for the same HOD (P&A) receives information about training program being conducted by external agencies including Grade-5 (Personal & HRD) based on actual need of situation and also the gap between training needs and the training opportunities offered by the Grade-5 calendar, the HOD (P&A) tries to organize internal/ external training program at unit level for fulfilling the gap.
Faculty Selected for Training Programs:

Faculty for internal training could be sourced from within the organization or suitable outside experts. Whenever and wherever possible, the gap may be filled by deputing the concerned employee to programs conducted by outside agencies. HOD (P&A) communicates the programs' details of both the external and internal planned program events to the concerned HOD's for their future action of deploying incumbent training. HOD (P&A) assists the HOD's in deputing the employees to these identified opportunities and lassie with outside agencies for completing the necessary formalities.

Before the next appraisal event, the reconciliation of the training needs identified and the training really important will be done by personnel department or training officer and the training is not imparted shall be communicated to the concerned HOD for his further necessary action. HOD on receipt of the same information decides the training needs of that employee for the current year keeping in mind the training programmes of him preceding year, could not be imparted, to that employee.

Evaluation of Effectiveness of Training:

The immediate superior of the employee by way of the personal interview and discussions evaluates the effectiveness of training and if available from the record of agencies who imparted the training. The effectiveness of training is assessed by the respective HOD\HOS after employee returns from training by any of the following means.

- Any form of certification issued by the organization faculty who has imparted the training.
- A written report submitted by the employee on the training course that he or she attended.
A presentation given by employee.
Discussions with superior and or on the job training.

The concerned HOD/HOS record this remark on the effectiveness of the training in the prescribed format. In case of internal training programs, the effectiveness of the faculty and also the program shall be done and recorded from the feedback form or discussion with the participation. Besides on the job and technical training, over 200 other programs are conducted every year. Emphasis is laid on encouraging creativity, innovation, achievement, motivation, empowerment, augmenting communication and interpersonal skills, developing initiative, leadership qualities and providing knowledge of computer applications.

Ultra Tech Residential Management Development Centre at Lonovala offers employees the opportunity for knowledge enhancement and learning through self-study and introspection. The faculty is drawn from India’s finest management institutes. Ultra Tech recently introduced a computer based self-learning facility comprising programs on CD_ROMs, which enables employees learn at their own place and draw maximum benefit from the packages offered. Ultra Tech is the Asian member of the benchmarking forum of American Society for Training & Development. This forum ensures the Ultra Tech’s training operations compare with the best in the companies world wide.

It has enhanced team culture with in the company. Over 600 cross-functional improvement teams are working across the country. The Kaizen movement to strengthen the improvement oriented culture and helps top potential at all levels. Organizational climate surveys are carried out to gauge employee satisfaction. To identify further areas of improvement in operations, customer satisfaction surveys and supplier satisfaction
surveys are also being conducted. New initiatives related to the quality movement such as six sigma, Benchmarking and Self-assessment are also being taken up.

**Employee Focus:**

The employee suggestion scheme triggers the creativity of the employees and motivates them to suggest measures to upgrade quality enhance productivity, reduce cost and fine tune safety practices. It acts as a powerful tool in moulding the value systems of employees in line with the Ultra Tech vision. Annual awards like ‘Bachatvir’ and ‘Sachanvir’ and awards in inter departmental competitions promote participation. So far, 48 items have won the Viswakarma Rashtriya Puraskar instituted by the Ministry of Labour, Govt, of India.

**WELFARE ACTIVITIES AT ULTRA TECH:**

**Medical Centre:** The company has a well-equipped 10 bed Medical Centre in our township under the charge of qualified and well-experienced Medical Officers (3 Doctors). Lab technicians and Dressers. Ambulance service is also available to take care of the patients need. A special dispensary to cater to the needs of the contract employees has also been established.

**School:** Ultra Tech CSI Public School has classes up to Xth Class standard under CBSE syllabi and offers instruction in English medium. There are well-qualified Teachers, Computer lab, and Science lab, Library etc., in the schools.

**Shopping Complex/ Co-operative Society:**

The shopping complex houses:

1. Departmental Stores
2. Restaurant
3. Vegetable shop
4. STD/ISD booth & Soft drinks vending
5. Ladies Fancy Stores
6. Ice-Cream Parlour
7. Barber
8. Washer man

The company has fully functional Co-operative Stores, through which, they operate cooking gas agency and sell rice, other food grains and notebooks etc.

**Canteen:** Ultra Tech has one canteen to cater to the needs of the employees. The canteen is well furnished and the kitchen and storeroom are provided with modern equipment. Cooking is being done using LPG gas and electricity. The Canteen is run by a contractor is recouped for the difference in market rates of various eatables by way of subsidy, by the company.

**Education & Training:** The company has evolved a number of training programs in house as also deputing employees to various programs conducted by outside agencies from time to time. Ultra Tech has a training department, which deploys latest teaching gadgets such as Video films, Overhead projectors, Computers etc., for conducting training programmes. Course material is also being distributed to participants, so that they can refer the same as and when they desire, besides attending classes.

**Township:** The Company has a self-reliant housing colony, spread over 140 acres of land. The colony can accommodate about 300 families. The colony is well planned and
the residential quarters are situated in the midst of picturesque surroundings. The quarters are provided with basic amenities.

**Transport:** They are running the following Bus/ Shuttle services for the benefit of employees and their families.

- 52 seated bus to Tadpatri – Daily
- Mini bus for pick up and dropping to & from Tadpatri Bus/ Railway station
- Station – Daily
- Marketing trip to Anantapur – Weekly

Besides, as and when required, they provide vehicles for medical treatment, drop and pick-up from Railway Stations and meetings any emergencies, round the clock.

**Recreational Activities:** Ultra Tech Ladies club has already started functioning. The town ship has a full-fledged and full functional recreation centre with following facilities:

- Shuttle badminton court
- Library cum reading room
- T.V. Room
- Table-Tennis Court
- Multi Gym
- Caroms & Chess
- Cricket ground
- Volley ball court
- Tenni-coit court
- Throw ball court

**Industrial Relations Climate:** Maintaining harmonious industrial relations through various participate management forums and such as:

↔ Safety Committee
↔ Canteen Committee
↔ Shop Floor Councils
Seva Committees (Welfare)
Suggestion Committee (for improving productivity & cost consciousness)

Safety Procedures:
- Permit to Work System
- Vessels Entry Permit
- Excavation Permit
- SHE Assessment

Fire extinguishers/hydrant line system:
- Mock drills
- Safety audits
- Testing of pressure vessels & lifting tackles
- Safety awareness

By Green-tech foundation, New Delhi and awarded first in cement industry for the year 1999-2000. Recently they have received certification of Appreciation from National Safety Council, Andhra Pradesh Chapter in recognition of efforts of management, staff, employees and workers, in achieving occupation health and safety assessment series 18001 (OHSAS 18001) certification. Their journey started towards achieving TQM and SIX SIGMA in the year 2002.

TQM in Ultra Tech Limited
There are problems in operations such as low workshop skills, inadequate manufacturing standards, processed goods treated poorly, poor work and environment and more importantly no education to create equipment concerned operators. Despite having Preventive Maintenance Schemes and Quality Management inclusive of Total Quality Control, down time of equipment and productive looses and quality complaints continue. Therefore, the need to improve the plant operations through the better Plant Management.
known as "Total Quality Management". In a unique way the company calls such thoughtful programme as "PARIVARTHAN". It is strongly believed that this programme will result in improvements in productivity, quality, cost, delivery, safety, environment friendliness and morale.

PARIVARTHAN – THE VISION FOR ULTRA TECH CO Ltd:
The aim is to create world-class cement plant that pursues cost reduction, quality and delivery improvement in a truly holistic manner leading to customer, shareholder and employee satisfaction. This integrated effort will result in this plant becoming an industry bench and role model. Ultra Tech has been a pioneer in the Parivarthan journey. The company is now all set to accelerate with TQM in the main plant.

- TQM is an abbreviation for Total Quality Management
- TQM calls for people to take ownership of the area they work in
  - Collecting performance data
  - Analysing problems
  - Taking corrective & preventive countermeasures
  - Finally setting up an asset care & process control system
- TQM emphasizes the importance of people in the plant for bringing about improvements
- TQM promotes a manufacturing team, as opposed to a production team, a maintenance team, a quality team, etc.
- TQM involves everyone
- TQM will reduce cost and increase productivity & delivery capabilities by involving everyone in systematic process.
IMPLEMENTATION OF PARIVARTHAN:

(a) Focused improvement projects in the areas of: operations & process; optimisation, Quality improvement, Cost reduction
(b) Energy cost reduction
(c) Planned maintenance and spare parts management
(d) Implementation of step-by-step process & asset care and area
(e) Effectiveness activities
(f) Development of audit standards and framework and audit
(g) Development of master plan

TQM will be a comprehensive programme that improves process, plant & equipment and prepares people to cope with change through change management and competency building on the job. TQM is about taking ownership to maximize value, eliminate waste and improve service levels across the supply chain in order to satisfy and exceed our customer's expectations. The focus on ownership for bottom-line results makes TQM worthwhile to pursue.

➢ Improved understanding of the equipment and processes
➢ Shared objective to improve plant effectiveness by:
   (A) Restoring the equipment to its optimum condition
   (B) Applying the most appropriate asset care
   (C) Resolving problems once and for all

➢ Optimising the process
➢ Establishing process control
➢ Establishing best practices for operating and preserving the life of equipment.

PILLARS OF TQM

1. Process optimisation
2. Pact (plant asset care team)
3. Planned maintenance
4. Energy management
5. Office area effectiveness
6. Cost reduction
7. Skill development
8. System process

For each pillar there is a pillar team in the plant. Pillar team has members from each AET. Pillar team collects information from all AETs, analyses it and suggests new ideas.

**PACT (Process and Asset Care Team):**

In this team the members will be Wage Board employees of technical department. In the plant all the AETs are divided into different zones. According to the area there will be 2 PACs in some zones and 4 PACs in some zones. The main function of members of this PACT is to find out any abnormalities in the area and to prepare action plan for solving that.

**TQM TOOLKIT APPLIED IN ULTRA TECH CO Ltd:**

- 5-Why
- Fishbone
- 9-step process
- Criticality assessment
- Condition appraisal
- P-M analysis
- SQUIS
REFERENCES


8. ibid., p.53.

9. ibid., p.82.


12. ibid., 1999, p.43.


