Lighting up the Future

Building and Home Automation Solutions from L&T
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Intelligent Buildings, Smart Homes
L&T’s Foray into Building and Home Automation Products

For years, L&T Switchgear was all about products that protected and controlled power in industries and at farms. Our products did their job so well that they became market leaders. Recently, the leader has turned its gaze towards a new frontier. It’s a frontier that is close to home - in fact it is home itself, and encompasses commercial buildings in its sweep.

L&T’s venture into a domain that is referred to as ‘Building Electricals’ is in pace with the quiet revolution that is transforming the application of electricity in domestic and commercial applications. Until a few years ago electricity was about having tube-lights and fans in the house. Not any longer. Today we demand more from electricity. We want comfort, safety, energy management & conservation, communication, quality and innovation.

Buildings are no more structures of concrete that hold offices and residences. They are intelligent entities that can be commanded to perform a variety of functions using a host of modern electronics applications.

While we shop in malls, dine in fancy restaurants, experience the comfort of our houses and offices, what doesn’t cross our minds is that all this is made possible through some state-of-the-art technologies and automation systems. And L&T has a role in the transformation that these new-age technologies are bringing about.

Dominance in the Electrical Systems Space

L&T’s Electrical & Automation Operating Company (EAOC) has been a prominent presence in the electrical systems and industrial automation markets for the past several decades. Moving on from being the market leader in India, L&T has also made its presence felt in several overseas markets.

The Company’s U-Power ACBs are sold across five continents, under four different brand names. L&T is also a strong player in the measurement and protection equipment segment. L&T’s MCCBs and SDFs compete with global majors in the world market. The power quality equipment manufactured and marketed by L&T is widely acclaimed for the comprehensive range it offers.

With its range of Flame Retardant (FR) and Flame Retardant Low Smoke (FRLS) wires, L&T is a reputed name in wires for buildings. These wires...
terminate onto switches, sockets and other electrical wiring accessories. L&T's electrical wiring accessories, launched under the brand name ‘ORIS’ in 2008, are available across the country through a network of retailers.

Thus, the Company offers a complete range of building electrical systems. But a great product range is one part of the story. Delivery to the world outside is another. L&T's wide product range is complemented by strong marketing efforts and service capability. Backed by a nation-wide network of stockists, system integrators and service centres, L&T has perhaps the largest reach, taking products and services to every corner of the country. A strong dedicated team of sales and marketing professionals ensures timely delivery of the right solution for any given requirement.

Then again, L&T’s well-thought-out delivery modes make all the difference. These methods have been institutionalised by the Company so that they can be easily deployed by channel partners who in turn are judiciously selected. Only after several probation projects are they formally appointed as Authorised Integrated
Solution Providers (ISPs). This helps L&T establish technical and project management competence to ensure that the products are integrated in the manner required by the customer. The ISPs are located closest to the customer and thus are able to ensure faster response time to well-defined Standard Operating Procedures (SOPs) that are commonly followed across its ISPs. Best-in-breed practices are followed to deliver utmost value to the clients.

It was only a natural logical step for the Company to take its automation expertise to buildings and homes. L&T now offers the widest range of electrical and automation products/systems for buildings with the largest reach in the country, addressing all building-related electrical and automation requirements.

**New Forays – Building & Home Automation**

L&T is not new to automation. The Company’s Control & Automation (C&A) Business Unit has been effectively providing discrete and turnkey automation solutions for a wide variety of industries since 1972.

However, commercial complexes and residences are a different ball game.
altogether. And the pace at which L&T has created a space for itself in this segment, in the short span of time it has been in it, is exemplary.

It has just been a little more than a year and-a-half since L&T decided to step into the glitzy, hi-tech world of Building and Home Automation products. The first project, using L&T’s Building Automation products, was undertaken in 2008 and today, L&T provides automation solutions to malls, commercial office complexes, hotels, hospitals, and celebrity residences.

**Building Automation**

Building automation systems are for institutional and commercial establishments. L&T has created its own brand of building automation products. The USP of L&T's products is that they follow open architecture and can be easily integrated into other systems. Other distinctive pluses are – being suited for Indian conditions and being the best-in-class in technology and user friendliness.

Building automation systems can be further broken down into categories that add to convenience, comfort, energy, safety, security, usability and design.

**Automation Implies…**

**Energy Efficiency:** Automation is an integral part of green buildings. Zone controlled air-conditioning, light controls that use presence detectors or motion sensors, energy auditing to monitor energy usage and re-distribute energy loads, are just some of the many applications that can make a building, commercial or residential, more energy efficient.

**Comfort:** With an intelligent house one may forget to switch off the lights or the air conditioning with no harm done. Motion sensors controlling lights, a push of a button that sprinkles the garden with water and turns on the outdoor lights, a home theatre that seamlessly integrates lighting, projection screen deployment, surround sound control, curtains, etc...there is not much that cannot be automated with the right systems in place. Discrete touch screens make switch-cluttered walls a thing of past.

**Safety:** It’s reassuring to know that all electrical appliances, and water and gas supply can be switched off with just the push of a button as one leaves home for, say, a vacation. What’s even more assuring are the safety checks that come as part of the package. The system runs a presence simulation routine creating an occupied appearance during the resident’s absence. Should an uninvited visitor still manage to break in, the right systems can activate all necessary protective actions in cooperation with the integrated burglar alarm. Even from a distant location one can have a look at the recorded camera images and alert emergency services if needed. Houses can also be organised in groups to be monitored over the internet from remote sites.

**Usability:** Each of the controls like push buttons and touch screens are logically built-up with every function easily accessed and clearly displayed. So, there could easily be a scenario where one draws the curtains on the windows using the TV remote control while watching news.

**Design:** For a balanced interior, push buttons, touch panels and touch screens are considered to be aesthetically more appealing. These can also be customised, depending upon the user’s taste and the décor of the place.

BMS or HVAC controls ensure greater convenience, comfort, energy efficiency and coordination with the rest of the building utilities for various functions e.g. temperature control; EMS is about ensuring improved quality of power and energy efficiency. This is achieved through Energy Auditors, a web-based tool that helps monitor and re-distribute energy loads; CCTV, as we all know, provides security and safety of public places, buildings and enterprises, through surveillance. These are becoming increasingly relevant in the current times; safety from fire is a critical and mandatory aspect for all high-rise buildings. Fast action, easy integration, simultaneous alarms to agencies and de-activation/activation of desired areas in a building form very crucial aspects of FDAS; ACS allow authorised personnel and disallow unauthorised ones from accessing the premises. L&T’s offering comes with a two-tier architecture that gives an eco-friendly option to access control by directly connecting the addressable readers to the central controller, thus eliminating the need for secondary controllers; Lighting Controls is the final BA vertical. Other than dimming and colour mixing, lighting controls also include presence detectors that form a very simple energy efficiency solution.

All building automation products from L&T use state-of-the-art technologies and compete globally with world leaders in the space. The key element of L&T’s products is that they fit into the highly scalable and future-proof architecture known as “L&T Architecture for Building Automation” (LTAB), allowing clients to add on each vertical as per their need and then integrate it all with one unifying open protocol Integrated Building Management System (IBMS).

Home Automation
Home Automation is an emerging area of automation, which is expanding exponentially. Smartly designed homes are the order of the day. With increase in the net worth of individuals, home automation is expected to see a phenomenal growth in the coming years.

Home automation systems are for residences and broadly include lighting controls; curtain control, projection control and other motor-based controls; access/ safety applications like video door phone, alarms for smoke, glass-break, burglar, etc; integration of AC, multi-zone AV, etc; and control through mobile phones/ PDAs (i-Phone, i-PAD), etc.
L&T offers the best in home automation technology to the Indian market. The two product formats offered by L&T are TELETASK – a high-end system with integration of almost all popularly used white goods in the home environment – and TEBIS – a KNX-based system from Hager (KNX is a network communication protocol for intelligent buildings). Retro-fitting for existing wired homes, using the wireless option, makes it more customer-friendly.

Home Automation is the integration of all different electrical systems in the house. This integration connects the normally autonomous systems and circuits to a network to enable generation of new functionalities. However, hardware integration is

Shoppers Stop – Managing Energy

At Shoppers Stop, one of the largest shopping outlets, a wide array of items of regular use and consumption are brought together under one roof. Electricity requirements are high. The focus has, therefore, always been on effective power utilisation and reduced energy consumption, by eliminating watt wastage at every point of distribution. Most of the load was single/three phase, causing phase imbalance. Also, there were power factor concerns at quite a few locations. All this was corrected in just about 1-2 months by using the PowerMan application, installed by L&T’s authorised ISP M/s Rasan that resulted in 3-4% saving.

With L&T’s PowerMan, it is easy to identify energy wastage, compare energy consumption and take corrective action. Energy consumption can be benchmarked, and consumption at each store can be known. In addition, targets can be set for each of the outlets and bills can be generated for the tenants. This was carried out under the guidance of Mr. Sudhir Soundalgekar and Mr. Prashant Purav from M/s Shoppers Stop Ltd.
not the only aim. An intelligent connection offers more than the sum of its individual parts. Sometimes the added value is strictly technical, sometimes it’s an obvious addition to comfort and safety. Often it even offers an aesthetic, economical, user-friendly and ecological added value. The more electrical systems are integrated into one’s home automation systems the more the ecological value.

So, home automation is not just lighting control, but the integration of an extensive package of electrical functions such as lighting, curtains, sun shades, appliances, humidifiers, heating and cooling, audio, video, video door phone, etc. It also allows interaction with mobile phones, PC, internet including LAN, WAN, WiFi applications, etc.

Green Buildings – The Need of the Hour

Today, corporations are striving to go green. L&T is among those few that embraced the concept much before it became the norm. A key manner in which L&T adopted this cause was through automation.

While all L&T campuses are energy efficient, zero or minimal-water discharge campuses that make extensive use of renewable energy, one has especially raised the bar for all corporate houses in the country.

L&T’s Centre for Excellence, Unnati, is a green campus that provides an eco-friendly work environment. The building is equipped with modern amenities like access control and building management systems with zone-controlled air-conditioning and efficient energy management systems. A solar photovoltaic power generation system generates 180-200 units of energy on an average. A solar water heating system, with a capacity 1500 litres/day, takes care of the water requirements of the campus cafeteria. A waste water treatment plant recycles water for gardening. Hazardous waste is collected by the Mumbai Waste Management and e-waste is processed by Eco-Reco Ltd. Kitchen waste is collected in two compost pits, for composting to be used as manure. Noise levels are regularly checked to be kept within permissible limits.

Another L&T building that has set a benchmark for corporations in India is L&T’s Technology Block at Hazira that bagged the coveted Platinum Rating under the LEED NC v2.2 Rating System, widely acknowledged to be one of the toughest in the world.

Securing 56 out of the 57 attempted points in the rating system, the building is ranked third greenest in India and the first LEED Platinum rated project in Gujarat.

The automation for this building, including Building Management Systems and Energy Management Systems was done by L&T’s ESP – Automation.
Do you know that what you can buy for Rs. 1 lac today will cost you over Rs. 5.74 lacs after 30 years? This is because of inflation (simply defined as the percentage increase in the prices of goods and services every year). Assuming Inflation @ 6% P.A. the value of Rs. 1,00,000 will be Rs. 17,411 after 30 years. Hence you have to let your money work harder for you.

Mutual Fund - Is it for you?
If you are someone who does not have the time and/or the experience to analyse and invest in stocks and bonds, mutual funds offer a vital investment alternative. This is because mutual funds spread the risk by investing in a basket of assets (equity debt etc) rather than putting all the eggs in one basket. Then there is a team of professional fund managers, with in-depth research inputs from investment analysts, who manage the investments. Also, one individual may not have the access to critical information required for making judicious investments that mutual funds would have as large institutions.

The Essentials of Asset Allocation
Asset allocation is a method for describing how much of different investment classes – stocks, bonds, cash, real estate, precious metals, commodities etc- one should have in the portfolio. The idea is to distribute the risk across different investments so that downturn to one particular asset class does not affect the investor appreciably. Another prudent thing to do is to periodically review and rebalance the allocation as per needs.

Asset Allocation Models
Different people require different asset allocation models to suit their needs and risk-taking abilities. A retired person with a lumpsum to invest may prefer fixed income obligations for a steady monthly income throughout the remainder of his/her life. On the other hand, a young corporate employee will be interested in building wealth without the worry of depending on his investments to meet day-to-day expenses. So, he may ignore short-term market fluctuations and prefer a portfolio heavily concentrated in stocks/ equity mutual funds.

Preservation Model for the Conservative Investor
Investors who have a fixed expense in near future, e.g. the purchase of a house, or those who do not wish to risk losing even a small percentage of principal value in short term may find this model suitable.
Cash and cash equivalents such as money markets, treasuries and commercial paper /ultra and short-term funds debt-oriented mutual funds
often comprise eighty-percent of these portfolios. The biggest danger is that the return earned may not keep pace with inflation, eroding purchasing power in real terms.

**Income Model for the Steady-Income-Seeking Investor**

The need for in-hand cash for meeting daily expenses is of primary importance for these investors. A typical income-oriented investor could be an employee nearing retirement and facing the prospect of losing his steady source of monthly income. Another example would be a young widow with small children who has received a lump-sum settlement and cannot risk losing the principal. For such investors, the recommended options are Monthly Income Schemes of Post Offices or Monthly Income Plans of Mutual Funds, with some portion invested in shares of blue chip companies that have histories of continuous dividend payments / large cap oriented mutual funds.

**Balanced Model for the Semi-Conservative Investor**

Portfolios based on this model attempt to strike a compromise between long-term growth and current income. For most people, the balanced portfolio is good for both financial and emotional reasons. However, it is even more suitable for the age group 40+ as large expenses are likely to be incurred in the coming years.

The ideal result is a mix of assets that generates cash as well as appreciates over time with smaller fluctuations over long period of holdings. Balanced portfolios tend to divide assets between medium-term investment-grade fixed income instruments and shares of common stocks in leading companies, many of which may pay cash dividends. Balanced Mutual Funds or a composition of Monthly income plan with large cap funds could be ideal solution for investors seeking a balanced approach.

**Growth Model for the Risk-Savvy Investor**

The growth model of asset allocation is designed for those who are interested in building long-term wealth. Usually this group includes young people (25-35 years) who are in the initial phases of their careers. The assets are not required to generate current income because the owner is employed and living off his/her salary for daily expenses. In fact, in contrast to the income portfolio, the investor is likely to increase his or her deposited funds. Even hundred per cent of the portfolio can be invested in common stocks or in aggressive mutual funds with a proven track record.

**Beyond Asset Allocation**

Choosing an asset allocation model is just the first step to investment success. One needs to review and reallocate investments to prevent erosion of wealth in the long-term. As the needs change with increasing age, so must the asset allocation strategy.

It is advisable to engage a financial planner and share one’s needs, objectives and risk-taking abilities to take decisions for a successful financial life. If investments are managed by professionals with a proven track record of identifying appropriate instruments, such as the fund managers in Mutual Funds, one can get reasonable diversification of investments and can expect to achieve one’s financial goals.

**L&T Mutual Fund**

L&T Mutual Fund (L&T MF) came into being on February 16, 2010 after L&T Finance acquired the erstwhile DBS Chola Mutual Fund. This fund house has had a credible track record of its schemes, some of which have been creating wealth for investors for over 14 years now. These schemes have witnessed the most turbulent of times in the history of the nation and have emerged as the preferred schemes of choice for investors. Noteworthy among them is the first ever launched AAA rated debt fund, The L&T Triple Ace Fund and the first Multicap Fund, the L&T Multicap Fund in the industry.

L&T MF harnesses technology in all aspects of business – such as product innovation, investor servicing & investment management to emerge as a one-stop shop for all investment requirements.

With its principles of fund management, investment processes, and the financial advice given to investors, L&T MF has won the trust over 1,20,000
of investors. Since the acquisition of DBS Chola Mutual Fund, the assets have grown from Rs. 2465 crores to Rs. 3974 crores, as on Aug 31, 2010.

[Source: http://www.amfiindia.com (Past performance may or may not be sustained in future and is no guarantee of future results.)/

Some Offerings

One’s investment needs depend on one’s personal and financial goals. The product range available at L&T MF, takes care of a gamut of these needs and couples it with world-class, customised services. Some of the popular products are:

**L&T Midcap Fund**

Indian companies have entered a time of high growth. This offers opportunities to small & medium enterprises to grow at faster pace than the growth rate of large & mature companies. Therefore, investing in midcap companies enables participation in comparatively early stage of the business life cycle of these companies. Investors with high risk-taking abilities would prefer it.

L&T Midcap Fund is an open ended equity scheme with an objective of generating capital appreciation by investing primarily in midcap stocks. It is a pure midcap fund that meticulously identifies valuation gaps by analysing the growth prospects of a company. The emphasis is on finding stocks which could be potential wealth creators of tomorrow.

**The L&T Opportunities Fund**

These are meant for the aggressive investor. All stocks or sectors do not move proportionately or in one direction in the equity market. The Fund chooses stocks based on their potential to take advantage of valuation mismatch that arises due to these movements. This Fund, therefore, attempts to take advantage of these opportunities. E.g. when mid-cap stocks outpaced the large-caps, the exposure to mid-cap stocks was increased.

Adopting an aggressive strategy in an up trending market has given the fund the ability to deliver. This fund should be considered for investing from the medium to long-term (over 2-3 years) investment, with the objective of capital appreciation.

**L&T Monthly Income Plan**

If you are a conservative investor who seeks periodic income, the L&T Monthly Income Plan is a good investment avenue. This fund is an open-ended income scheme that invests 80% to 100% of its corpus in instruments such as debt, money markets and government securities, and can invest up to 40% in securitised debts. It also invests up to 20% of its corpus in equity and equity-related instruments.

**L&T Fixed Maturity Plans**

These are close-ended income schemes with a fixed maturity date i.e. that run for a fixed period of time. This period could range from one month to as long as two years or more. When the fixed period comes to an end, the scheme matures, and the investor receives the accumulated amount.

FMPs do not invest in equity. The portfolio is generally invested in debt and money market instruments maturing in line with the tenure of the scheme. The objective is to lock-in the investment in securities at a specified rate of return thereby insulating the scheme against market fluctuations

**Transparency**

L&T MF has set new benchmarks in the industry by maintaining the highest level of transparency. Disclosing portfolios on a monthly basis is a step in this direction. On one hand, it gives investors a great deal of comfort to know where their money is deployed and on the other hand, it helps them understand the thought process that went into chalkling out their investment plans, the purity of portfolios, asset allocation and sector preference.

The success of any organisation depends on the firmness of its process. L&T MF has robust processes in all functional areas like research, investment, sales, operations, human resources, risk management and compliance. The processes are designed so that all activities act as check points and also complement other activities.

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### Sample Asset Allocation using Mutual Funds

<table>
<thead>
<tr>
<th>Category</th>
<th>Allocation</th>
<th>No Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRESERVATION</strong></td>
<td>100% L&amp;T Select Income Fund</td>
<td>10% L&amp;T Growth Fund</td>
</tr>
<tr>
<td><strong>INCOME</strong></td>
<td>90% L&amp;T MIP</td>
<td>10% L&amp;T Growth Fund</td>
</tr>
<tr>
<td><strong>BALANCED</strong></td>
<td>50% L&amp;T MIP Or 50% L&amp;T FMP</td>
<td>50% L&amp;T Growth Fund Or 50% L&amp;T Opportunities Fund</td>
</tr>
<tr>
<td><strong>GROWTH</strong></td>
<td>75% - 90% L&amp;T Growth Fund Or 75% - 90% L&amp;T Opportunities Fund</td>
<td>10% - 25% L&amp;T Select Income Fund Or 10% - 25% L&amp;T FMP</td>
</tr>
</tbody>
</table>
LTS 3000 Goes to Work

In June 2006, L&T and SapuraCrest Petroleum Berhad announced the formation of a joint venture to build, own and operate a Heavy Lift cum Pipelay Vessel (HLPV) of lift capacity 3000t, valued at USD150 million. This step was taken to make L&T’s Oil and Gas operations self-sufficient, offering holistic services to customers, and enabling both partners to better address the growing global demand for oil and gas engineering, procurement, installation, construction and services.

The JV took delivery of the vessel from ASL Shipyard Singapore, in March 2010. After a period of testing, trials and rig-up for operations, the LTS 3000 was ready for undertaking offshore construction work in July 2010.

The vessel was mobilised in mid-July 2010 to Kinabalu Field, Eastern Malaysia, being operated by Petronas, for installation of the KPNG-B Jacket.

Currently LTS 3000 is about to complete this installation that is being carried out by SapuraCrest under a three-year umbrella contract. The contract was awarded to SapuraCrest by Petronas, covering the requirements of 11 Production Sharing Contractors operating oilfields in Malaysia. This contract will enable the LTS 3000 to achieve high vessel utilisation during the period May to October each year in Malaysia.

Following the installation of the KPNG-B jacket, the LTS3000 is scheduled to install two more jackets and five topsides, before she mobilises to India to take up installation works under ONGC’s MHN and MHN RD Projects, starting mid-November 2010.

These projects were awarded to E&C Division’s Upstream Hydrocarbon OC. The work programme for the LTS 3000 includes installation of the MHN Jacket, which at 12,500 MT will be the largest jacket ever to be installed in the Indian waters.

The scope of work to be carried out by LTS 3000 in India includes eight jackets and six topsides, and other miscellaneous structures, which will keep the vessel occupied till Mid-April, 2011. Thereafter the vessel will be mobilised to Malaysia to commence work under the Petronas contract being executed by SapuraCrest.

V. Ashwini Kumar
E&C - Upstream
The swanky new terminal, T-3, at the Indira Gandhi International Airport, New Delhi was successfully completed on July 3, 2010, after 36 months of bustling activity. L&T’s ECC Division won the contract to build the new airport in February 2006, securing the order against stiff international competitive bidding. The contract involved design and construction of a state-of-the-art passenger terminal, and one of Asia’s longest runways.

The new terminal is part of the project for the modernisation and upgradation of the Delhi airport awarded to Delhi International Airport Limited (DIAL), a JV formed by the Bangalore-based GMR Group, Airports Authority of India (AAI), Fraport and Malaysian Airport Holdings. The T-3 airport project has been developed by DIAL under Public-Private Partnership.

As part of the first phase, DIAL has already commissioned the third runway (4,430m) in September, 2009. That makes the airport India’s first and among the few civilian airports in Asia to have three operating runways. The runway is equipped with modern instrument landing systems that allow aircrafts to land even with visibility as low as 50m. The passenger terminal building (PTB) was completed in record time of 18 months and commissioned in July 2010.

The Structures
With a capacity to handle traffic of 34 million passengers, T-3 is the largest airport in India and among the most advanced and fastest built international airport terminals in the world. The new terminal also joins the exclusive league of airports that operate Airbus A-380, the world’s largest passenger aircraft.

The terminal is located in the outskirts of South Mumbai, well connected by six lane winding roads and flyovers, and a dedicated metro railway line. With its departure complex at the upper level and the arrivals at the lower, the PTB is flanked by two piers. The building is 28m above the ground level with a built-up area of 5.5 lakh sq.m and the apron spreads out to 6.3 lakh sq.m. Within PTB there are 168 check-in counters equipped with Common Usage Terminal Equipment (CUTE) and Common User Self Service (CUSS) facilities for generation of self check-in boarding passes.

An impressive ramp leads the passengers into the new PTB with a

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Touchdown at T-3.
multi-level car park. A subway tunnel from the metro station also terminates here in addition to a skywalk bridge connecting the car park to the T-3 terminal, which caters to both domestic and international traffic, arrivals and departures. 90 per cent of all passenger traffic at T-3 is handled via aerobridges and six of these aerobridges are compatible for the Airbus A-380. There is a five-level in-line baggage handling system installed in the terminal in addition to travelators (automatic walkways).

Once the passengers reach the terminal, they can watch movies, shop, or savour different cuisines from several food and beverage courts. The terminal has been built to provide the highest service levels so that the least possible time is taken in all processing areas such as main entrance gates, check-in counters, baggage screening, immigration and security check, etc.

The airport gets ample natural light and is provided with facility for recycling water through a 10 MLD sewerage treatment plant with zero discharge and 310 rain harvesting pits.

The Forecourt
Passengers boarding flights access the departure level through the ramp that leads to the forecourt. This forecourt is a passenger drop off zone comprising nine lanes – six dedicated passenger drop off lanes adjacent to 3m wide curbs.

Stretching across the length of the PTB (about 300m), the forecourt is sheltered by a fabric roof, forming a translucent barrier to sunlight and providing protection from rain. The forecourt is followed by the external landside concourse, a transitory space engulfing the check-in hall.

The Passenger Terminal Building
The check-in hall consists of 168 check-in counters distributed over six locations (check-in islands) to ensure minimum check-in time for passengers. It also has the provision of 28 additional check-in counters for future development.

In addition, the check-in hall provides 84 ticketing counters, four over-sized baggage counters, provision for about 35 CUSS kiosks, facilities like Forex, toilets, reserved lounges, access to hotel, facility for passengers with reduced mobility seating lounges, etc. The check-in halls lead towards security check and immigration. To bring down the waiting time for the international passengers to just about 10 minutes, a total of 44 immigration counters have been provided. 30 security frisking booths follow this (16 for domestic and 14 for international) with provision for future expansion.

The Canyon Area
The enormity of the yawning space in the canyon area is accentuated by the 27m-high columns. On moving through the bridges across the canyon, the passengers are led to the retail area. This area has a retail space of 30,000 sq.m distributed in two levels. Passengers are finally led from the canyon to the aircraft through piers that act as waiting space for the departing passengers.

The passengers exit the terminal through the gate portals by crossing through the internal landside concourse. The concourse, acting as a transitory space before exiting the building has facilities such as transfer check-in (11 counters), onward travel centers, retail spaces, etc. A skywalk connects the terminal to the metro station and the 4300 capacity multi-level car parking. Airport services building, fire stations, pump rooms, cooling towers of huge capacities, form the flood line of the terminal building.

The Transformed Wonder
The completion of T-3 in just about three years manifests L&T’s already proven capabilities on a global platform. The architectural design and detailing for the terminal – an example of expert engineering, state-of-the-art design, efficient planning and flawless execution – has been carried out keeping in mind 2016’s estimated annual passenger traffic. The distribution of space was chalked out taking cue from the structure’s functionality, and the movement, comfort and security of the passengers.

The Indira Gandhi International Airport (IGIA) has been ranked the fourth best airport in the world in the 15-25 million passengers per annum category by the Airport Council International (ACI). The council, an international association of the world’s airports, has also ranked the IGIA as the Best Improved Airport in the Asia-Pacific region.
Orissa has an abundance of raw metals. Among these is iron ore. With its estimated reserve of at 5.42 billion tonnes, the state is a treasure trove for manufacturers of steel, pig iron and sponge iron. The excellent road connectivity of Paradip Port with these belts makes Orissa of great strategic importance for India’s steel industry.

Bhushan Steel Limited (BSL), the largest manufacturer of auto-grade steel in India, is presently building a five million tonnes per annum (MTPA) integrated steel plant at Meramandali, located around 130km from Bhubaneswar, at a cost of around Rs. 25,000 crore.

L&T is concurrently executing all major units of iron & steel production at a single location for this integrated steel plant.

Phase – I
The first phase of this project was installed with a production capacity 2.2 MTPA of steel, which involved erection of a 180TPH twin shell conarc furnace; a 2X180TPH ladle furnace, a 1X single strand slab caster in addition to four kilns, a 110-MW power plant, a steel melt shop and raw material handling facilities. The first phase also included production of sponge iron (6,80,000 TPA), billet caster (3,00,000 TPA) and slab caster (2.2 MTPA).

Phase – II
Currently, the second phase of BSL (capacity – 5MTPA of steel, likely to go up to 7MPTA) is under construction. L&T’s Construction Division is executing various EPC packages for this phase. The scope includes a 2.5MTPA (3814cu.m) blast furnace, a 2X2.3 MTPA (204 sq.m) sintering plant, the raw material handling system, all civil, structural, piping & equipment related work for two slab casters, two basic oxygen furnaces (BOF), and civil work for 2.5 MTPA coke oven.

L&T entered the project with a contract value of Rs.1400 million. This has now risen to Rs.24591 million. Expected timely completion and commissioning of various plants has resulted in customer delight and increased trust in L&T’s project execution capabilities.

Constraints
The project execution commenced in January 2007 with the deployment of the first batching plant. By and by, after site clearance, the fabrication work began with the development of the fabrication yard.

As a greenfield project, there were many political and local problems to be dealt with. To begin with, a boundary wall had to be erected to demarcate the site. The toughest challenge however was to mobilise a large pool of skilled workforce. As the site is located in a remote place with harsh climatic conditions (summer at 48°C and rainfall of 60mm), there were no workmen in the vicinity. But once these initial hurdles were crossed, the work picked up momentum and the project team started setting benchmarks.

Furnace-II
As part of BSL expansion programme, contract for the construction of the new furnace-II was awarded to L&T-Paul Wurth consortium, on a turnkey basis.

The scope included supply of all indigenous equipment for all technological and building structures like plant utilities, water structures, ventilation, fire fighting, coal grinding system, electrics and instrumentation, civil works including roads, drainage and railway track. These items included pumps, fans, pipes, fittings, valves, ducts, chimneys, coal mill, refractories, bins, silos, etc.

L&T also carried out all civil work for foundations, buildings, road work, drainage systems, railway track, etc, and supply, fabrication and erection of structural work, installation, testing and commissioning of all imported and
indigenous equipment, plant utilities, water system facilities, plant automation system, etc.

**Sinter Plant**
Order for the construction of two sinter plants that suited the blast furnace requirement was awarded to L&T as part of the expansion project. The basic design of this plant was done by OUTOTEC. L&T took care of the detailed engineering and the supply of indigenous equipment.

**Quality Management System**
A full-fledged quality department was set up to implement on-site quality management. Continuous hands-on experience and training was imparted to the front line engineers and workmen, which apart from enhancing their knowledge, also enabled the entire team achieve targets better.

**Environment, Health, Safety**
Taking care of the wellbeing of more than 1,21,400 workmen (deployed during the peak of construction) was quite a task in itself. L&T's management policy, EHS initiatives and commitment to sustainability ensured this from the commencement of the project. Safety awareness programmes were regularly conducted for every category of workmen in various areas like material handling, working at heights/depths, deep excavation and confined spaces including offices. All workmen were educated on all possible safety measures. They were given the freedom to alarm engineers and fellow workmen for any unsafe actions, methods or zones. Pre-employment medical examination and screening was done for all workers to ensure the right man for the right job i.e. height passes were issued to workers who were to work at great heights only after examining their physical and mental condition. To supplement this, excellent fall prevention and fall protection systems were put in place.

The safety training hall, specially established at site for imparting safety training, had a seating capacity of 60 at a time. This hall featured various safety tools, tackles, gadgets and accessories to provide a clear understanding of different devices to everyone. In addition, it had a 'formwork mock-up yard' where hands-on demonstrations were carried out.

As a result of this, the site was able to achieve an all time record of 58.2 million safe man-hours from July 6, 2007 to June 7, 2009, for which it was honoured with an international award from British Safety Council for the year 2008, and the ECC Safety Rolling Trophy for two consecutive years.

**Labour Colony**
A residential colony was established within the plant premises to accommodate more than 6000 workmen. Frequent health check-ups for all labourers are conducted by a qualified and registered medical practitioner, who was accessible at all times along with his team of paramedics, for any first aid requirement.

**Construction Skills Training**
To cater to the huge requirement of skilled workforce, a construction skills training centre was established at the site. Candidates were sourced from nearby villages and the local industrial training institute. Training was provided to the selected people in line with L&Ts curriculum in areas of formwork, bar bending, electrical work and welding.

**Society & Environment**
Saplings were planted all along the periphery of the site, which was spread over an area of 3sq.km area, and near the labour colony. In addition, several social activities were regularly carried out to improve the lives of the people living in the vicinity of the site. These included blood donation camps, malaria eradication programmes and free medical camps for villagers and school children at periodic intervals.
Mr. A.M. Naik Wins NDTV’s Business Leader of the Year Award

In an evening sure to go down as a memorable one for L&T-ites, Chairman & Managing Director, Mr. A.M. Naik was honoured with a special award at the NDTV Profit Business Leadership Awards on September 1, 2010. Mr. Naik received the Business Leader of the Year – Building India Award from the Union Minister for Finance, Mr. Pranab Mukherjee.

Mr. Srinivasan Jain, Editor of NDTV Profit, showered praise on Mr. Naik, saying that under his visionary leadership, L&T has rendered great service to the nation – ‘taking on challenges and doing what no one else can do’.

In response to a question on what the Government could do in building a better India, Mr. Naik said that expenditure on infrastructure needed to be enhanced to meet planned targets.

He also pointed at the critical area of defence and said that India could never be ‘sustainable’ unless its borders were secure. For this, he said that the private sector should have a prominent role in the production of defence equipment.

L&T Bags Leadership Award for ‘Excellence in Infrastructure’

Another honour that came L&T’s way at the NDTV Profit Business Leadership Awards was the Leadership Award for Excellence in Infrastructure. The Award was jointly received by Mr. K.V. Rangaswami, Member of the Board & President - Construction, Mr. Vivek Bhaskar Gadgil, Chief Executive & Managing Director of L&T Hyderabad Metro Rail Pvt. Ltd (formerly Sr. V.P. & Head E&GP OC), and Mr. S.N. Subrahmanyan, Executive Vice President & Head – B&F OC.

This is the fourth occasion when L&T has emerged the winner in the infrastructure category, affirming the Company’s leadership position in the industry.
L&T Plastics Machinery Limited (LTPML) – a wholly owned subsidiary of L&T – crossed a milestone on August 27, when the 4000th plastics injection moulding machine was handed over to the customer, TCI, New Zealand, at a function held at LTPML’s manufacturing facilities at Chembarambakkam, near Chennai. TCI, New Zealand is a renowned moulder of plastics components.

Mr. S. Raghavan, Senior Vice President & IPM OC Head, handed over the 4000th machine to Mr. Quintin Fowler, Managing Director, TCI, in the presence of Mr. N.S. Sivaraman, Vice President, Shipbuilding, other Chennai based SBU Heads of IPM OC, and Area Manager of CAO. At the same function, the 4001st machine was also handed over to the domestic customer, Mr. Ashok Goyal, Director, Tenty Group, Kolkata – a leading moulder of writing instruments.

Mr. P. Kailas, Chief Executive, and Mr. S. Venkataraman, Vice President, welcomed the gathering. This was followed by Mr. S. Raghavan’s keynote address. Mr. Sivaraman, the first Chief Executive of the then JV Company, delivered the felicitation address. Both the domestic and international customers spoke warmly of their association with LTPML. Mr. I. Venkatesan, Head-Manufacturing, proposed the vote of thanks.

The Chembarambakkam unit of L&T is a world-class plastics injection moulding manufacturing facility. It has been manufacturing injection moulding machines and auxiliary equipment for the plastics industry for the last two decades.
Mr. A.M. Naik Conferred Award for Contribution to Corporate Leadership

Chairman & Managing Director, Mr. A.M. Naik’s contribution in transforming L&T into a global company was acknowledged yet again. Mumbai-based Priyadarshini Academy, a renowned NGO, conferred on him its prestigious Harish Mahindra Memorial Award for Outstanding Contribution to Corporate Leadership.

The award was presented to Mr. Naik on September 19, at the Academy’s 26th Anniversary Global Awards function held in Mumbai, at the hands of the Chief Guest, Mr. Ashok Chavan, Chief Minister of Maharashtra.

Priyadarshini Academy is engaged in socio-cultural and educational activities and has been holding its biennial awards function since its inception in 1984. These awards acknowledge people around the world who have made outstanding contributions in different fields, and have touched and transformed people’s lives.

The Academy also honoured Dr. Anil Kakodkar, Nuclear Scientist, for his significant contribution to the development of nuclear technology in India; and Mr. Martin Luther King III, Civil Rights Leader, USA, was conferred the Ramkrishna Bajaj Memorial Award for Promotion of Human Rights.

L&T is BCCI’s Good Corporate Citizen

The Bombay Chamber of Commerce & Industry (BCCI) honoured L&T with its Good Corporate Citizen Award 2009-10, on September 21, at a ceremony held in Mumbai to celebrate BCCI’s 175th Foundation Day. Mr. R.N. Mukhija, Member of the Board & President – Electrical & Electronics, received the award from the Governor of Maharashtra, Mr. K. Sankaranarayanan.

The evaluation parameters included business performance, corporate interests, employee welfare, customer & stakeholder satisfaction and social investment. L&T emerged the winner by the vote of the jury that had its members drawn from legal, corporate and academic fields.

The award is yet another affirmation of the increasing public recognition of the Company’s impressive record in social initiatives and its high standards of corporate governance and ethics.

L&T had earlier won BCCI’s Good Corporate Citizen Award in 1995.
L&T's Houston Office Inaugurated

The new Houston office of L&T and L&T Infotech was inaugurated on September 9 by Mr. V.K. Magapu, Member of the Board & Sr. Executive Vice President – IT & Technology Services. The occasion was also graced by Mr. Sanjiv Arora, the Hon. Consul General of India – Houston, and Mr. Rajeev Arora, Managing Director – Haryana State Industrial and Infrastructure Development Corporation along with about 40 other delegates representing clients, prospects, partners and the Indo-American Chamber of Commerce.

“L&T is well positioned to offer IT and engineering services and provide the last mile connectivity to business results,” said Mr. Magapu. He further added, “We are one of the few, large accredited workshops in the world to make all kinds of complex equipment for the oil & gas industry.”

Houston is the oil & gas and energy capital of the US, and a critical part of the EPC vertical. The office has a Technology Innovation and Demo area that has been specifically set up to serve as a facility for L&T to work with clients and partners.

Congratulating L&T for setting up office in a city, which is of huge importance from the economic and business standpoint, Mr. Sanjiv Arora said, “The Consulate in Houston services nine states in the southern part of the country. Nearly 14.7% of the India-US trade is accounted for by Texas alone and the remaining southern states account for another 13 to14%.”

The inauguration ceremony was followed by an open-house tour of the facilities and a networking session. The Technology Innovation and Demo Area, and the display of offerings in the entire chain of services – consulting, testing, and data management – attracted enthusiastic participation from the audience.

This new office accommodates several L&T Infotech business units including SAP, EPC and Oracle. The other divisions represented include Integrated Engineering Services, Valves and Heavy Engineering.

Also present were Mr. KRL Narasimham, EVP and Country Manager – North America, L&T; Mr. Robert Surprenant, VP, SAP Alliance, L&T Infotech; Mr. Rakesh Mahajan, EPC Global Head, Centre of Excellence, L&T Infotech; and Mr. Amit Chadha, L&T Integrated Engineering Services Business Head – North America, along with the Houston sales teams from L&T Infotech, Valves, Integrated Engineering Services and Heavy Engineering.

L&T Again in Forbes Asia's Fabulous 50

For the fifth time in a row L&T has featured in the Forbes Asia’s annual ‘Fabulous 50’ list. And once again, L&T is the only engineering and construction company in India to feature in the list.

Forbes compiled an initial list of 936 publicly-traded companies of the Asia-Pacific region that had revenues or market capitalisation of at least $5 billion. The criteria applied included revenue, operating earnings, return on capital over the past five years, as well as the most recent results, share-price movements and future outlook.

Other Indian companies to have made it to the list include Infosys, TCS, ITC, Mahindra & Mahindra, Axis Bank, Dr. Reddy’s Laboratories, HCL Technologies, HDFC Bank, Hindalco Industries and JSW Steel.
Mr. K. Venkataramanan (KV), Member of the Board & President – Construction (Projects) delivered the keynote address at the EPC Sphere Conference in Mumbai, on July 23, 2010. The conference was organised by the Standard Board in association with the Process Plant & Machinery Association of India (PPMAI).

KV’s views on ‘Managing Projects, Programmes & Portfolios: Institutionalising Project Excellence in the Management of Large Portfolios’ received wide appreciation and his remarks were quoted by other prominent speakers from global EPC companies, vendors, consultants and end-customers.

He spoke on the factors responsible for scaling up profit growth, business drivers like project complexities, margin pressures, global competition, regulatory compliances, and the importance of an integrated project management system where risk, knowledge and human capital were the main pillars for profitable growth.

L&T’s contribution in strengthening the EPC industry was also applauded by all present.

A new statistical milestone was crossed when L&T’s Construction & Mining Equipment Business rolled out the 9000th L&T-Komatsu PC200-6 hydraulic excavator, on August 28, 2010. PC200-6 is the largest selling hydraulic excavator in the country in the 20-tonne class, and is deployed in a number of applications at various job sites.

At a function held at L&T-Komatsu’s (LTK) Bangalore Works, a symbolic key was formally handed over to Mr. Arun Karambelkar, Group Executive Vice President – Procurement & Outsourcing, Hindustan Construction Co Ltd. (HCC). He was also presented with a plaque by Mr. S. K. Mittra, EVP – CMB Sector, in the presence of Mr. Arun Banavali, AVP – Sourcing & Supply Chain, HCC; Mr. U.B. Dangi, AVP – Equipment Procurement, HCC; Mr. Anuran Ghatak, GM – Equipment, HCC; Mr. K. Yamada, MD – Komatsu India Private Ltd.; Mr. S.R. Subramanian, Chief Executive, and Mr. K. Yanagisawa, Dy. Chief Executive, LTK; Mr. Arvind K. Garg, GM – CEB, L&T, along with other personnel from L&T, LTK and KIPL.

Mr. S. K. Mittra (extreme right) hands over a plaque to Mr. Arun Karambelkar, to mark the occasion, while Mr. S.R. Subramanian applauds.

Mr. K. Venkataramanan at the EPC Sphere Conference, in Mumbai.
A
other milestone was crossed on July 2, 2010 with the supply of the 102nd P380 Scania tipper truck to Sadbhav Engineering Limited.
Sadbhav Engineering Limited is now the single largest owner of Scania tippers in India, which are marketed and distributed by L&T.
At an event held in Ahmedabad, the symbolic key of the tipper truck and a memento were handed over to Mr. Vishnubhai M. Patel, CMD, Sadbhav Engineering Limited, by Mr. S.K. Mittra, Executive Vice-President, Construction Machinery Business, L&T. Mr. B. Dinakar, Head - Construction & Mining Tipper Business, L&T was also present along with other L&T-ites.
Sadbhav Engineering Limited is a large diversified company in western India, with strong interests in irrigation, roads and mining contracts. Scania P380 tipper trucks are fitted with 18 cu.m. rock body and are benchmarked for their high productivity indices across off-highway segments. The Swedish-made tipper trucks were launched by L&T in India in November 2007 and the first batch of tipper trucks was supplied in March 2008. Currently, over 375 Scania tipper trucks are deployed across the Country.

Advanced Waste-Water Treatment Plant

L&T entered into an agreement with the Public Works Authority (ASHGHAL), Doha, Qatar for ‘Doha South Sewage Treatment Works, Phase II Expansion’, on June 27, 2010, with consortium partner Galfar Al Misnad.
The contract was signed by Mr. N. Suresh Kumar, Vice President – Water Technology, E&C and Mr. Satish Pillai, Galfar Al Misnad WLL, in the presence of the Director Chairman, Public Works Authority, Qatar. Also present were Mr. Roy Francis Saldanha, Corporate Business Development Manager, Qatar, and Gulf media.
This design & build contract, worth USD 190 mn, is to be executed in 912 days. The scope includes design, supply, procurement, construction, and testing & commissioning of Phase – II.
The treatment will involve combination of two advanced technologies (a) Sequential Batch Reactor (SBR) with rated capacity of 92000 m3/day followed by (b) Ultrafiltration (UF) plant for 187,000 M3/day. The plant is an expansion of the existing facilities.

This project is the biggest of its kind. ITT Corporation, USA is the Technology provider and the project is scheduled to be operational by 2012.
Single-Stop Shop for Construction & Mining Solutions Inaugurated

L&T's Construction & Mining Equipment Business unveiled a new service centre at Bahadurgarh on the Delhi-Rohtak National Highway No.10, on August 3, 2010. This service centre will be a one-stop service solutions provider for its vast customer base – various construction and mining projects in Northern India.

The centre has comprehensive facilities like spacious bays and specialised machines such as hydraulic test rig and machining centres. The services offered include complete overhaul of equipment, repair and overhaul of major assemblies, reconditioning of machine structures and testing of transmissions, engines and hydraulic assemblies. The service centre is also equipped with a full-fledged training centre for imparting classroom and hands-on training to customers, dealers and employees.

As part of value-added services to customers, L&T offers full maintenance contracts, annual maintenance contracts, site support agreements, customised services and recon exchange programmes for field machines, for ensuring maximum uptime of the machines.

The Service Centre was inaugurated by Mr. S. Raghavan, Sr. VP, IPM, L&T. Mr. S.K. Mittra, EVP, CMBS, L&T; Mr. K.R. Palta, VP-Corporate Affairs, L&T; Mr. S.R. Subramanian, CE, L&T-Komatsu Limited, Mr. C.V. Alavandi, CE, L&T-CASE Equipment Pvt. Ltd. and Mr. N. Kawanishi, VP, Komatsu India Pvt. Ltd, several customers and dealers were present on the occasion.