



Bajaj Electricals Ltd.

Inspiring Trust

GREEN BUILDING SOLUTIONS



Global Warming & it's Causes

Global Warming is increasing the earth's average temperature. The Green house gases are the main cause of the global warming. Green House gases like carbon dioxide, methane, and nitrous oxide are playing hazards in the present times. These green house gases trap heat in earth's atmosphere and thus result in increasing the temperature of earth. The excessive emission of these gases is the major cause of global warming. The major source of carbon dioxide is the power plants. These power plants emit large amounts of carbon dioxide produced from burning of fossil fuels for the purpose of electricity generation. Another major source of carbon dioxide in the atmosphere is the emission from the cars and other vehicles. About twenty percent of carbon dioxide emitted in the atmosphere comes from burning of gasoline in the engines of the vehicles. This is true for most of the developed countries.

Buildings, both commercial and residential represent a larger source of global warming pollution than cars and trucks. Building of these structures require a lot of fuel to be burnt which emits large amount of carbon dioxide in the atmosphere. Another major cause of global warming is deforestation. Deforestation is to be blamed for 25% of all carbon dioxide release entering the atmosphere, by the cutting and burning of about 34 million acres of trees each year. Greater urbanization, requirement of land for factories and buildings, requirement of timber are all reasons that are leading to deforestation, which in turn is leading to global warming.



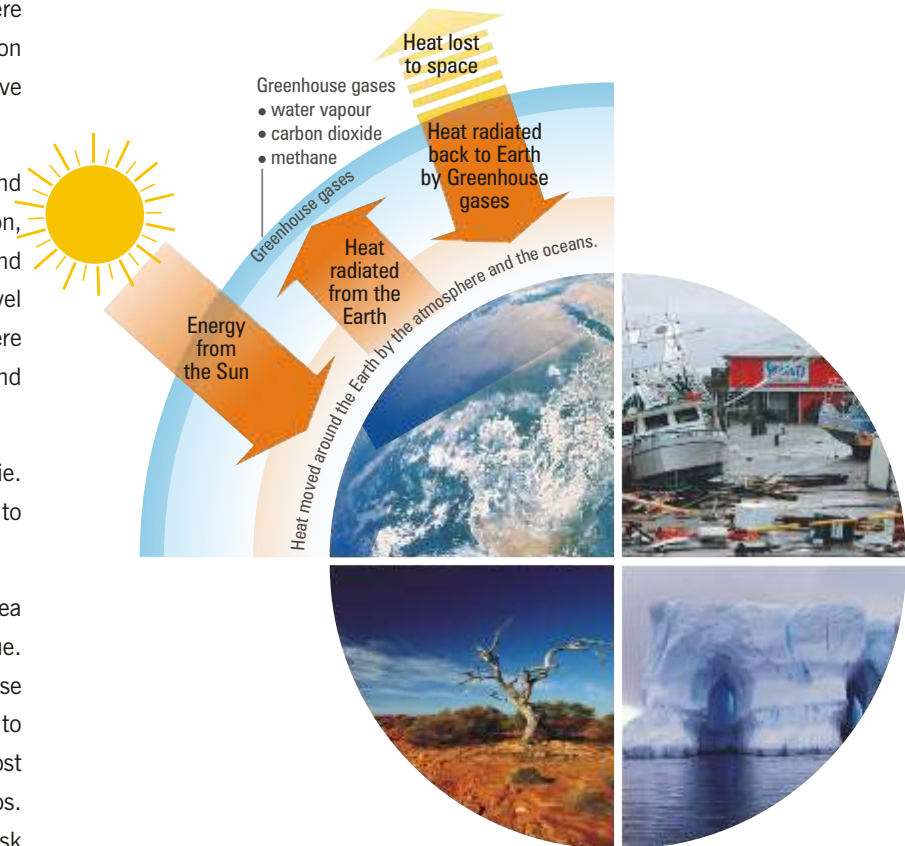
Impacts of Global Warming

A warmer world will bring in everything - from dirtier air and water to more severe floods and droughts. This rise in average temperature will have far-reaching effects on the earth's climate patterns and on all living things. Many of these changes have already begun.

On Weather Patterns : Higher temperatures could lead to increased droughts and wild fires, heavier rainfall and powerful & dangerous hurricanes. Greater evaporation, particularly during summer and fall, could exacerbate drought conditions and increase the risk of wild fires. Hotter weather enables deadly mosquitoes to travel greater distances; carbon dioxide in the air aggravates asthma and allergies. There are Heat Waves, Outbreak like Bad Air, Allergy and Asthma, Infectious Disease and Food & Waterborne Illness.

On Wildlife: Rising temperatures ravage Ecosystem Shifts and Species Die. Increasing global temperatures are expected to disrupt ecosystems, pushing to extinction of those species that cannot adapt.

On Glaciers and Sea Levels: Arctic summers could be ice-free by 2040, and sea levels could rise as much as 23 inches by 2100 if current warming patterns continue. Rising global temperatures will speed the melting of glaciers and ice caps and cause early ice thaw on rivers and lakes. Current rates of sea-level rise are expected to increase as a result both of thermal expansion of the oceans and melting of most mountain glaciers and partial melting of the West Antarctic and Greenland ice caps. Consequences include loss of coastal wetlands and barrier islands, and a greater risk of flooding in coastal communities.



Kyoto Protocol

In December 1997, the third Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) adopted the Kyoto Protocol. The Protocol requires developed countries (listed in Annex 1 of the protocol) to limit their Green House Gas (GHG) emissions to individual targets, resulting in on an average 5.2% reduction in the GHG emission from their 1990 emission levels, in the commitment period 2008-12. The protocol for the first time in the evolving climate change regime, provided for legally binding to the emission commitments by annex 1 parties.

Carbon Credits

Carbon credits are a key component of national and international emissions trading schemes. They provide a way to reduce Green House Gas emissions on an industrial scale by capping total annual emissions and letting the market assign a monetary value to any shortfall through trading. Credits can be exchanged between businesses or bought and sold in international markets at the prevailing market price. Credits can be used to finance carbon reduction schemes between trading partners and around the world.

There are also many companies that sell carbon credits to commercial and individual customers who are interested in lowering their carbon footprint on a voluntary basis. These carbon offsetters purchase the credits from an investment fund or a carbon credit development company that has aggregated the credits from individual projects. The quality of the credits is based in part on the validation process and sophistication of the fund or development company that acted as the sponsor to the carbon project.

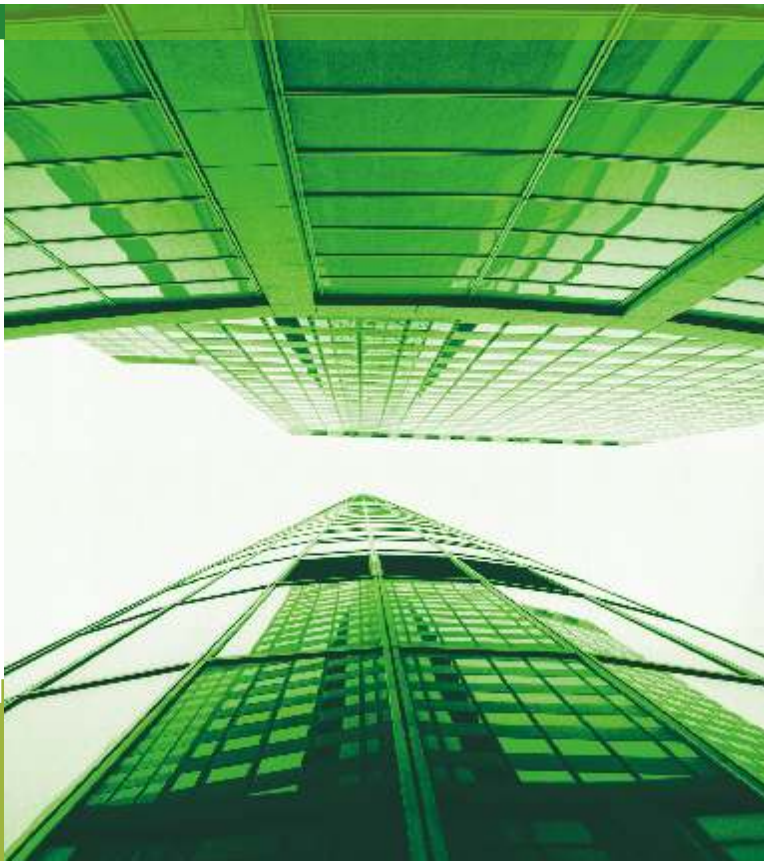
Indian Scenario

In India, carbon credit trade is entering the big league, with large Indian business houses jumping onto the bandwagon. After small and mid-sized companies, it's now the turn of the giants to explore options of cashing in on efficient production technologies to boost profitability, as polluting foreign companies rush to meet international deadlines starting next year. India is considered one of the largest beneficiaries in carbon credit trade, accounting for about \$5bn, or 31%, of the total world carbon trade through the Clean Development Mechanism. The adaptation of the Green Building technology by corporate and commercial sectors will be invariably beneficial by way carbon credit trades.

What is Green Building?

"A green building uses less energy, water and natural resources, creates less waste and is healthier for the people living inside compared to a standard building."

- As defined by Indian Green Building Council



Green building is designed to increase the efficiency of resources used like energy, water and material to reduce the building impacts on human health and our environment during the building's lifecycle, designing, construction, operation, maintenance and exclusion.

Green buildings reduce the overall impact of the built environment on human health and the environment as a whole.

This is achieved by following:

- Superior Indoor air quality within and around buildings and structures especially as it relates to the health and comfort of building occupants.
- To minimize the environment degradation caused due to depletion of resources such as air, water, soil. Thus reducing the operating cost.
- Reduced environmental effects like storm water runoff and heat island.

Green buildings achieve green artistic harmony of a construction and its contiguous natural built environment, although they are not necessarily distinguishable from their less sustainable counterparts.



Why Green Building?

Buildings have major environmental impacts over their entire life cycle. Natural resources like forests, soil cover, water, and energy are used extensively in the making of buildings.



More than 70% of the energy consumed in the building is for the lighting, space conditioning, water heating and the usage of monitor / fire alarm systems.

Resources are expansively used for the structure of the building and landscape development.

Water, the most vital resource gets consumed continuously from construction to operation. A series of building processes and inhabitant functions produce large amounts of waste.

Buildings are thus one of the major pollutants that affect urban environment and contribute to drastic climatic conditions.

The need is to design, construct and integrate a green building in the most scientific manner to address all the above issues.

In spite of the high cost of design and construction, the fact remains that green buildings cost less to operate as well as have great environmental benefits and provide better place for the occupants to reside and work in.

Benefits of Green building

Environmental benefits

- Enhance and protect ecosystem and bio-diversity
- Improve air and water quality
- Reduce solid waste
- Conserve natural resources

Economic benefits

- Reduce operating costs
- Enhance asset value and profits
- Improve employee productivity and satisfaction
- Optimize life-cycle

Health and community benefits

- Improve air, thermal, and acoustic environments
- Enhance occupant comfort and health
- Minimize strain on local infrastructure
- Contribute to overall quality of life



Green Building Certification



LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Developed by the U.S. Green Building Council (USGBC), LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.



LEED is a voluntary certification program that can be applied to any building type and any building lifecycle phase. It promotes a whole-building approach to sustainability by recognizing performance in key areas:

- Sustainable Sites
- Energy & Atmosphere
- Indoor Environmental Quality
- Awareness & Education
- Regional Priority
- Water Efficiency
- Materials & Resources
- Locations & Linkages
- Innovation in Design



LEED India

The Leadership in Energy and Environmental Design (LEED-INDIA) Green Building Rating System is a nationally and internationally accepted benchmark for the design, construction and operation of high performance green buildings.

LEED-INDIA provides building owners, architects, consultants, developers, facility managers and project managers the tools they need to design, construct and operate green buildings.

LEED-INDIA promotes a whole-building approach to sustainability by recognizing performance in the following five key areas:

- Sustainable site development
- Energy efficiency
- Indoor environmental quality
- Water savings
- Material selection



LEED-INDIA rating system provides a roadmap for measuring and documenting success for every building type and phase of a building lifecycle.

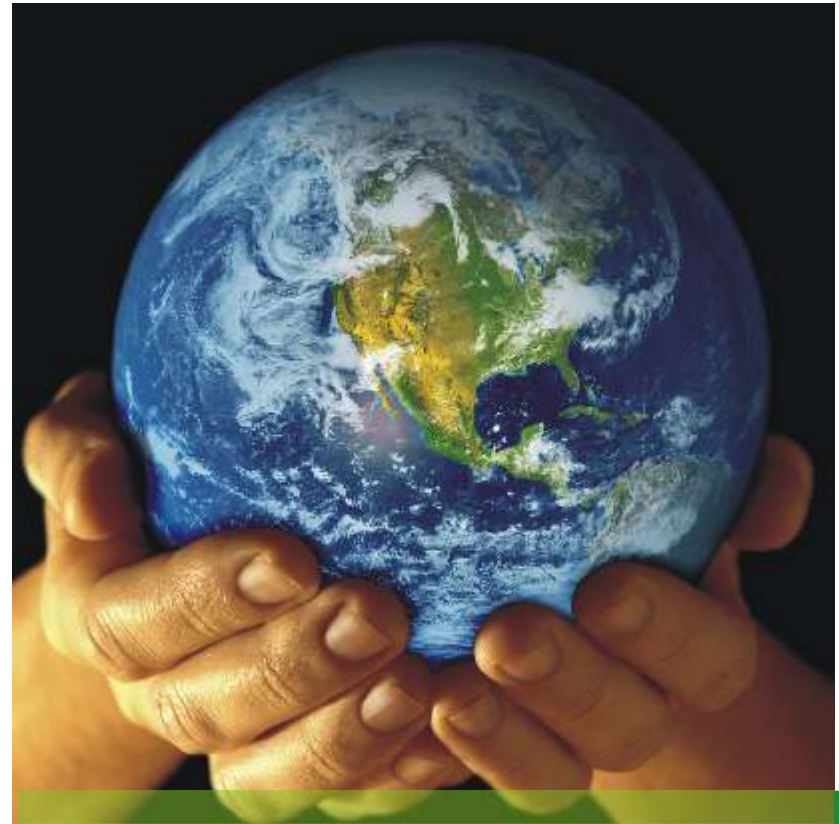


Bajaj Green Building Solutions

Bajaj Green Building Solutions is a conscious effort to minimise the adverse effects of modernisation on the global environment and an initiative to ensure that we save the human race from the critical consequence of global warming. Unless we do not act now, our children will inherit a hotter world, dirtier air and water, more severe floods and drought, and more wildfires.

Our diversified and distinct green building solutions come from use of modern lighting systems, both interior and exterior.

These categories of lighting systems act not only as energy savers, but also help to keep a watchful eye on the environment pollution. Moreover, they add value to the cost on the economics of any building from designing, construction and maintenance over entire life-cycle.



Our Green Building Solutions



GREEN BUILDING SOLUTIONS



Bajaj's newest offering is based on LEDs... Light Emitting Diodes...

A revolutionary new disruptive technology. It is another step forward in our continuous quest for alternatives to conventional sources of energy. LED's non destructive process enables positive and negative charge carriers to recombine with applied voltage as a result, energy is released in the form of light!

With a lifespan 50 times longer than that of the average lamp, GREEN LED is a special range of application oriented LED products based on Optics, Power and Thermal Management. 100% environment friendly, they have zero harmful emission and a guarantee of 80% lumen maintenance even at the end of 20,000 hours of operation!

Crafted with care, committed to the cause of a cleaner, greener Earth..... GREEN LED embodies our concern for conservation of Nature's precious resources...

These world-class, intelligent GREEN LEDs have multiple applications and are suitable for both indoor and outdoor use. A blend of ingenuity and iridescence, they not only incorporate optics and colours, but also include programmable sequences.



Go Green

Why not better the Earth as you beautify it?

Bajaj GREEN LED range is as varied as it is versatile: Indoor architectural spot lights; recessed wall mounted steplights; onground walkover spots; floodlights, underwater luminaires!

Rest assured all your needs are anticipated... and addressed!

All this... and more! GREEN LEDs mesmerize you with their spectacular array of colours. Vivid and vibrant, they transform the mundane into the magical! Be it façade lighting or landscape lighting....watch LEDs sculpt exotic effects through the interplay of light and shade: colour and light combine creatively to transform everyday reality into dreams!

GREEN LEDs are unlike any lighting system you have ever seen...or used! They fuel your Fantasies even as their energy efficient, eco-friendly technology cuts down emission.





Integrated Building Management Systems

This is a strategic move of Bajaj Electricals to offer a wider product portfolio to integrated, intelligent building management systems i.e Fire Detection Systems, Security Systems, HVAC Systems, Access Controls and Lighting Controls. Bajaj Electricals is partnering with Securiton AG of Switzerland for Fire Alarm Systems, and with Delta Controls of Canada for Building Management Systems (BMS). This is an exclusive tie-up to market Securiton and Delta Controls products in India by Bajaj Electricals Ltd.

Integrated Building Management System includes:

- Building Automation (HVAC controls scheduling as well as dimming cooling/heating control, ventilation control, pumps etc.)
- Lighting Control
- Consumption measurements of water, electricity & cooling heating energy
- Emergency lighting
- Access control system (time, attendance and info options)
- Video monitoring system
- Fire alarm system
- Intrusion alarm system

All above systems are functionally integrated, & being monitored and controlled fully from a uni-pole location.

Integrated Building Management Systems allow a level of control optimization to take place which is unavailable to stand-alone Building Management Systems.



Security and access systems can instruct HVAC and lighting systems when the building is occupied, fire systems can control lifts, CCTV systems can be used to check fire alarms, heating systems can interact with cooling systems - the list goes on. Occupants feel better because the system is responding to them more. At the end of the day, the system responds by changing its operation. Real intelligent control is now possible. Better control not only brings happier occupants but also energy-saving increases because energy is used only when needed.

Building Management Systems are steadily growing to become an integral part of any large building. A well designed Building Management System helps in managing all the existing utilities and facilities in the building to ensure smooth operation of the building. It can be customized to suit customer needs.

Integrated Building Management System (IBMS) is implemented as a fully integrated, open solution.

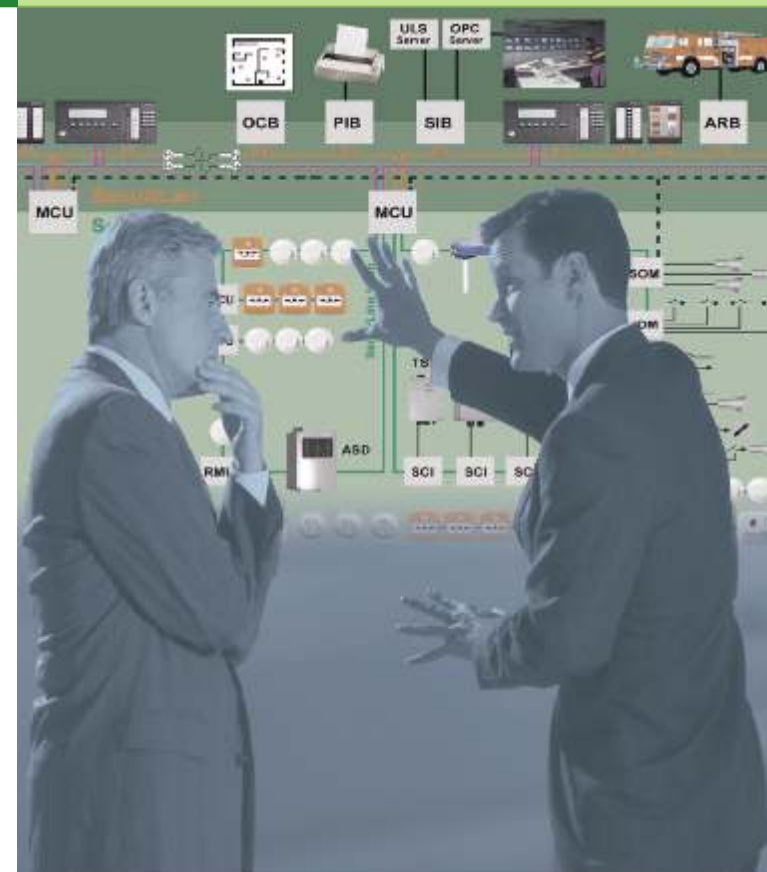


“ Intelligence for your building.
Integrating, energy saving and
controlling, while keeping you
better informed than ever before ”



“Playing safe by getting expert advise”

Securiton has been committed to customer security since 1948. Securiton forms a part of the Swiss Securitas Group’s alarm and security systems division. The group comprises of 21 companies and almost 8000 employees, in Switzerland, Europe and throughout the world. Vital synergies are available to Securiton and its customers thanks to the dynamic exchange between groups of companies, resulting in comprehensive one-step security solutions. Securiton offers totally reliable fire detector systems for any kind of environment ranging from hotels to industrial warehouses and road tunnels. Leading edge technology, superior know how and in-depth experience all combine to prevent damage by fire round the clock.



The fire alarm panel consists of two equal systems, one of those is constantly in “Hot-Stand-By-Condition”.

If an error should arise in the active part, the other system is activated automatically and a system fault is indicated.

All functions, like clear-text indication on the display, actuation of fire flaps, etc., remain in full and unrestricted function.



Heat & Smoke Detector



Master Control Unit



Manual Calls Points



Line Type Heat Detector



Aspirating Smoke Detector



Do it Right.

A lot of companies offer Building Automation Control Systems.
The real question is, who will earn your trust ?

In everything we do, from product research to service and support, Delta Controls strives to do the job right. Guiding that mission are some of the brightest and most experienced minds in the business.

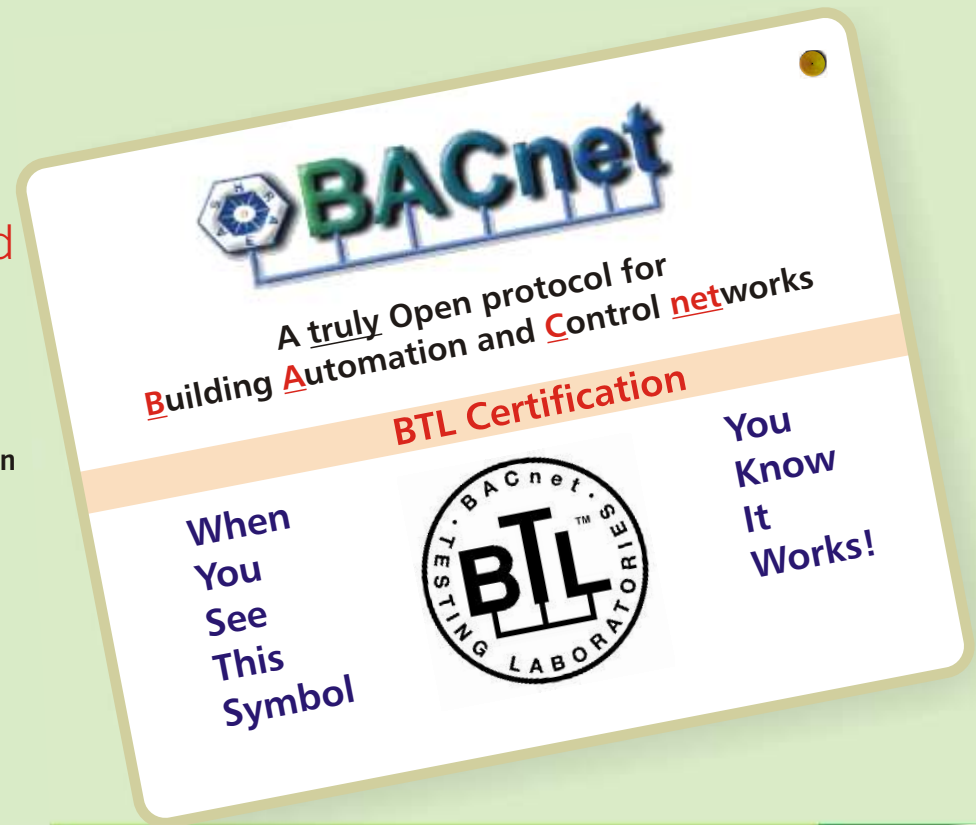
In 1980, the co-founders of Delta Controls had a decision to make, lose the trust and confidence of a key customer or develop products themselves to meet the customer's delivery and performance expectations. The decision was easy. Out of this sense of commitment comes Delta Controls, renowned for providing innovation in building systems and solutions for native BACnet HVAC, Access and Lighting controls worldwide. Delta Control's approach to business is to do what it takes to do the job right, all the time, every time.



Introducing Open Architectural Integrated Building Management Systems in India

Bajaj Electricals brings in India the Native BACnet in association with Delta Controls - A Leader in BACnet development and installations.

- Flexibility to connect with other systems having BACnet, without the use of routers.
- The controllers offered by Delta Controls are **BTL** approved.
- Easy to integrate with third party systems or equipments working on BACnet or even Modbus protocol.





BAJAJ INDUCTION LIGHTING

Fit it. Forget it.

The Introduction of Induction lamps, an electrodes less fluorescent lamp is a revolutionary breakthrough in lighting and is based on the combination of two well known principles of electromagnetic induction and gas discharge resulting in a longer lamp life and practically maintenance free light with substantial savings. The electronic driver used in the luminaires ensures efficient lamp working in terms of operation and light output. Possibility of regulating the lighting level adds to comfort, the lighting quality is enhanced and it has better colour rendering.



APPLICATIONS

Installations at very high elevations - Large Domes, Big Hall ceilings, Public Halls, Retail Malls.

Difficult to access - Sensitive Public places, High security zones, Tall bridges , Towers (non highmast), Near airport runways.

Areas exposed to **Sub zero temperatures** for a long time. Out door lighting in low temperature zones.

Installations prone to Vibrations – Tunnels, subways , bridges, industry shop floor.

High Frequency traffic areas – Fly overs, 24x 7 public places – railway stations, airport concourse.

PRODUCT RANGE

- Highbay
- Flood lighting
- Tunnel Lighting
- Street Lighting
- Lowbay and Mediumbay
- Parking area lighting

BENEFITS OF INDUCTION LIGHTING SYSTEM



Lamp with longest life - 100,000 Burning HOUR

Filament less lamp ensures operational life of almost 25 years (at 10 hours a day).



Zero maintenance lamp

No relamping required for years, making it ideally suitable for installations at inaccessible locations.



Energy Efficient Lighting

Lower power consumption in electronic driver reduces total system wattage and high lamp efficacy ensures High Energy savings.



Operates in harshest environment

Effectively operates in temperature ranging from -30° to +50°C.



Vibration proof lamp design

It can operate in areas prone to vibrations - tunnels, railways yards, ports, airports



Instant ON - Instant Re-strike

Ideal choice for locations with 24x7 public presence like railways stations, airports, retail malls, roads with continuous traffic.





DESIGN - A good design is subtle and yet unforgettable.

A small design includes a balanced interplay of inspired styling, superior materials and excellent workmanship. If the design is to offer more than just beauty, i.e. timelessness, aesthetics or perfection it must interact with its surroundings subtly and harmoniously accentuating and completing an architectural vision in terms of a holistic room concept.

Each and every TRILUX luminaire is designed with this principle in mind. Resulting in a design that allows, TRILUX luminaires to have an incredibly positive influence on the entire room. First like the light that they enter.

TECHNOLOGY

Light from TRILUX inspires. Not only at the desks of our engineers. The effect that light has on people is tremendous. Our life form has evolved over millions of years to adapt to the natural course of the day. Light colour and intensity affect our well-being and our ability to concentrate. Nowadays, we are able to leverage this effect more than ever before thanks to countless TRILUX technologies. It is now possible to provide the ideal lighting for people in every situation and environment. The effect: an office luminaire from TRILUX not only illuminates rooms but ideas as well.



Inspired by the breathtaking combination of room and light in the Roman Pantheon, POLARON's circular luminaire body forms the light emitted, illuminating the room without direction. The product's claim for high quality does not end in the lighting of the space but in its design. Whether recessed, semi-recessed or surface mounted, the TRILUX Polaron inspires with its high level of variability, practical lighting effects and the confidence of its unusual design.



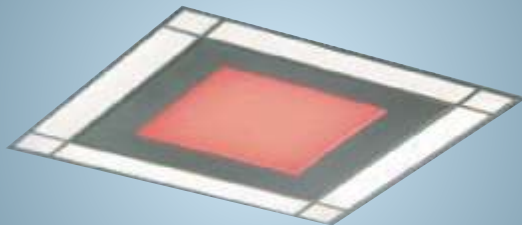
GREEN BUILDING SOLUTIONS

APPLICATION

Good architecture follows a vision. TRILUX light follows good architecture.

Like good light, which provides far more than just illumination, architecture is much more than just rooms in which to live. Architecture can inspire and astonish. Whether living quarters, work areas or showrooms, architecture is nothing if it is not presented in the right light.

Optimum lighting is indispensable if the allure of a room is to evolve completely. The RWE Tower in Dortmund, the European Parliament in Strasbourg or the Ataturk International Airport in Istanbul are only 3 examples of interesting buildings that have become impressive structures thanks to TRILUX lighting solutions.





Recessed luminaires with decorative PLEXIGLAS diffuser:

For increased lighting comfort in offices, financial institutions, foyers, sales areas, showrooms and conference rooms.

Universal system that can be installed in cutout recess openings and in ceiling systems comprising of concealed or exposed grids in 600 (625) mm module.





The Disano products include a very broad selection of lighting fixtures able to meet all outdoor and indoor lighting requirements. In particular, the selection includes lighting fixtures for:

Urban and street lighting

Lighting fixtures designed for street lighting, combinations suitable for urban decor, fixtures designed for greenbelt areas, outdoor floodlights, floodlights suitable for tunnels, etc.

Lighting designed for sports facilities:

Floodlights for large sports facilities, fixtures suitable for indoor and outdoor facilities, etc.



MUSA

Die-cast aluminium housing. Supplied with a standard asymmetric reflector that directs the luminous beam towards the street or the pavement.



Power LED - Mutant

TEX uses the LED technology (36 powerful LED lights, 3W, high light emitting efficiency, long-lasting, Beam angle 12° -22° - 34°).

This technology offers many advantages, such as a light emitting power rate that was not available until recently. It is highly reliable and noise-free, accounting for substantial reduced consumption, minimum environmental impact and fast response time.





15/17, Sant Savta Marg, Reay Road, Mumbai - 400 010. Phone : 022-23765000 Fax : 022-23730504
E-mail : luminaires@bajajelectricals.com, Website : www.bajajelectricals.com