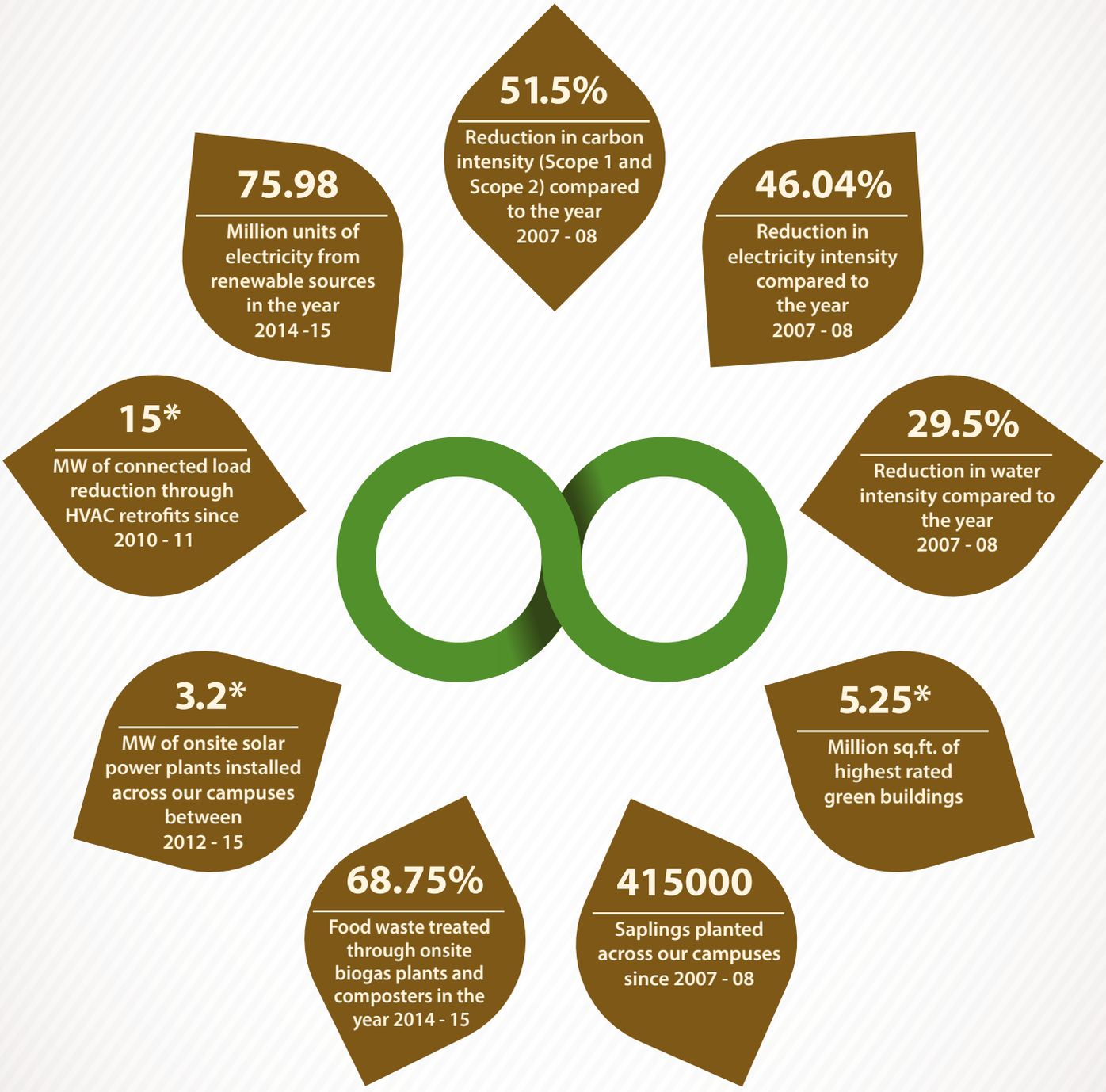
GREENFINITY

A WORLD THAT RUNS ON ITSELF

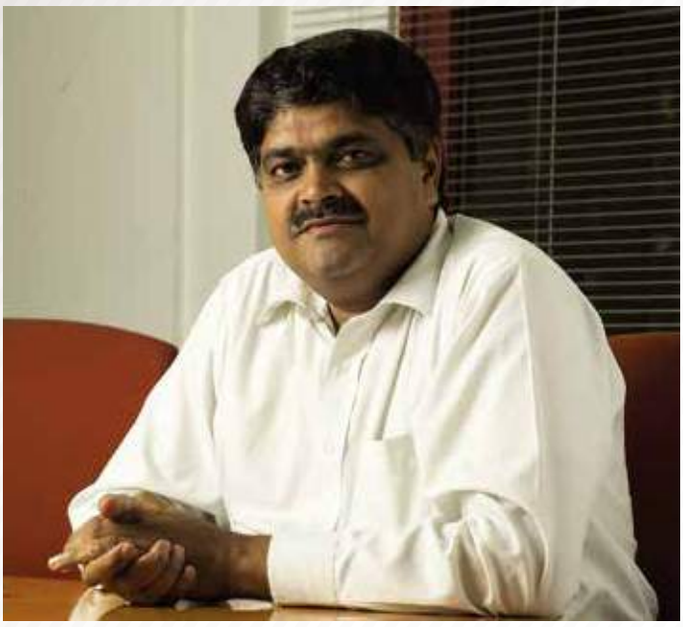
Infosys®

POWERED BY INTELLECT
DRIVEN BY VALUES

RESOURCE INTENSITY



*as of September, 2015



Ramadas Kamath U.
Executive Vice President and Head - Infrastructure, Facilities, Administration, Security & Sustainability

"The thrust towards a low carbon and clean energy future is a plausible solution to achieve energy security. We see real opportunities for the solar market in India and strongly believe that solar has the capability to become the mainstream power source in India."

Today, even in the age of globalization, more than 300 million people in India do not have access to electricity. It is essential for all of us to take up initiatives that will help reduce this huge energy gap and result in a fundamental change. System-level transformation can only occur through collaboration and bold leadership by individuals and organizations across the globe. This will result in a propitious situation by improving environmental payoff, bring in favorable public policies, and increase sustainable business practices.

India is dependent on crude oil imports to meets its soaring energy needs. It procures more than $125 billion worth of crude oil annually to cater to the energy demands of its people. The thrust towards a low carbon and clean energy future is a plausible solution to achieve energy security. We see real opportunities for the solar market and strongly believe that solar has the capability to become the mainstream power source in India.

At Infosys, we have embedded sustainability in our core business strategy. Our ability to push boundaries and take risks by incubating new ideas, in the last seven years have resulted in deserving rewards. It has been a difficult journey, as we set highly perverse goals for ourselves. And again, we are proud to say that we have been able to set new milestones this financial year.

We have set new benchmarks for energy performance in buildings by implementing innovative technologies and building automation. Focused efforts on smart buildings systems, retrofits, new building designs with an efficient envelope, renewable energy and granular level monitoring have helped us achieve huge reductions in energy use. We are consuming less by becoming more efficient.

Our deep green retrofits in the air conditioning systems have helped us achieve 15 MW* connected load reduction in the last four years. Our continued focus on reducing our per capita energy consumption has resulted in a reduction of about 46% from our baseline figures of 2008. Nearly 29 percent of the total electricity needs were met from renewable energy. Currently, we have 3.2 MW of solar PV installations across our campuses in India and we plan to increase it to 175 MW in the next few years through on-site and off-site installations.

At Infosys, we nurture our business around innovation. We continue to innovate and implement disruptive energy efficient measures to optimize our energy consumption. We have become a beta customer to test various new technologies - different kinds of biogas plants, composting, building envelope, radiant cooling technology, lighting, and renewable energy technologies. Our campuses have become live labs for these tests. We are sharing the test results through various open sources, so that other organizations can replicate our success and help in carving a sustainable future.

We are aware of the daunting challenges posed by water scarcity not only to our country but also globally. Thus, we are committed to save and preserve this precious resource and ensure that more amount of water is available for others to use. We believe, rainwater harvesting is a logical solution to alleviate the acute water shortage in both rural and urban India. There is an immediate need to capture, store, treat, and reuse the freely available rainwater, to ensure water conservation and augment the groundwater tables. Our focused efforts on optimizing water use through innovative water efficient technologies and rainwater harvesting have significantly reduced our per capita water consumption by about 30 percent in the last seven years.

We have also been persistent in our efforts to ensure reuse, recycling and the responsible disposal of waste, and have a focused approach towards waste management. With liberalization and increased consumerism, each year, humans are adding millions of tons of waste to landfills, which are overflowing. In India, we don't have a system or practice in place to handle this volume of waste scientifically. At Infosys, we have taken up a goal to minimize the amount of waste going to landfills. We are focusing on new ideas and emerging technologies to manage our waste scientifically and eliminate the related impact on the environment.

This has all been possible as we have built a very passionate team and our culture is to take risks, set difficult goals, and push the boundaries of innovation. For us, it's not just important for Infosys to be green; we want to lead the way in creating a clean energy future for the development of the society as a whole. We are constantly sharing our best practices with the industry and wider communities to demonstrate that these interventions make a strong business case for others to emulate. We will continue on this path and want other individuals and organizations to join us to bring about a sustainable transformation in the world.

Ramadas Kamath U.
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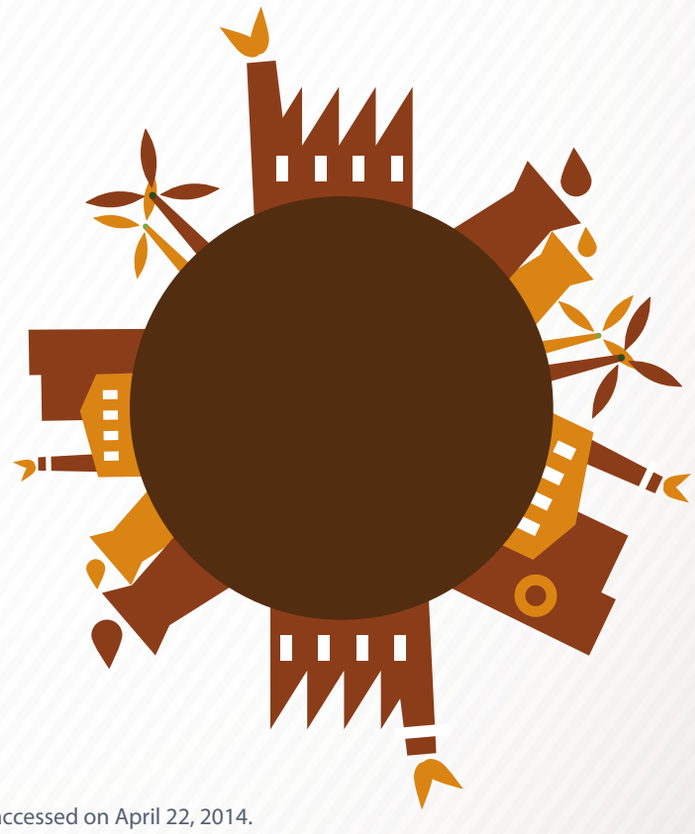

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*as of September,2015

Being Gentle with the Earth

It hasn't taken us long to stand on the brink of destruction. We're using natural resources up too fast - so fast that we run the risk of running out of them.

At Infosys, we're working towards building a greener planet. Through resource conservation, strategic partnerships, setting tough goals, improving performance and monitoring our resource footprint, we have significantly improved our resource intensity. Read on to know our story.

High Performance Buildings

- We have demonstrated the power of modern technology and energy-efficient building designs to achieve significant energy savings without increase in first cost
- Infosys buildings consume one-third of the energy consumed by the average building, at no extra capital costs
- The annual energy consumption of our new building designs for an infrastructure of 1 million sq. ft. is estimated at 9 million kWh, as against 25 million kWh for conventional building designs
- It is estimated that for 10 billion sq. ft. of commercial space expected by 2030 in India, Infosys design standards can avoid 45000 MW of installed capacity of power plants

IMPACT OF NEW DESIGN ON FIRST AND OPERATING COST

Infrastructure required for 1 million sq. ft.

SYSTEM DESCRIPTION	UNITS	NEW DESIGNS	OLD DESIGNS	CONVENTIONAL
Total Electrical Load	MW	3.5	6.5	10.0
Transformer Capacity	MVA	4.0	7.5	12.0
DG Set Capacity	MVA	5+2.5	9+3	15+3
Annual Energy Consumption	Million kWh	9	20	25

LEED's the way

- Since 2008, every office building of Infosys has achieved the highest level of green certification in India
- We have been awarded the Leadership in Energy and Environmental Design (LEED) India Platinum rating for fourteen of our buildings
- Four of our buildings have also received the Green Rating for Integrated Habitat Assessment (GRIHA) five star certification
- Over 5.25 million sq.ft. built up area of Infosys is the highest rated in India

*as of September, 2015

LEED India Platinum Rated Buildings

Infosys BPO 1, Jaipur:

- First LEED India Platinum rated building in Jaipur
- The building demonstrates nearly 33% reduction in energy consumption compared to ASHRAE baseline standards
- Water use reduction by over 41% compared to LEED standards

Infosys SDB 9, Chennai:

- The building demonstrates nearly 40% reduction in energy consumption compared to ASHRAE baseline standards
- Water use reduction by over 54% compared to LEED standards

Infosys SDB 10, Pune:

- The building demonstrates nearly 46 % reduction in energy consumption compared to ASHRAE baseline standards
- Water use reduction by over 56% compared to LEED standards
- Energy performance index (EPI) is 76 KWH/Sq.m/Year

Infosys M&C Building, Bangalore:

- First building in India to implement the radiant panel-based cooling system
- The building demonstrates nearly 42% reduction in energy consumption compared to ASHRAE baseline standards
- Water use reduction by over 71% compared to LEED standards
- Energy performance index (EPI) is 79 KWH/Sq. m/Year

LEED India Platinum Rated Buildings

Infosys SDB 1, Hyderabad:

- The first radiant cooled commercial building in India
- The building demonstrates nearly 50% reduction in energy consumption compared to ASHRAE baseline standards
- Water use reduction by over 48% compared to LEED standards
- Energy performance index (EPI) of the radiant cooled side is 70 KWH/Sq. m/Year

Infosys SDB 3, Mangalore:

- The building demonstrates nearly 33% reduction in energy consumption compared to ASHRAE baseline standards
- Water use reduction by over 43% compared to LEED standards

Infosys SDB 6, Mysore:

- The building demonstrates nearly 39% reduction in energy consumption compared to ASHRAE baseline standards
- Water use reduction by over 68% compared to LEED standards

Infosys SDB 2 & 3, Hyderabad:

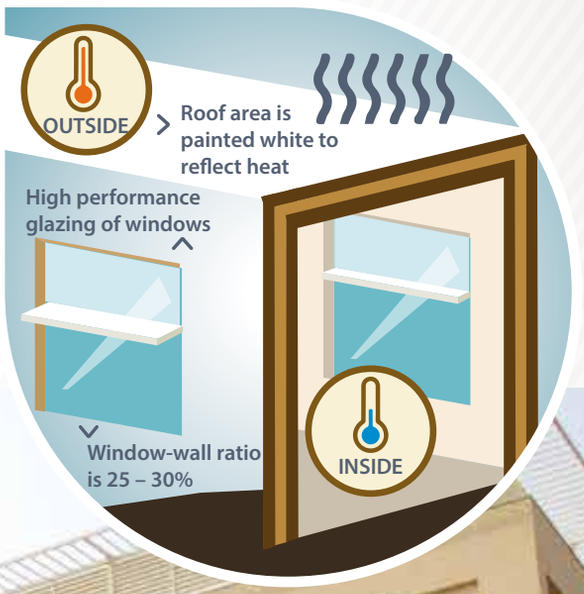
- The building demonstrates nearly 49% reduction in energy consumption compared to ASHRAE baseline standards
- Water use reduction by over 52% compared to LEED standards

1 - Conserving What We Have

- We want to lead a systemic change and carve a sustainable future for the benefit of the society and environment
- Through innovation, we are consistently creating and redefining benchmarks in corporate environmental sustainability
- These innovations are financially viable and therefore can be replicated by organizations and wider communities
- Some of the most important innovations that have helped us achieve significant resource savings are featured in this report

1.01 - Building Blocks

- By using efficient building envelopes, we are reducing heat ingression to significantly reduce our cooling requirements
- Since 2008, solar related heat gain has been reduced to 1W per sq.ft. of air conditioned area, in all new buildings of Infosys
- We have achieved **up to 15% reduction on the peak cooling load and 6–8% in annual energy consumption** with appropriate orientation, insulated walls and roofs, optimized window-wall ratio (30:70) and high performance glazing with adequate shading

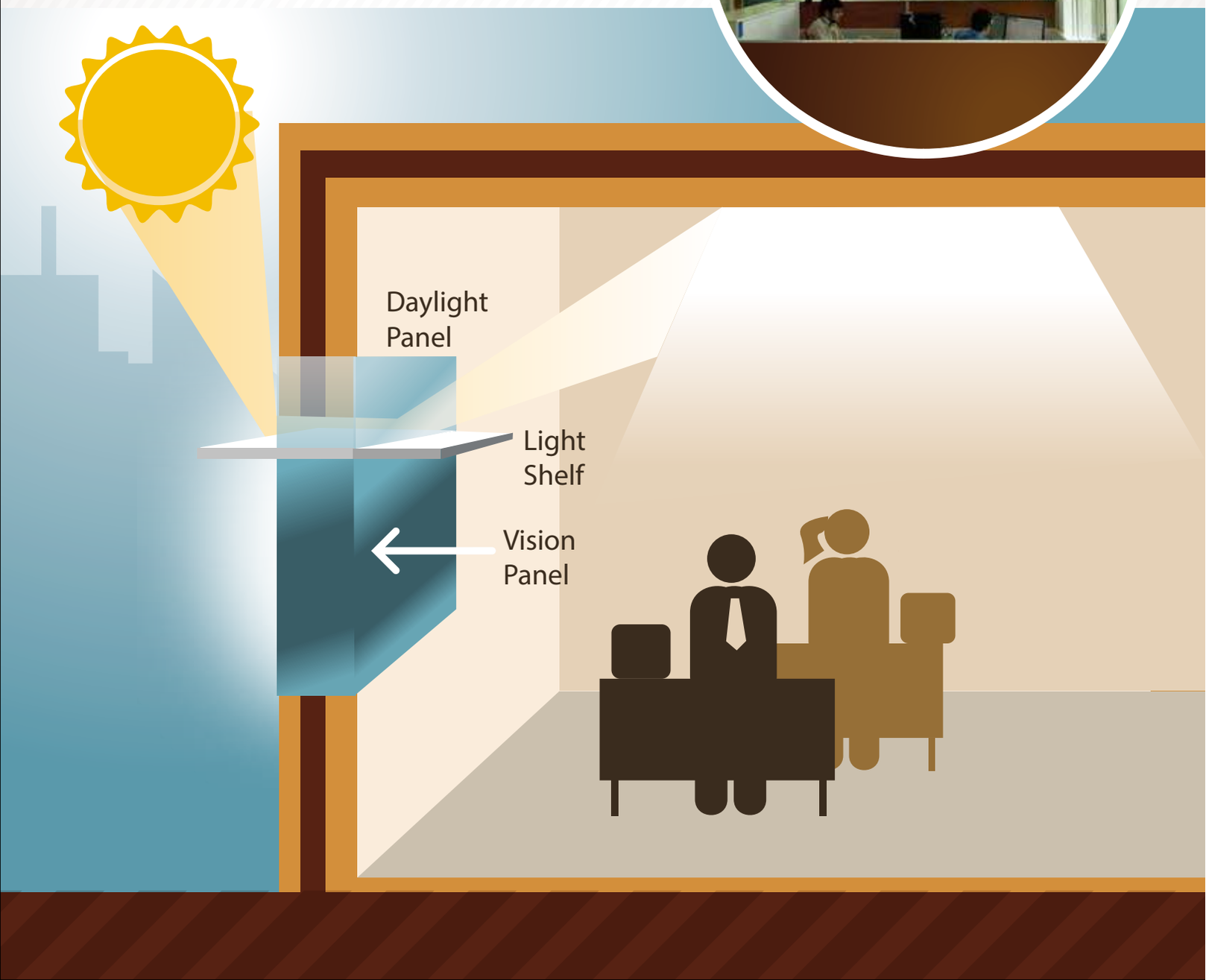


1.02 - The Panel with a Vision

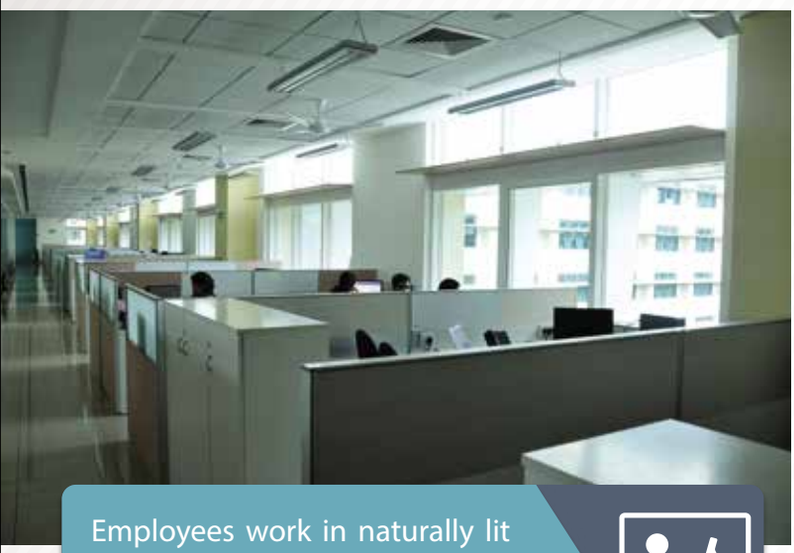
- To use natural light through the day, all our buildings since 2008 are designed with daylight and vision panels
- The window is split into 2 different types of glass and is highly efficient. It lets in good natural light with no/less glare, and minimizes heat gains into the building
- In most of our new buildings, almost 1**00% of the office space is naturally lit with this design**

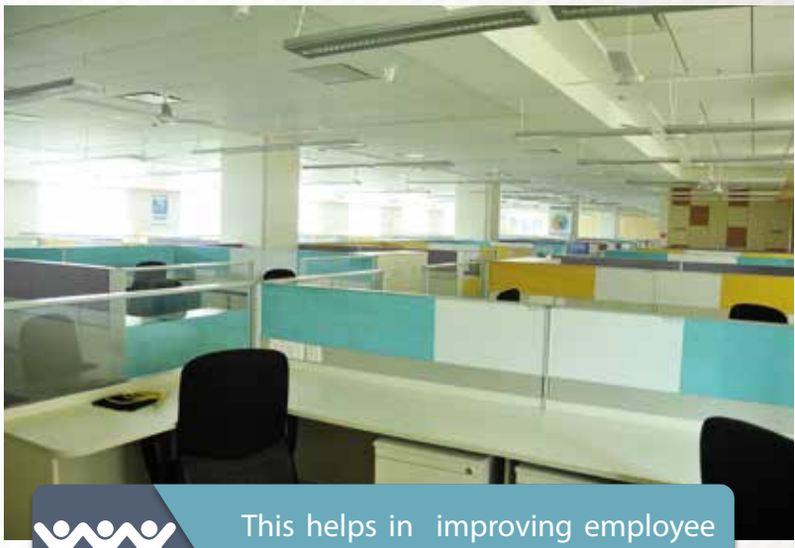
1.03 - The Shelf Life of Light

- Light shelf is an overhang fixed between the vision panel and daylight panel
- It helps in reflecting natural light deep into the office space and also provides protection from glare
- Employees don't feel the need to switch on artificial lights throughout the day as the office space is day lit, creating a natural work environment



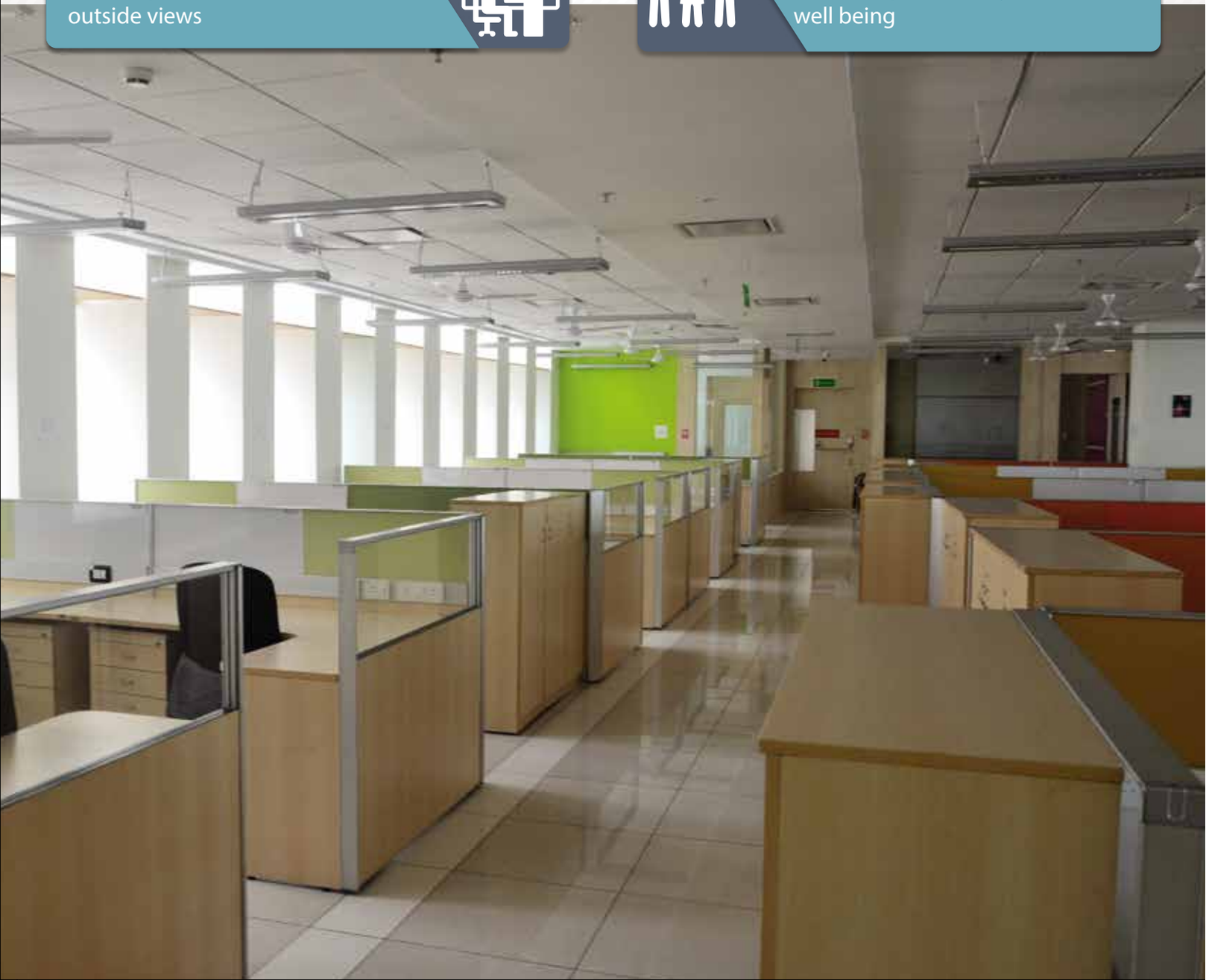
1.04 - Harvesting Daylight





Employees work in naturally lit office spaces with access to outside views

This helps in improving employee comfort, productivity, health, and well being

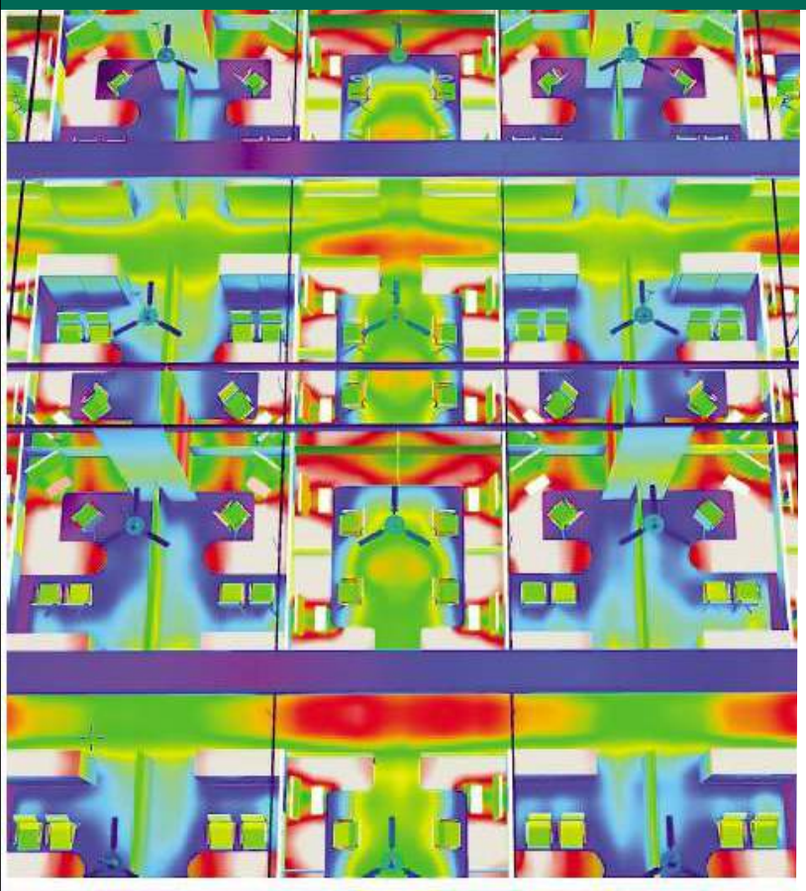


1.05 - Brighter Designs

- We use simulation software to optimize the number of light fixtures to achieve the required lighting levels
- This has eliminated the rule of thumb designs, thereby significantly reducing lighting loads and subsequently cooling and electrical loads
- Daylight sensors all around and occupancy sensors in all cabins and restrooms have also considerably reduced the use of lighting energy, thereby minimizing related environmental impacts and operational costs
- Our lighting designs are about **50% more efficient** than global ASHRAE standards
- And today, the lighting energy consumption has been **reduced to 1/8th of the consumption** of our old buildings

Simulation image of the workstation area

Various colors depict the lighting levels wherein white is the maximum and black minimum



3D image of workstation area

1.06 - LED by Innovation

- We have replaced our street lights across different campuses with LED lights to further optimize our lighting energy use and eliminate related environmental impacts
- With the use of LEDs, we are eliminating the hazardous impacts of mercury on human health and environment, and at the same time minimizing the use of electricity
- Additionally, LEDs have a longer life of more than 20000 hours compared to conventional lighting fixtures
- These efficient light fixtures are an easy and cost effective solution to optimize the use of lighting energy to a large extent
- **We have witnessed a 70% reduction in connected load by installing LED lights in our campuses**

LED Lights
Design flexibility for several applications

1.07 - Cooler by Design

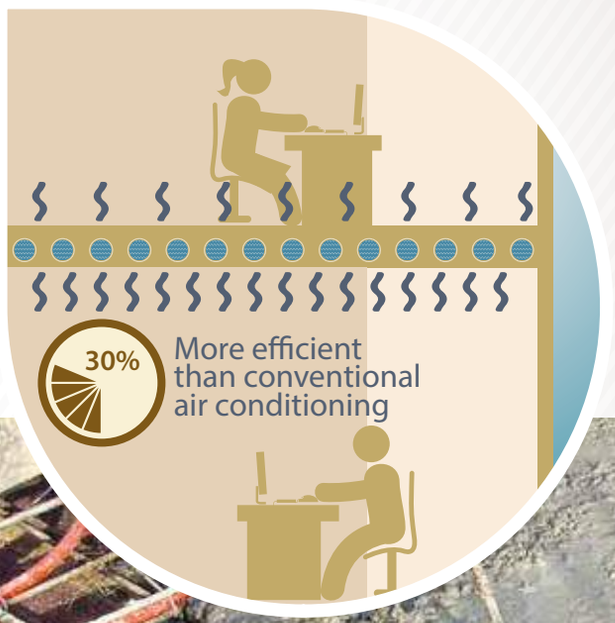
- Air conditioning is the biggest energy consumer in buildings
- Building envelope has a big impact on occupant comfort as well as air conditioning requirement as it shields the interior of the building from high and low ambient temperatures
- Some of the buildings in our campuses, initially designed as glass buildings, were uncomfortable for people to work and resulted in high energy consumption
- Thus, we retrofitted the façade of these buildings by reducing the amount of glass, replacing single glass with double glazing, and adding insulation to the walls
- This retrofit reduced the amount of heat entering the building and thus resulted in reduced air conditioning energy consumption and increased comfort for the occupants

1.08 - Lighter on Nature, and our Pockets too

- We have designed and implemented an innovative façade lighting system for one of the buildings in Mangalore, having a built up area of 1,00,000 sq.ft.
- LED light fixtures have been installed to highlight specific elements of the building façade
- This has made the building look aesthetically appealing and also enhanced viewers' experience during the night
- With this, the lighting load for the entire façade of the building is a mere 246 watts

1.09 - Radiant Cooling - Happiness on the way ahead

- Infosys building in Hyderabad is the first radiant cooled commercial building in India and the largest comparison of cooling systems in the world
- As there is no recirculation of air in the system, it inherently provides healthier indoor air quality and thus, comfort to the employees
- Through constant monitoring of data, we have witnessed that the radiant cooling technology is 30% more efficient than conventional air conditioning
- This building serves as a global case study for other organizations, demonstrating the viability of radiant cooling system in India, specifically for new buildings



1.10 - First radiant panel based building in India

- We have introduced the first 'radiant panel' based cooling system in our new office building in Bangalore
- Pipes are embedded in panels of modular sizes like ceiling tiles, and are then interconnected to allow for water to flow
- This system, we believe, is the solution for cases with specific ceiling designs and for retrofits in existing buildings to achieve significant energy reduction

1.11 - Infosys - Developed Radiflux Panels for cooling

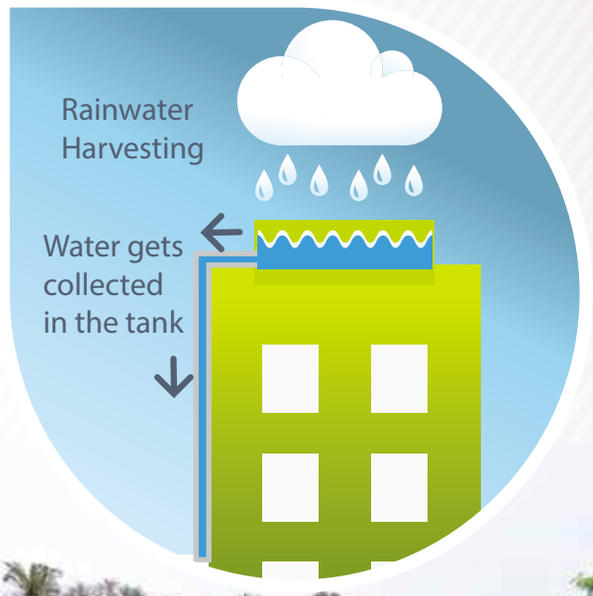
- We have pioneered the radiant cooling technology in India through radiant slab and radiant panel based cooling systems
- We realized that the available radiant panel based cooling solutions in the market today may not be cost effective in India. Thus, with high quality engineering we developed Radiflux Panels in-house
- These panels are two times more efficient than other products available in the market, less than half the cost, and need 50 per cent lesser time for installation
- Radiflux panels are much more efficient, flexible and easily replicable
- This solution can be deployed in large scale and has the potential to revolutionize the way cooling is done in buildings in future
- We have applied for India, US, and European patents for this product

1.12 - Watering down consumption

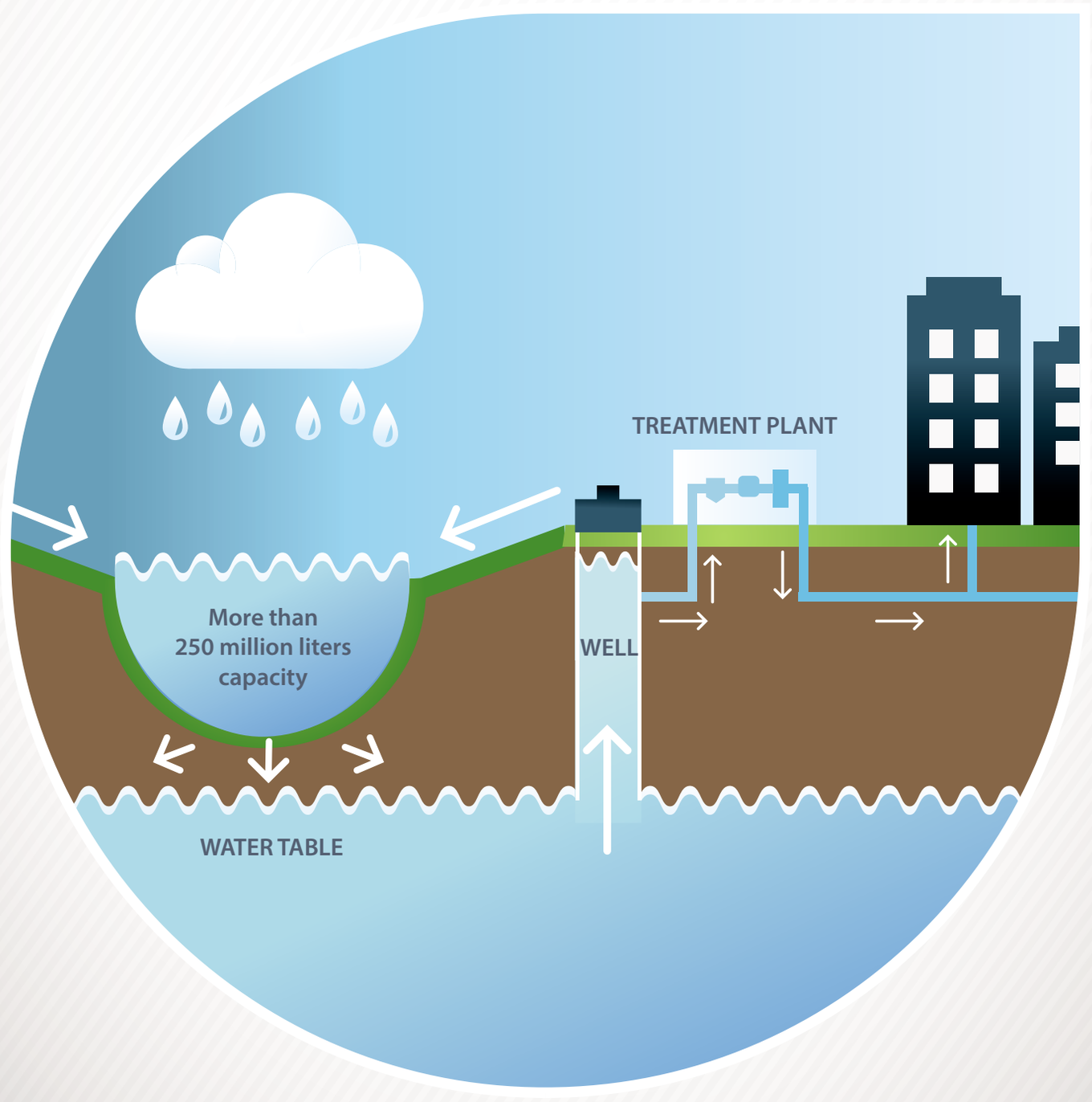
- We are in the process of revamping our entire water monitoring system to optimize our water use to the maximum levels
- We have installed smart water meters in many of our campuses to enable online monitoring of water consumption, and identify leakages, wastages and opportunities of reduction
- These meters have the ability to communicate with the Building Management System (BMS), which helps us monitor water consumption in real time
- We have installed 128 smart water meters in Pune campus, 31 in the Bhubaneshwar campus, and 40 in the Chandigarh campus till date
- We are in the process of installing smart water meters in all other campuses of Infosys across India

1.13 - It's raining hope

- Rainwater harvesting is a logical solution to alleviate the acute water shortage in both rural and urban India
- There is an immediate need to capture, store, treat, and reuse the freely available rainwater, to ensure water conservation and augment the groundwater tables
- With an aim to become water-sustainable and increase ground water tables to maximize the availability of water for others, we harvest rainwater through lakes, rooftop rainwater harvesting, and deep-well injection systems
- We have constructed about 25 lakes across our campuses, having a capacity of more than 250 million liters to maximize water sequestration



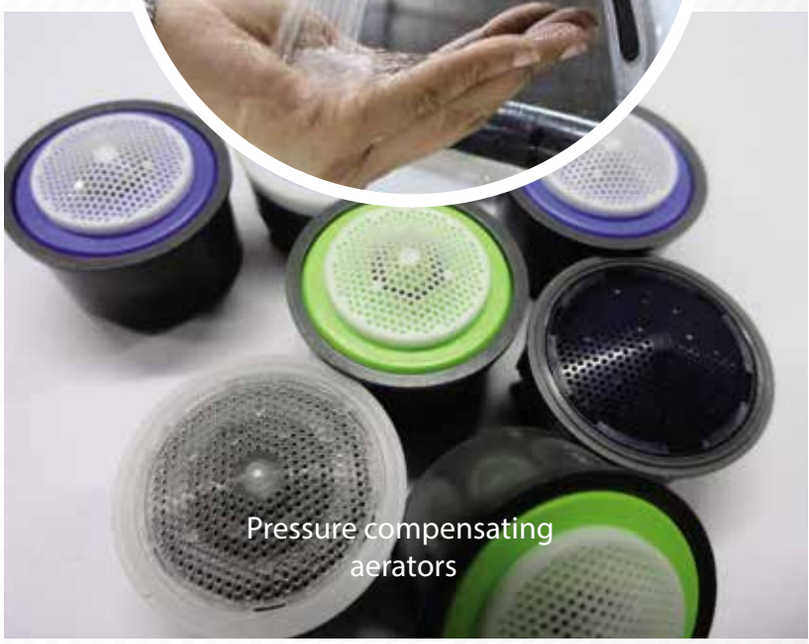
- Rainwater from the roof is directed and stored in an underground collection tank, filtered, treated, and then used for domestic purposes
- In fiscal year 2015, 42 per cent of the freshwater requirement of one of our buildings in Bangalore was met from harvesting rainwater during the monsoon months
- Rainwater is also collected and directed deep into the ground through injection wells, thereby increasing the groundwater tables
- We have built a total of **67 deep - injection well systems, having a capacity of about 3.3 million liters per day**, for groundwater recharge across different campuses in India
- During this fiscal, **we constructed 21 deep-well injection systems in our Pune campus and 19 in our Bangalore campus**



1.14 - Water therapy

- We have installed more than 25,000 Pressure compensating aerators (PCA) in water faucets across all campuses during fiscal year 2015
- PCAs provide a constant flow rate of 0.5 gpm through variable pressure situations optimizing water use to a great extent
- Our buildings in Bangalore, Hyderabad, and Bhubaneshwar boast of the latest from our kitty - waterless urinals, about 290 waterless urinals have been installed to minimize water use
- Waterless urinals do not require water for flushing, thereby reducing water consumption, and related energy use for pumping and treating water


Pressure compensating washers


Pressure compensating aerators


Pressure reducing valve


Waterless urinals

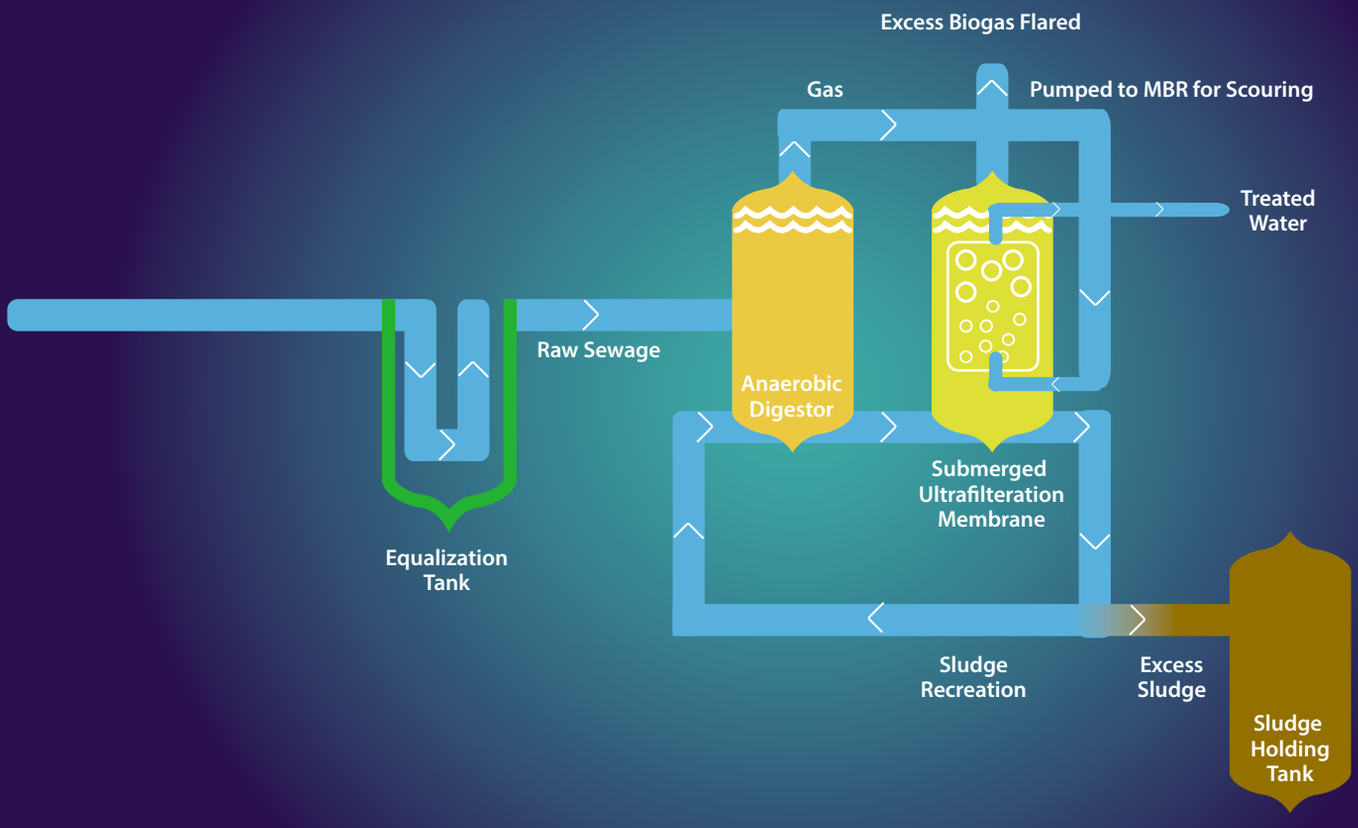
1.15.1 - Experiment 1: Anaerobic MBR for Waste Water Treatment

- We strive to recycle and reuse every possible drop of water
- Our zero liquid discharge policy helps us achieve this through recycling and reusing 100 percent wastewater in our aerobic membrane bioreactor (MBR) technology based sewage treatment plants (STP)
- To make our treatment methodology efficient, we have piloted the anaerobic MBR wastewater treatment technology
- It has been found that the anaerobic MBR technology requires 30 percent lesser energy, generates about 60 percent lesser sludge, and utilizes lesser space compared to the aerobic MBR technology
- We are currently planning to implement this technology in one of the sewage treatment plants in our campus

1.15.2 - Experiment 2: Capacitive De-Ionization (CDI) Water Treatment

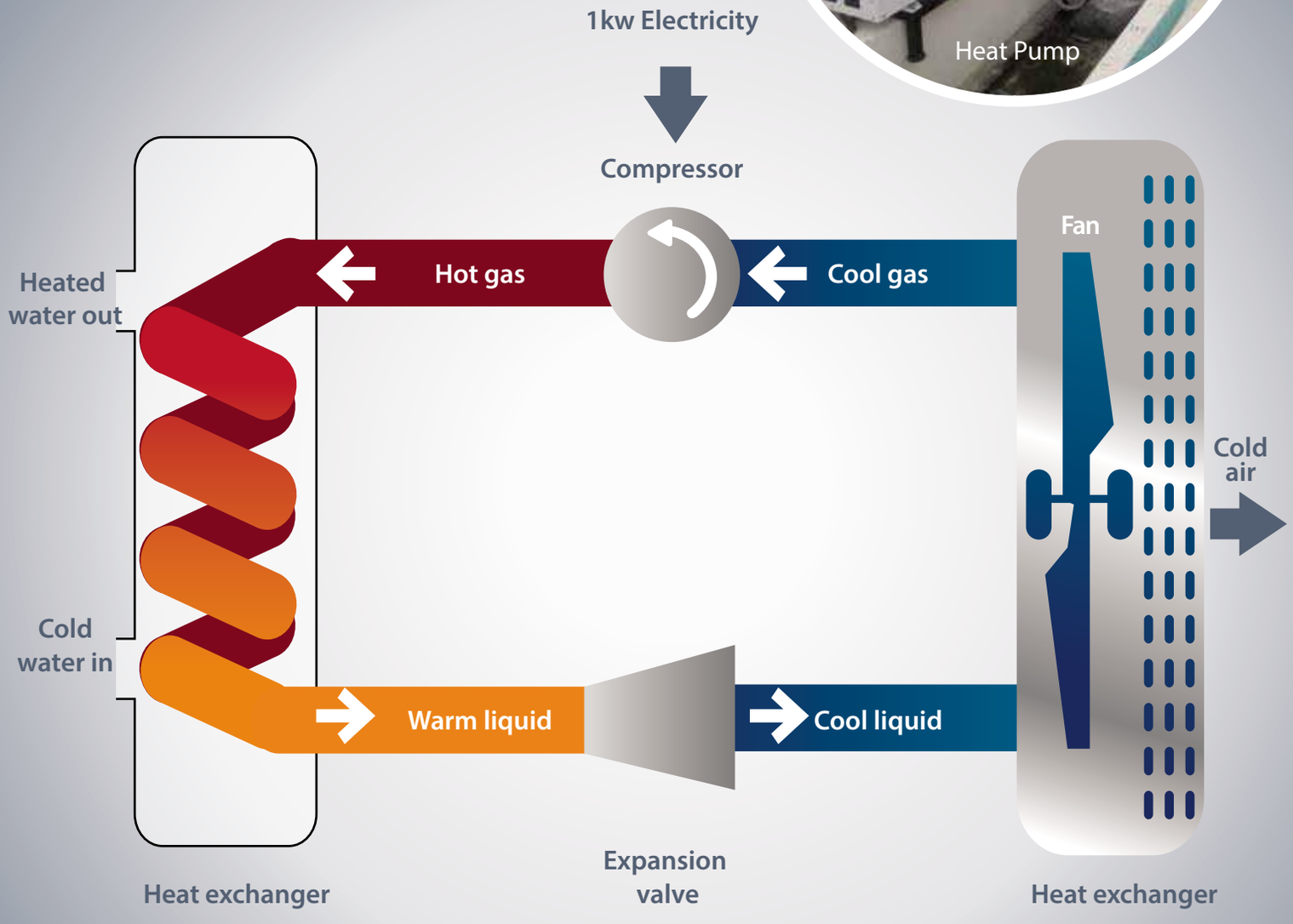
- In addition, we also piloted the Capacitive De-ionization (CDI) technology for treating water for potable purpose
- This technology is an energy efficient water treatment system with water recovery capacity as high as 85 percent, using 60 percent lower energy than the current reverse osmosis (RO) system.
- The reject from the CDI system is about 10 to 15 percent compared to 40 to 60 percent in case of RO systems
- We are planning to replace our RO systems with the CDI system to ensure high quality water treatment and optimum energy use. CDI system is a promising technology and can be easily replicated in large - scale

Anaerobic MBR



1.16 - Pumping up the heat

- The hot water generated from heat pumps is used in washers and driers in the laundry, thereby eliminating the use of diesel and related carbon emissions
- We also utilize the rejected cold air from heat pumps to cool the laundry area, making the space comfortable for the laundry staff
- Heat pumps have also been installed in employee care centres and food courts for generating hot water
- **Heat pumps being 3.5 times more efficient than electric heaters, have eliminated the use of 4000 kW of connected load**
- We are currently replacing all electric resistance heaters with heat pumps, which consume only **1/4th the electricity** to heat the same amount of water
- Working on the principle of reverse cycle of refrigeration, they transfer heat from atmosphere to water using a compressor



1.17 - Higher Efficiency-That's all we're about

- We have designed our data centers with emerging technologies to optimize energy use
- Our new data center in Bangalore campus has been designed with the most innovative design in the industry
- The unique feature of this data center is that all the auxiliaries are DC powered with high efficiency variable frequency drives (VFD), optimizing energy consumption based on ambient conditions
- The high performance 300 kW data center has been designed to Tier-3 standards with operating temperature ranging from 24ºC to 27ºC
- **The average Power Utilization Effectiveness (PUE) of this data center is estimated to be 1.08**

System	Energy in KWH
Servers	2,628,000
UPS	105,120
RDHX cooling	73,362
DC & UPS cooling	31,536
Lighting	3,472
Total Power	2,841,490

Break-up of the total power consumption in the system, including servers, UPS, air conditioning, and lighting. These energy details represents a PUE of 1.08

1.18 - Advancing with reduced load

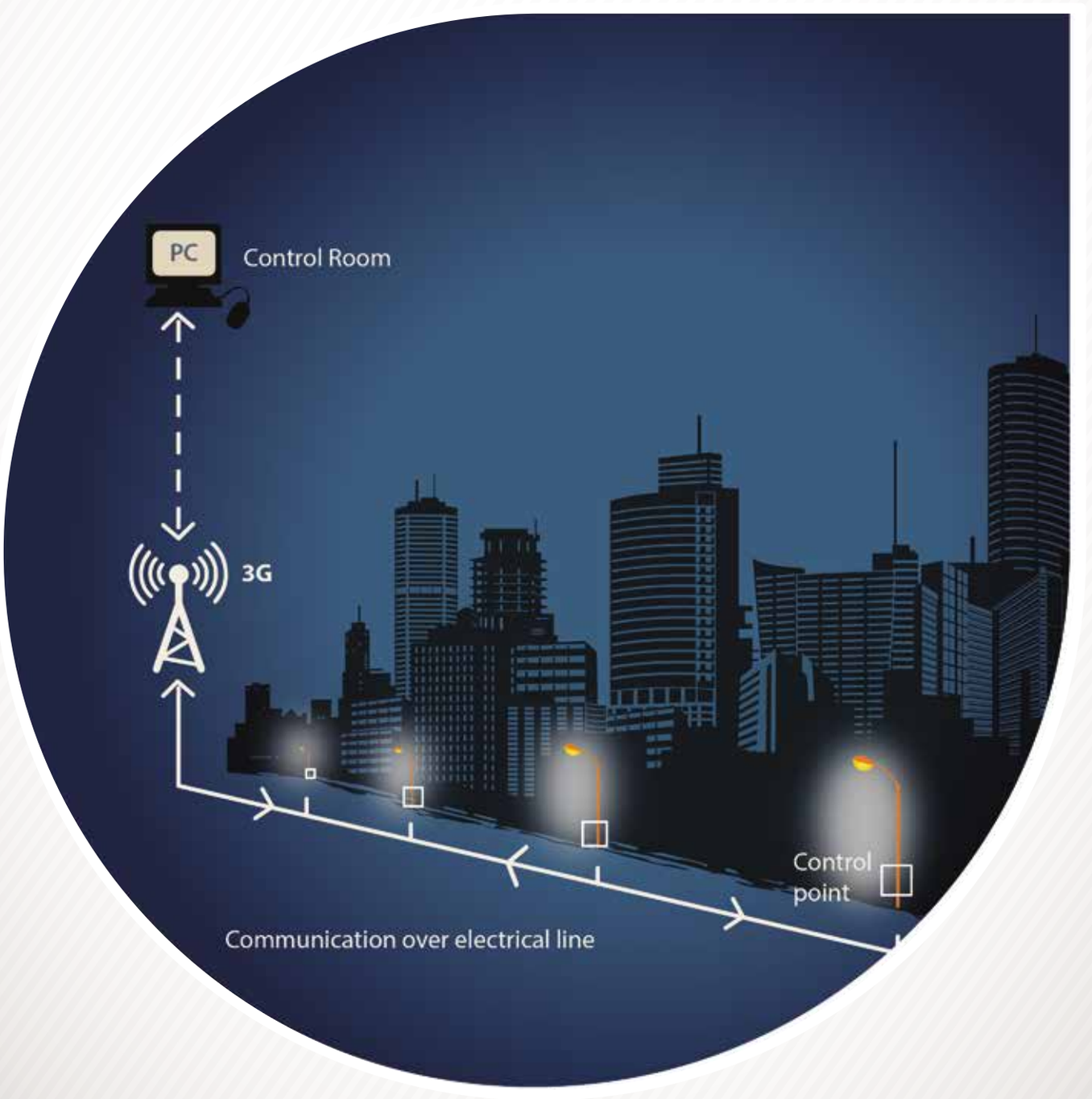
- Deep green retrofits in air conditioning and UPS systems are providing us with new breakthroughs, and we have reduced our connected load further by 3.4 MW and 4.4 MW in fiscal 2015
- We have achieved 25 MW (as of September, 2015) reduction in connected load in the last four years through deep green retrofits of our air conditioning and UPS systems
- Most retrofits have a short payback period of less than three years and can be easily replicated in other commercial buildings

1.19 - Energy harvesting

- Innovative peel-and-stick wireless and battery-less sensors are playing a critical role in managing resource consumption and comfort in our buildings
- They work on the principle of energy harvesting, where the sensors and other devices harvest energy from the building's indoor environment
- Even a simple light switch can work on the energy harvesting principle
- Occupancy sensors wirelessly communicate with lights and switches for automation
- Four hours of 100 lux light is sufficient for the sensors to harvest energy and work for the next 24 hours

1.20 - Taking technology to the streets

- The Point-to-Point control system uses System Manager and Node at each light
- System Manager uses PLC technology (Power Line Communications), which communicates with nodes installed at each point of light on the streets
- These features result in important savings on cabling and enable detailed control on the point of light level
- Node regulates and manages the element of point of light, which it controls by using three variables: illumination, power consumed and schedule
- The entire programming for this is done from the System Manager



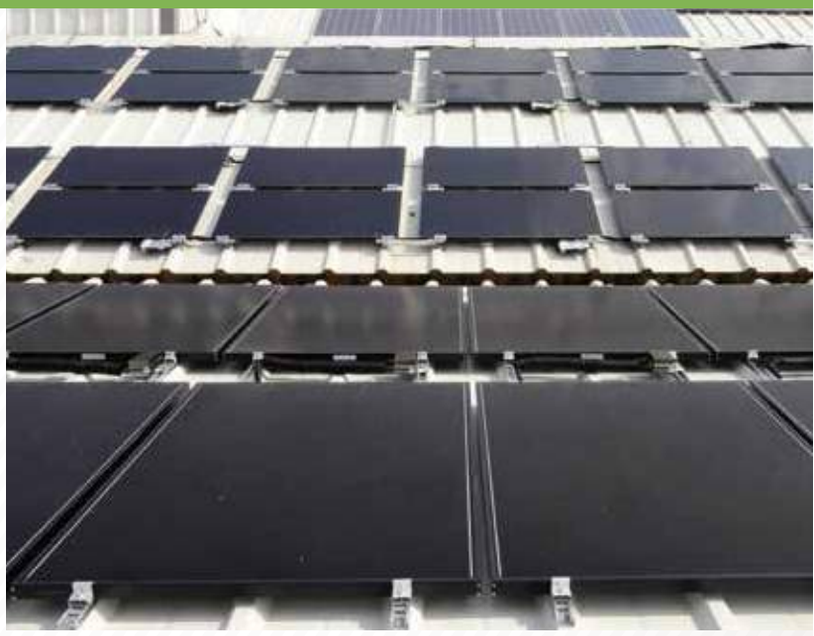
1.21- Under our watchful eyes

- Our central command center in Bangalore helps us remotely monitor, manage, and optimize our building operations
- We manage over 11 million square feet of smart buildings, energy management systems, solar PV systems, data center power usage effectiveness, battery management systems, energy consumption for sewage treatment plants, and weather stations for their performance across Infosys campuses
- It enables us to have building efficiency experts manage operations, remotely provide technical expertise for all locations and analyze data to identify optimization opportunities
- Centralized expertise from the center allows us to improve our diagnostic capabilities, enhance operational effectiveness and chart recommendations for new building designs

1.22 - One of the biggest solar PV experiments at Infosys Bangalore

- To demonstrate the viability of the best solar PV technology available in the market and encourage solar energy in India, we have installed solar PV technologies in one of our buildings in Bangalore
- Five different solar PV technologies are being compared on the same roof with continuous monitoring and analysis of energy generation data in real-time
- This project will analyze the effect of weather conditions on the performance of different PV technologies
- This plant is expected to meet over 10 percent of the total electricity demand of this building

Different Solar PV Technologies



Solar Technologies	Monocrystalline	Polycrystalline	Hetro Junction Intrinsic Thin	Cadmium Telluride Thin	Copper Indium Selenide Thin
Panel Capacities (Watts)	255-330	250-310	240	97.5	170
Panel Efficiency	15.5%- 20.1%	15.9%	19.4%	13.5%	13.8%

1.23 - Here comes the sun

- Increasing the use of renewable resources has been a constant quest for us at Infosys. Solar energy, we believe, holds immense potential and is the future of green energy
- We strive to meet our entire electricity demand from renewables in the next few years, we have successfully installed 3.2 MW (as of September, 2015) of solar photovoltaic (PV) plants across our campuses in India
- We plan to add another 175MW through onsite and offsite solar installations across India

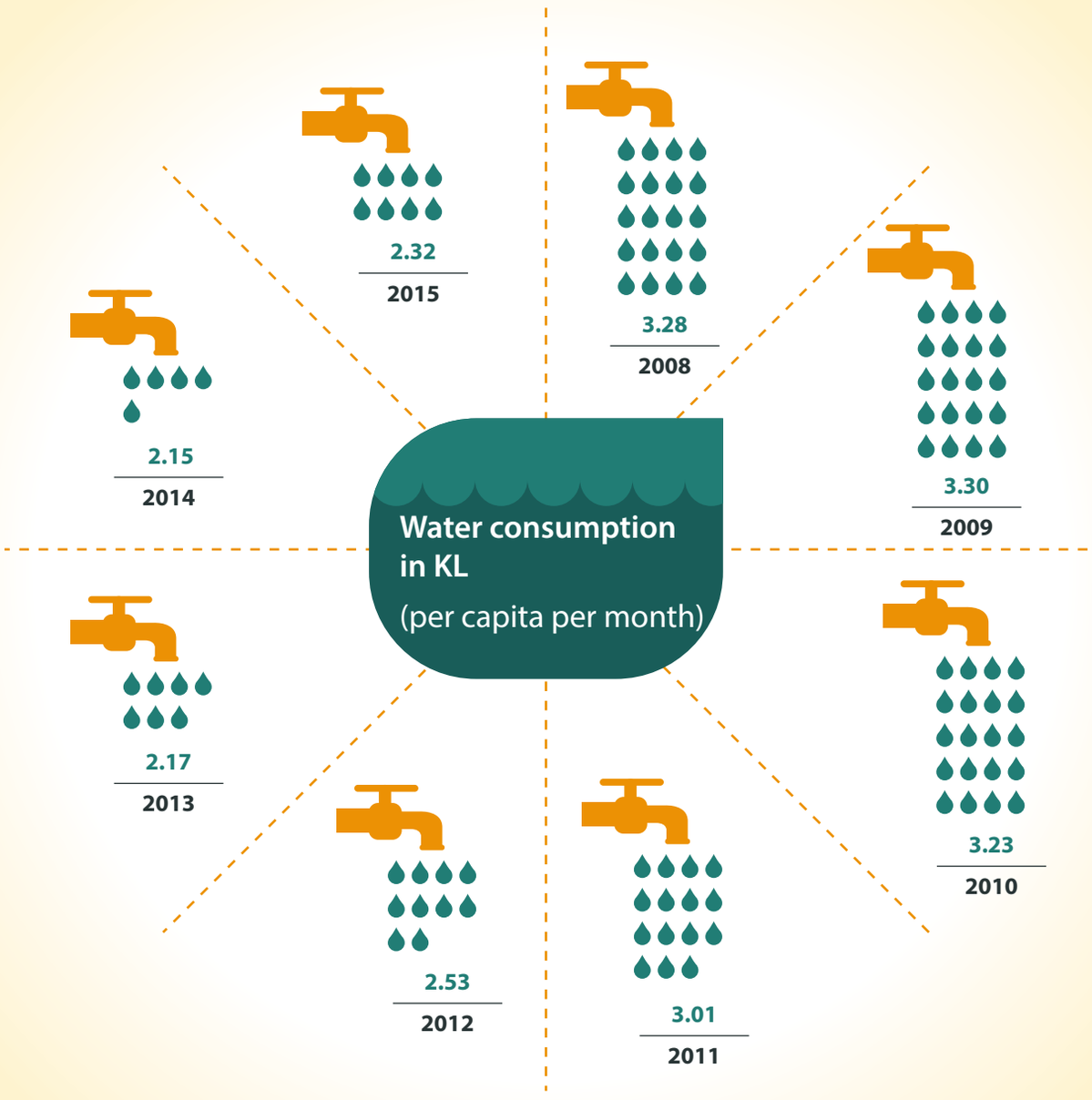
2 - Footprints on the sands of time

The following are the details of our consumption and savings in the areas of water, energy and GHG emissions.

2.1 - Water

With the threat of global warming and sea levels rising at an alarming rate, we never let our focus waver from water conservation.

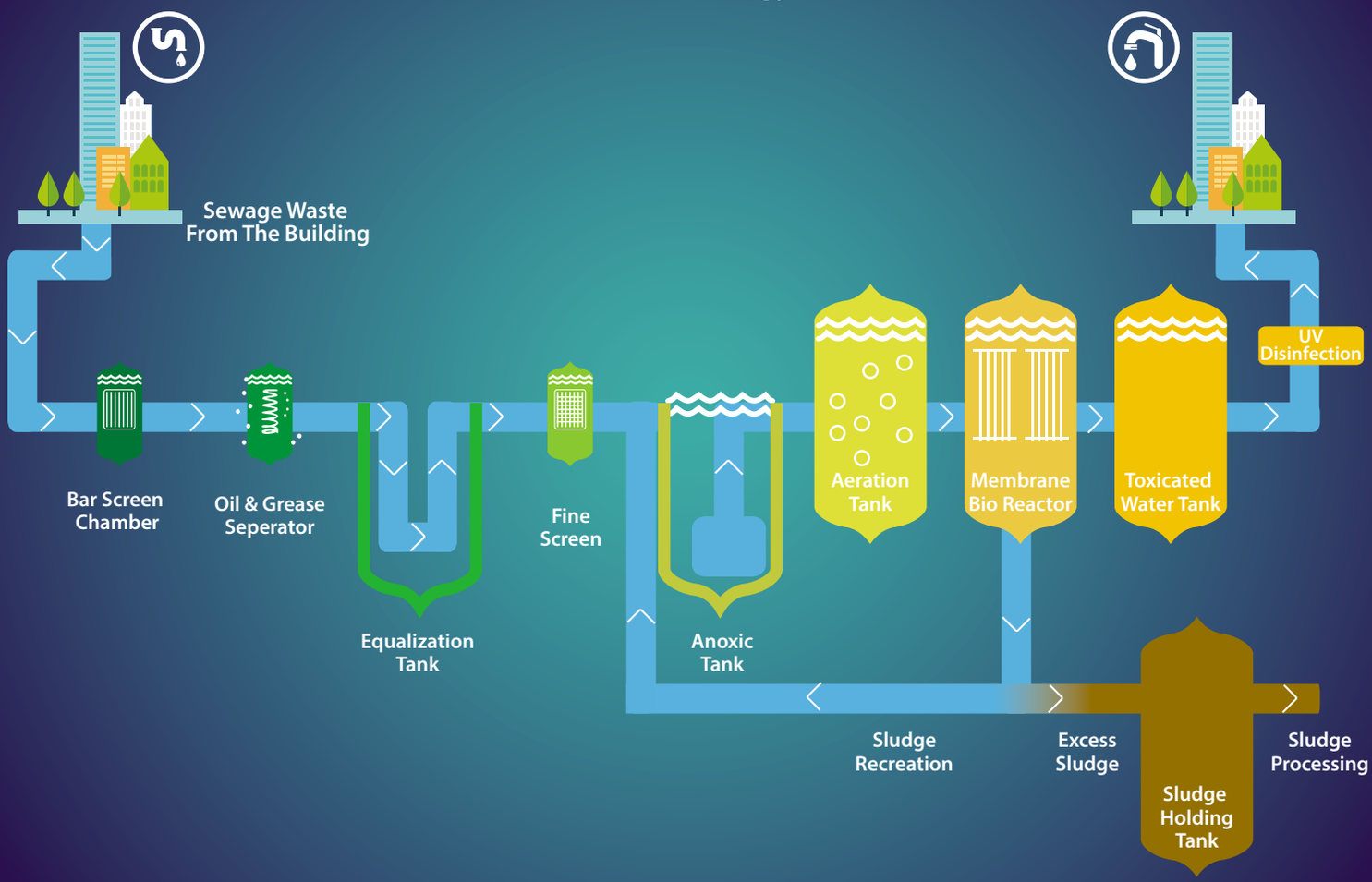
- In spite of the number of employees rising manifold, we reduced our per capita fresh water consumption by about 30% in fiscal 2015, as compared to the fiscal 2008
- Our water-sustainability strategy includes reducing our fresh water consumption, rainwater harvesting, recycle and reuse of waste water
- We have installed pressure-reducing valves in taps and pipes, flow restrictors, and sensor taps in high-density areas
- At present, we release a very insignificant amount of water into municipal sewage systems
- We follow stringent norms on water quality which are at par with global standards



2.2 - Watering it down

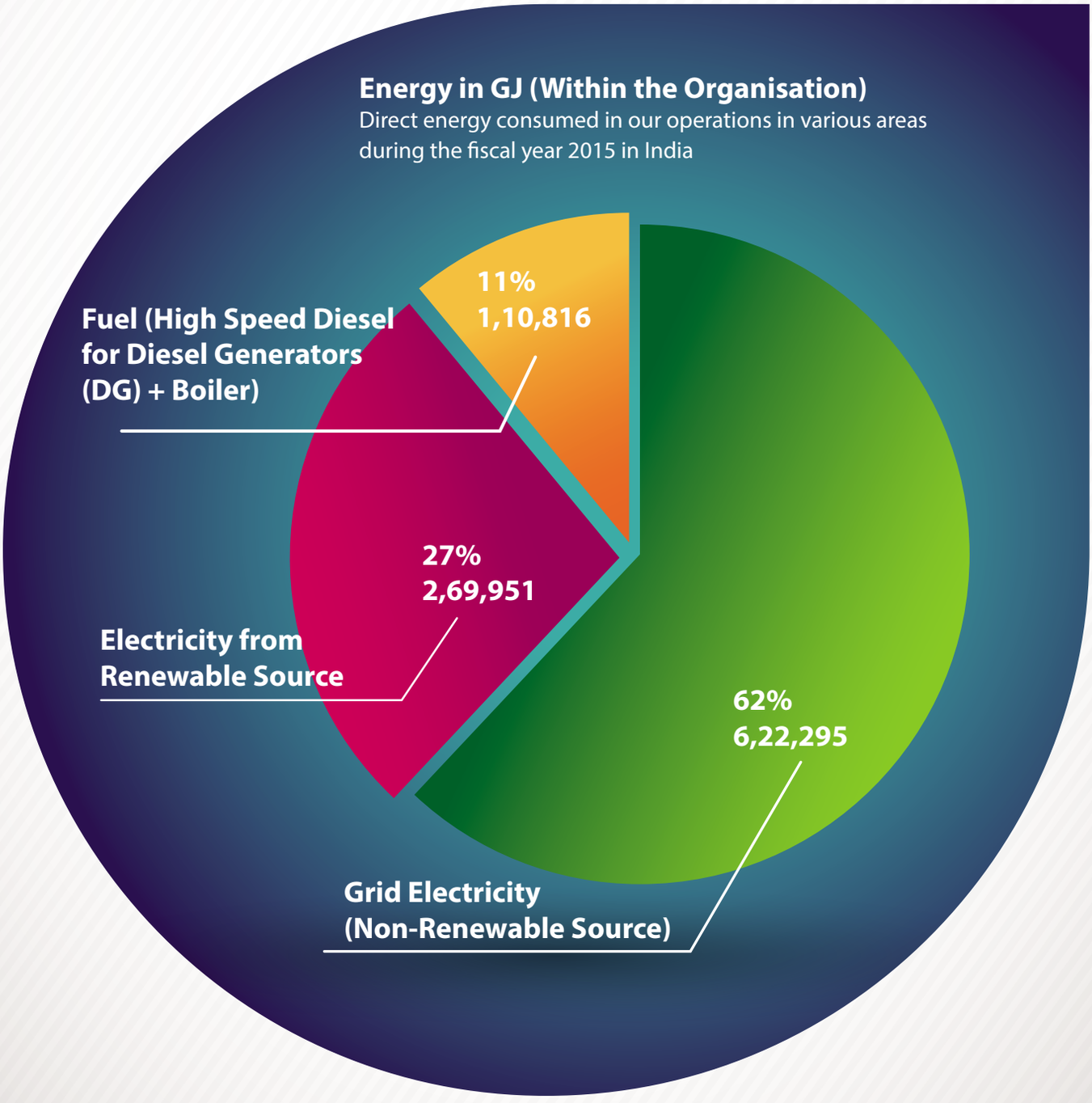
- The entire waste water generated in our campuses is treated at our sewage treatment plants
- Recycled water is used for landscaping, cooling and flushing within our campuses
- Dual plumbing system is in place to provide separate water piping for the supply of potable and non-potable water (treated waste water)
- The water quality is monitored regularly to applicable norms, ensuring good health and safety for the employees
- For the current fiscal, we recycled and reused 26,26,529 kl of water, amounting to over 71% of the total water withdrawn

MBR Technology



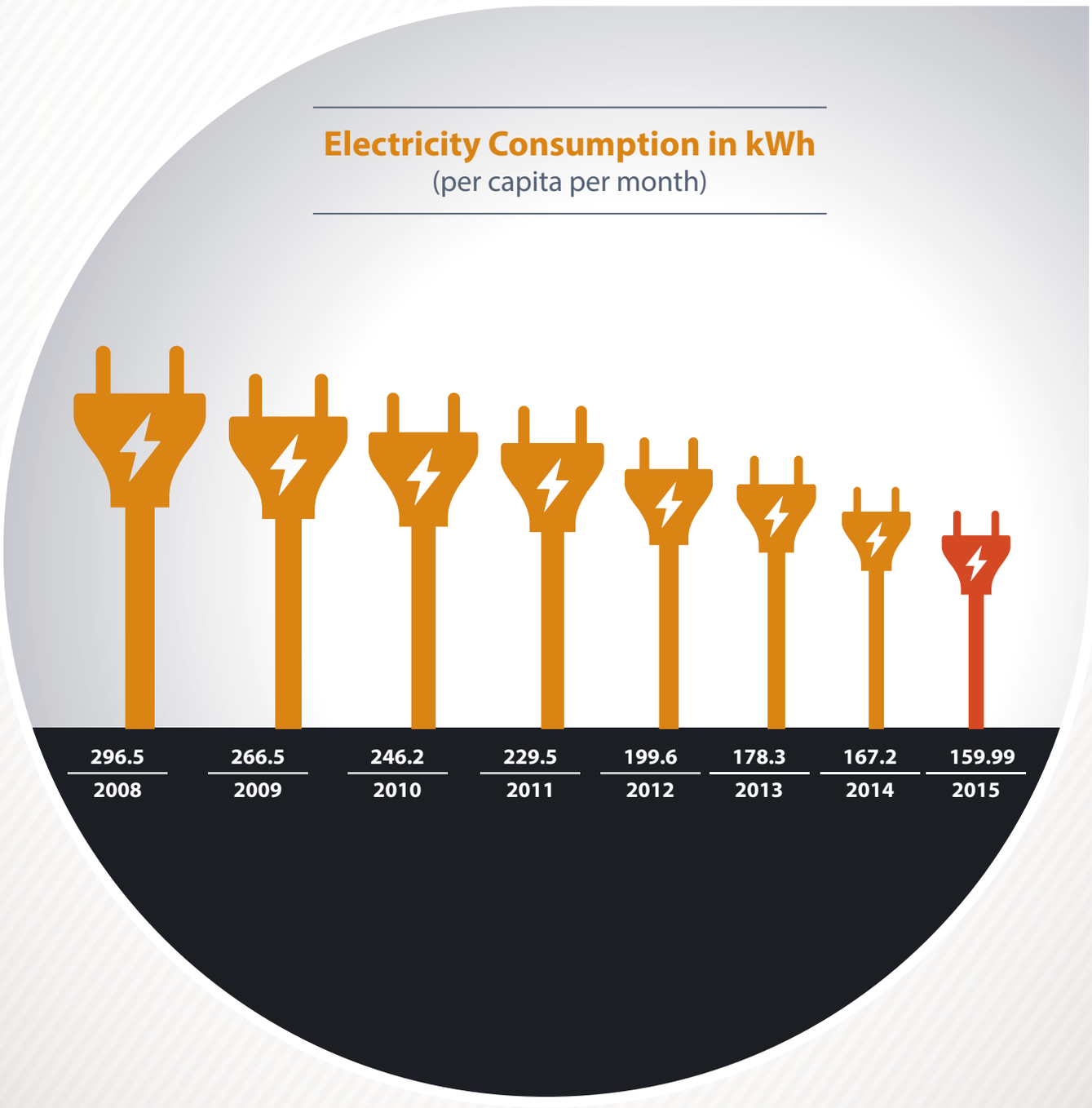
2.3 - Energy

Our energy consumption takes place mainly through the use of electricity, high-speed diesel used for generators and boilers, and petrol used in company-owned vehicles and lawn-mowers.



2.3.1 - Electricity

- We're on a mission to reduce per-capita electricity consumption by 50% in 2018, against the fiscal 2008 baseline
- As of 2014, we have achieved 46% reduction, which takes us very close to our target
- In 2015 alone, we have reduced per capita electricity consumption by 4.34% over fiscal 2014

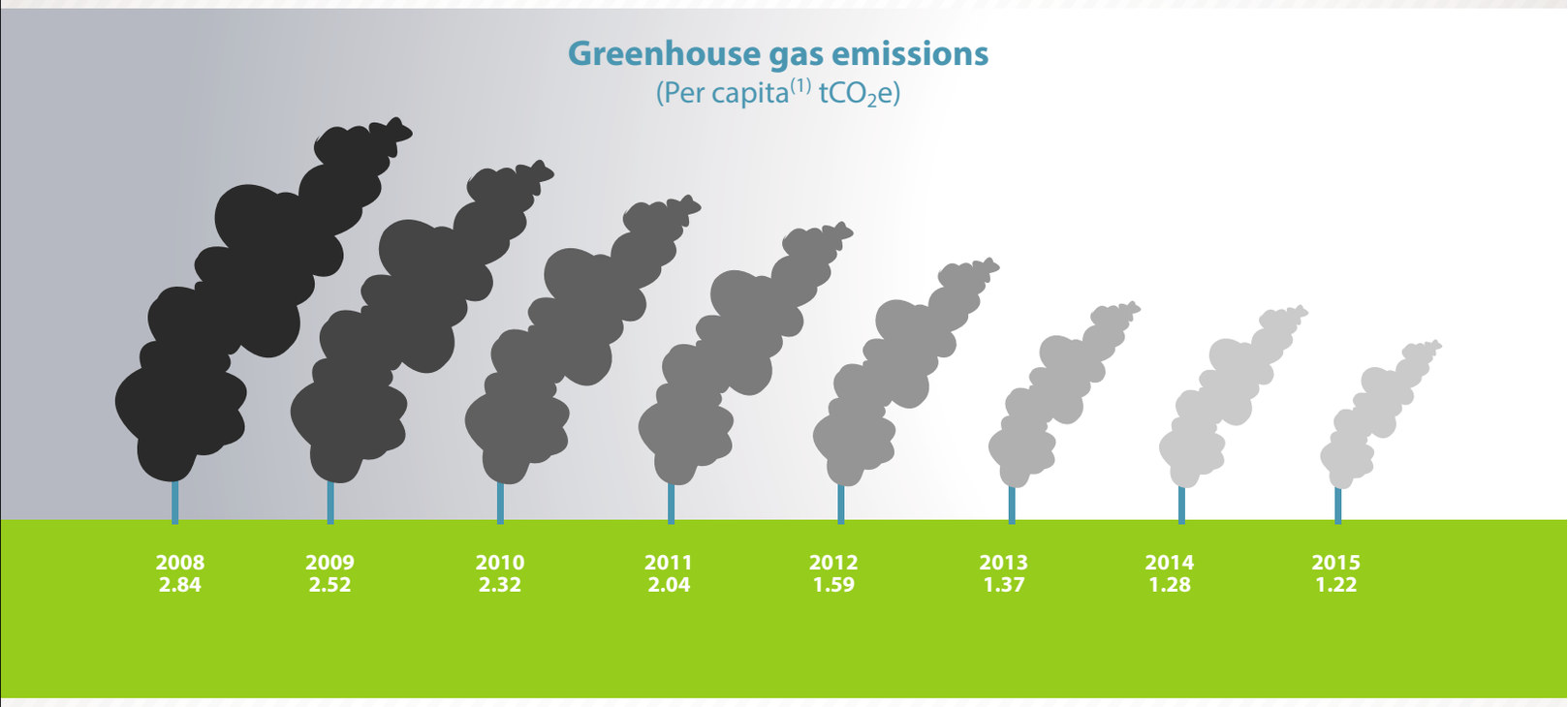


2.3.2 - Renewing our faith in renewable energy

- We harness solar energy across our campuses for electricity generation and water heating purposes
- Solar hot water systems with a capacity of about four lakhs liters per day are installed in our campuses to meet the hot water requirements
- This fiscal, our onsite solar PV systems produced 2911 MWh of electricity which was consumed within our campuses in India
- We used 75 million units of green power for meeting our electricity requirements during the same period
- This accounts for nearly 29.11% of the electricity needs of all Infosys campuses across India

2.4 - GHG Emissions

The trend of monthly per capita GHG emissions (Scope 1 and Scope 2) for all locations in India over the years is as follows :



Per capita emissions is computed by dividing the gross GHG emissions (scope 1+2) in our locations by the total number of employees. The employee count is calculated by totaling the swipe count of employees and number of support staff in our offices. The employee count considered for fiscal year 2014 is 126,612 and covers all India locations.

Emission reduction initiatives

In line with our carbon-neutrality goal and our annual carbon-intensity reduction target, we have implemented the following emission-reduction initiatives.

Carbon reduction initiatives	Electricity procured/ saved (MWh)	Emissions avoided (tCO2e)
Energy efficiency retrofits in our buildings (Scope 2)	6,234.10	5,111.95
Operational excellence and new green buildings	5,441.0	4,461.62
Total emissions avoided		9,573.57

2.5 - Reducing. Reusing. Recycling

Waste management has been a prime focus area for us in recent times, and the results are already showing.

- Our products, consultancy and services in the information technology domain do not produce any significant waste
- Our suppliers are encouraged to reuse packaging material
- Waste is segregated at source, stored and disposed to authorized recyclers
- Hazardous and e-waste are sent to recyclers with the necessary clearances from pollution control boards
- We have installed biogas plants and composting systems in multiple offices
- We use minimum paper and recycle the same to make usable products
- Our approach to waste management is spread across three dimensions-influencing social behavior, process optimization and implementation of technology

2.5.1 - Social networking for a cause

We conduct employee engagement and awareness programs across all campuses through eco-clubs to sensitize employees on waste management issues. Some of the initiatives we have undertaken are:

- All waste bins in pantries and food courts have been colour coded to ensure easy segregation of waste
- Stickers displaying the items that can go into specific bins guide the employees
- Mailers and posters on waste management are updated on a regular basis
- Our aim is to inculcate a culture where employees are sensitive towards the issue of irresponsible dumping of waste
- Through this, we strive to bring about a change in the minds of the people and develop a responsible approach towards managing waste in the society

2.5.2 - Nothing goes waste

By monitoring waste generation patterns across offices, we've been able to tackle the issue with:

- Detailed quantification of all kinds of waste help us analyze waste patterns and reduce the generation of waste
- Reduction of single-use plastic and paper tableware, including cups, spoons, plates and stirrers from our food courts
- Collaborating with our vendors to replaced disposable cutlery with steel and glass cutlery at most of our campuses
- Standardizing the design of our waste storage yards to enable better segregation and storage of waste, thereby enhancing the recycle value of waste

2.5.3 - Technology with a heart

We have adopted several green, scientifically proven technologies to help us reduce our carbon footprint. These are:

CFL Crusher

- We are testing the CFL crusher system, the first potable crusher in this sector, to minimize the negative impacts from mercury exposure
- Mercury from fused CFLs and tubelights is known to cause several health and environment hazards
- The CFL crusher absorbs mercury in CFLs and tube lights
- The mercury that is adsorbed on the filters can be recovered and recycled

Polycrack technology

- We are evaluating upcoming technology like the polycrack system to manage mixed solid waste
- We are still testing its viability to demonstrate that waste can add value to us
- A 100 kg per-day Polycrack system is being tested in Bangalore to handle mixed non-recyclable waste, plastic, rubber, etc.
- This Polycrack technology unit converts waste into oil, gas, and char through a catalytic process

Composting

- Food waste along with garden waste is mixed in equal proportions and is composted by in-vessel composting in Trivandrum, Jaipur and Chandigarh
- Food waste mixed with garden waste is also composted in an organic waste converter installed in the Bangalore campus
- We follow vermi composting in Mangalore for paper waste
- The compost generated is used for landscaping within our campuses
- Excess garden waste is shredded and used for mulching

Anaerobic digestion

- We have installed biogas plants in our campuses to recycle the food waste generated from our food courts
- Food waste is converted into biogas and reused in our food court kitchens for cooking
- In addition to our biogas plants in Mysore, Hyderabad, Bhubaneshwar and Mangalore campuses, we are in the process of setting up plants in our Thiruvananthapuram, Jaipur and Bangalore campuses
- These plants are automated and the process parameters such as pH, gas quantity generated, etc. can be remotely monitored on a computer

2.6 Standing our ground

Waste management has been a prime focus area for this world is not only about us. Millions and billions of life forms reside on our planet, and we consider it our duty to help each of them have a normal, healthy lifespan.

- We believe that rich biodiversity plays a vital role in creating a healthy and sustainable environment
- We are constantly striving to conserve biodiversity and promote the well-being of the people and society at large
- In fiscal 2015, we have planted about 89,000 trees across our campuses in India, taking our total number of plantations to nearly 4.15 lakhs

2.7 Spreading the word

Good citizenship constitutes the core of our corporate policy. Our employees help us pursue numerous green initiatives with renewed vigour. Eco groups at every office in our campuses provide a platform for passionate employees to volunteer their time, to take up projects that address the conservation of electricity and water, recycling of waste and local afforestation.

- **Clean Hussain Sagar drive** – Infosys employees from our Hyderabad campus undertook this drive on Solid Waste Management, by spreading knowledge on the subject and installing composting bins to promote dumping bio-waste to generate manure

Here's a snapshot of our activities

- **Free pollution checks** for two/four wheelers were conducted by Eco clubs in Hyderabad and Trivandrum

- **Zero food waste initiative** – This was an initiative taken up to encourage employees to reduce their food waste in some of our campuses. In our Hyderabad campus, we distributed more than 3000 candies amongst employees who finished every bit they'd taken on their plates

- **Earth Hour** – Employees from our Pune campus participated in the Earth Hour campaign driven by World Wildlife Fund (WWF). They also went around asking neighbourhood residents to switch off their lights for one hour and to spread the message of energy conservation at their homes

3 - Fighters for the future

When we dared to dream about creating a self-sufficient ecosystem, we were the only ones who believed in it. However, when we joined forces with our strategic partners the results began to show, year after year. The following endeavours deserve a special mention for helping us realize our dreams.

3.1 - Lawrence Berkeley National Laboratory (LBNL), USA

- We have collaborated with LBNL to analyze the effects of cool roof on building's cooling requirement
- This research includes the study of two similar buildings, with and without cool roof, at our Bangalore campus. The design, occupancy, internal loads, and heating, ventilation, and air conditioning (HVAC) systems are similar for both the buildings
- This study will draw a clear comparison of cooling loads in these two buildings and also identify the benefits of cool roof in buildings

3.2 - UC Berkeley Center for Built Environment

- Experts from UC Berkeley Center for Built Environment visited Infosys in September 2014 to understand and experience the functioning of radiant cooling in our buildings
- UCB, CBE is looking at radiant cooling as a disruptive technology and plans to jointly carry out an extensive research on radiant cooling systems
- We have proposed to share operational data of our existing radiant cooled buildings for the study and will collaborate with UC Berkeley Center for Built Environment on this new research

3.3 - Saint-Gobain Research India Limited

- We have partnered with Saint-Gobain to improve the efficiency of buildings in hot and humid climates
- Extensive research is being conducted on building material, building envelopes and monitoring systems
- The findings are already being implemented across our campuses in Hyderabad, Chennai and Thiruvananthapuram

3.4 - 3M

- In line with our goal of having completely day lit buildings, we are constantly looking for new ideas and innovative technologies to maximize daylight in our buildings
- With 3M we are working on evaluating new technologies that enhance daylight in buildings
- We evaluated an innovative application of light enhancing film for enhancing natural light in our new buildings
- We are testing the use of daylight redirecting films for enhancing daylight in office spaces

3.5 - United Technologies Research Center (UTRC)

- We are working with UTRC on technology evaluation of the energy management system developed by them
- The project intends to demonstrate the energy savings made through building automation, monitoring, analysis, and diagnostics, thereby optimizing energy use and reducing operating cost

3.6 - National Renewable Energy Laboratory (NREL), US

- We have collaborated with NREL to analyze the performance of different solar PV technologies under the same weather conditions with real-time data monitoring and analysis
- We are evaluating the behavior of five different solar modules in Indian weather conditions and establishing the effect of panel temperature on their performance

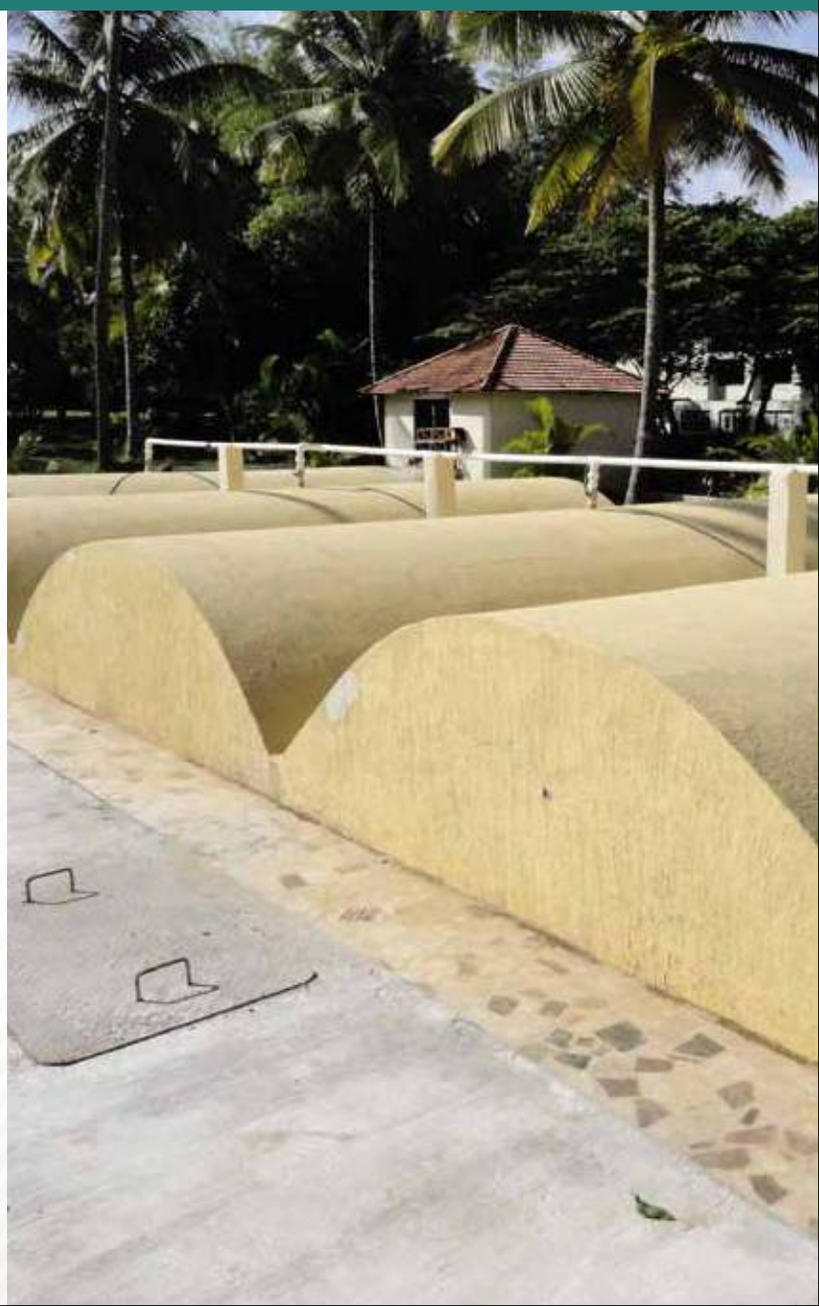
3.7 - World Business Council for Sustainable Development (WBCSD)

- We have collaborated with WBCSD to develop an action framework and identify financially viable investments for energy efficiency in existing buildings
- We hosted the Energy Efficiency in Buildings Laboratory in March 2015 at our Bangalore campus
- This session gave us an opportunity to engage with multiple stakeholders and identify core issues of energy efficiency retrofit projects

3.8 - Raising the benchmark on Solid Waste Management

- At our Bangalore campus, we hosted a three-day conference-cum-training session on solid waste management
- Dr. Ing. Dirk Weichgrebe from University of Hannover, Germany, an expert in solid waste management, shared his views on the subject
- He reviewed the solid waste management projects across Infosys campuses and conducted training sessions on Biological and Thermal treatment of waste
- On the last day of the event, participants from local municipalities and several NGOs joined us as he spoke extensively on large scale waste management solutions

Biogas plants in Infosys Hyderabad and Mysore campuses

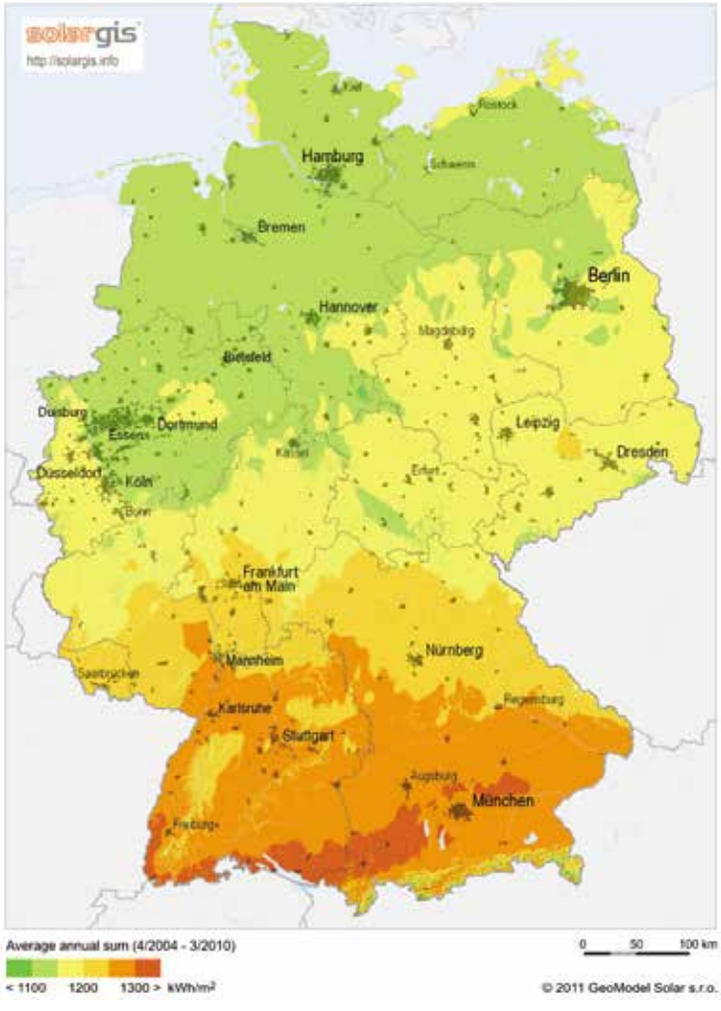


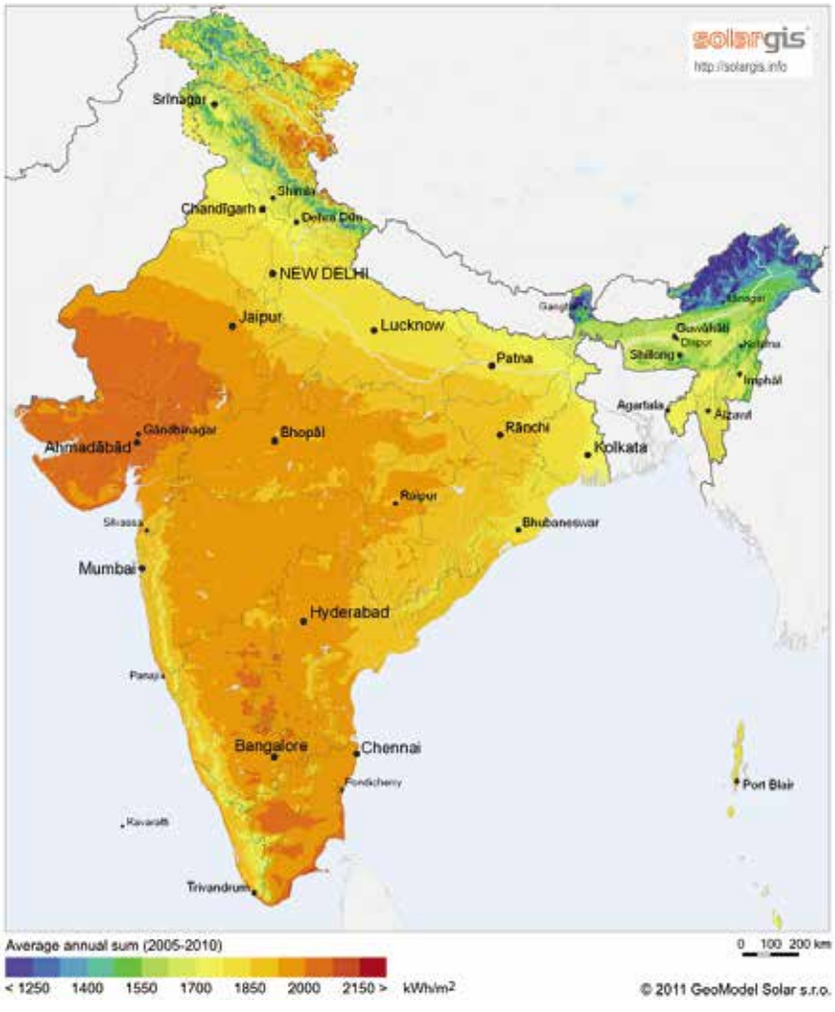
Case Study 1: Sunshine makes us happy

A major part of India is solar energy rich. We believe the answer to India's power shortage lies in the sun. As one of the largest growing economies with huge energy demands, harnessing India's solar potential makes economic as well as environmental sense. Investing in solar PV installations to generate power and meet this growing energy demand might be the best way ahead for us.

India's annual GHI (Global Horizontal Irradiance) varies from 1600 to 2200 kWh/m2, which is twice as large when compared to Germany, which has the highest solar power installations in the world, with a total capacity of about 36 GW (Wirth, 2014). India currently has a total capacity of 2.6 GW (Chadha, 2014) and has great potential for growth in this area.

Source: SolarGIS





CASE STUDY 1: SUNSHINE MAKES US HAPPY

Today, in India, the central and state governments have come up with attractive solar policies and incentive schemes to promote solar installations. India now has the largest solar PV plant in Asia. This 130 MW solar PV plant was commissioned in February 2014, in Madhya Pradesh. (Chadha, Welspun Energy Commissions, India's & Asia's Largest Solar Power Project, 2014)

At Infosys, we have taken up the goal to source all our electricity requirements from renewable sources in the next few years.

We currently source nearly 30% of our electricity from green power. We have installed about 3.2 MW solar PV in our campuses in India for our own consumption. This makes economic sense for us not only because of the attractive solar policies but also because the electricity price across our India operations has increased by 35% and diesel price by 70% in the last 5 years. This makes the solar case commercially viable.

Across our four campuses in India, we have roof top and on-ground PV installations.

Solar PV installations by Infosys in its various campuses

Infosys Campus	Campus Capacity in (kWp)
Chennai	1792
Trivandrum	127
Hyderabad	555
Jaipur	253
Mangalore	212
Bangalore	265

Total: 3204

as of September, 2015

Frequent power cuts in our Chennai campus forced us to rely heavily on DG sets to run business as usual. The cost of DG power on an average is 2 to 3 times higher than grid. Between March and December 2013, we had consumed 7 million units from DGs. Hence, it made perfect economic sense to install large PV systems in our two campuses in Chennai.

Here, solar panels are installed in an innovative manner. Panels are oriented east - west instead of south. We found that with E-W orientation, over 20-30% more PV capacity could be installed depending on the roof layouts. Even though the specific yield of the plant reduces by about 2% compared to optimal South orientation, yield per sq.m of installed area is more due to elimination of shading distances.

The return on investment for these PV installations has been estimated to be about 6 years, which is very attractive, considering the life of the solar plants is 15 years.

CHENNAI

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Case Study 2: Being in command

At Infosys, we have been using pioneering green technologies to address resource conservation through an integrated design approach. We are aware of the benefits of integrated building design approach and have been implementing it in our buildings. Our operations have become more efficient, only because our buildings are now smarter than ever.

Smart buildings use inbuilt artificial intelligence and energy saving algorithms to constantly optimize operations on the go and build high level diagnostics. Smart buildings offer maximum leverage on the variability that exists with building operations, such as weather, occupancy, equipment condition, etc. The idea is to use a combination of sensors, controllers, actuators, feedback, and energy saving intelligence to make building operation most efficient.

With smart building technology, we are able to monitor and operate our buildings remotely from any part of the world. Using this technology backbone, we have recently set up a central command center to remotely review, manage, and optimize our building operations.

The command center has real time access to all Infosys smart buildings across the country. Building efficiency experts with expertise in areas of HVAC (air-conditioning), lighting, plug load energy, and water, continuously review building operations in real time as well as analyze historical data to identify improvement opportunities. Unlike standard location based set up, which may not always have professionals looking through building operations, the command center has expert engineers trained to see through building data. Data points like design vs. actual performance, equipment health parameters, system key performance indicators, other diagnostic parameters at equipment and system level and historic trends are reviewed on a regular basis. Energy and water wastage is also identified and reviewed from the command center setup.

The command center gives data on all campuses and buildings to all stakeholders at any time of the day. Everybody, from a facility manager to our senior management can look at any of our campuses from one location and get current and past data on energy consumption, equipment condition and operating patterns in an easy way. This also gives an opportunity to compare energy consumption between multiple buildings, or campuses on one screen.

Centralized expertise allows us to smarten our diagnostic capability and hence enhance operational effectiveness. This capability is not just limited to diagnostics but extends up to recommendations for new building designs. This changes the whole landscape of building operations, boosting our morale to keep up the good work.

Case Study 3: Retro becomes contemporary

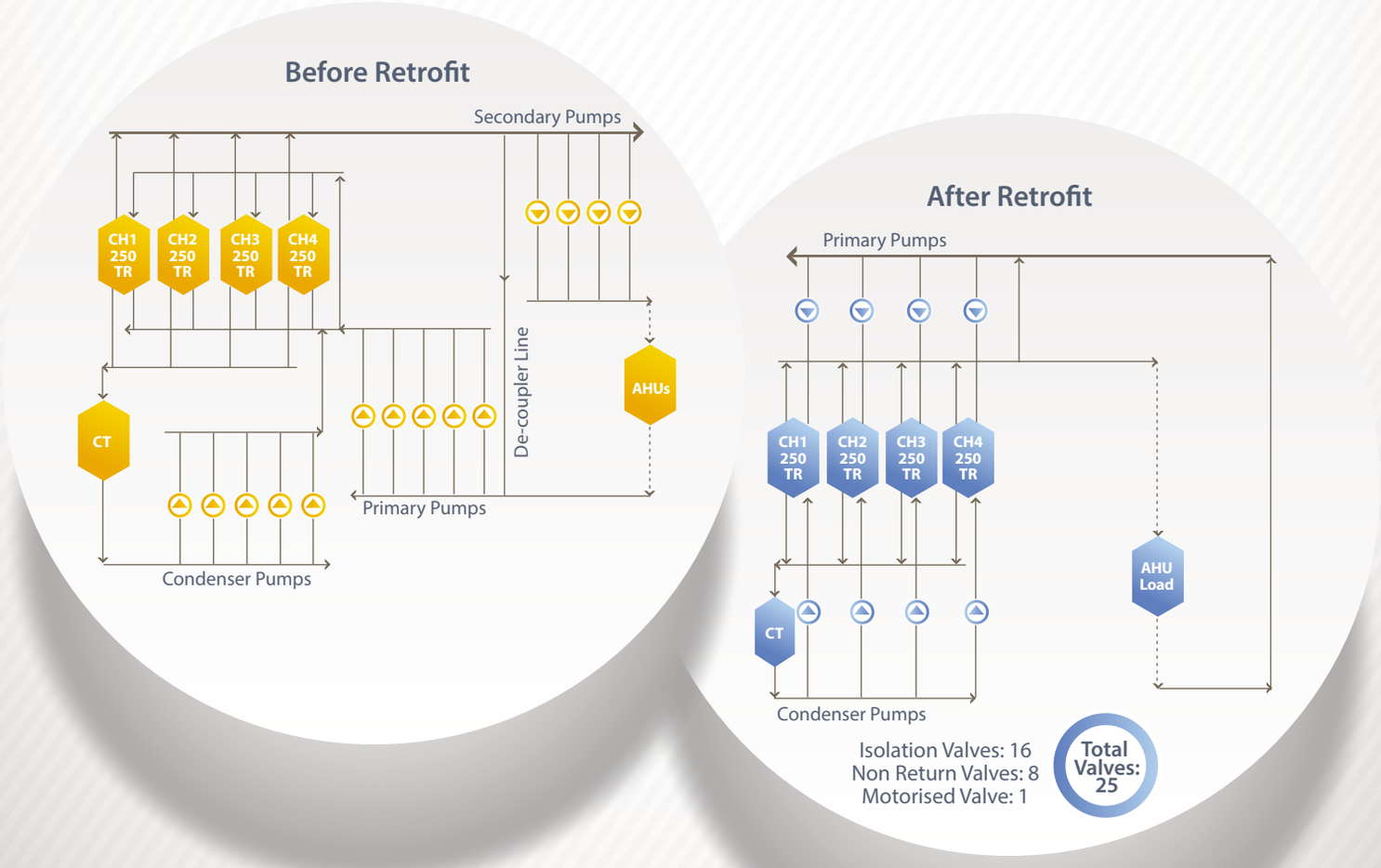
At Infosys, we have taken energy efficiency of our new buildings to a new level by implementing innovative technologies and smart automation. Therefore, our buildings are among the most efficient, globally. At the same time, we have taken up major retrofits in our existing buildings, particularly in air conditioning systems, to bring them to the highest possible efficiency levels. In the last 3 years, several chiller plants in our campuses have been retrofitted to eliminate wastage, optimize operations, and to bring about huge reductions in energy consumption.

The case for retrofit begins with a detailed audit of all equipment of the chiller plant including chilled water pumps, condenser pumps, cooling towers, and chillers. Over a period of time, the heat load in the buildings undergoes changes with replacement of equipment (like PCs) with newer and more efficient technology. Advancements in technology have resulted in new products such as high efficiency chillers and efficient inline pumps coupled to the chiller. Better control valves and automation are also available in the market today. The main advantage in retrofits is that the new equipment can be sized very accurately based on measured operating parameters over a period of time, thereby improving efficiencies greatly. All these advantages deployed in old chiller plants result in a dramatic reduction in connected load as well as reduced energy consumption. A case study of one such retrofit in our Mysore campus is given below.

The chiller plant was retrofitted from a conventional primary-secondary chilled water system to a variable primary pumping system. The pumping system was changed from a bank of conventional end suction pumps to vertical inline pumps coupled to the chiller. Due to the improved design, the number of valves were reduced from 74 to 25, thereby reducing pressure drop.

Reduced pressure drop in the plant room, and by right sizing and selection of efficient pumps, the connected load in the plant room reduced by 70%, and energy savings of about 30% was achieved.

The schematic below shows the chiller plant before and after the retrofit.



The number and capacity of the pumps before and after retrofit are listed in the table below:

	Before Retrofit			After Retrofit		
	No.	KW	Total KW	No.	KW	Total KW
Primary pumps	5	15	75	4	11	44
Secondary pumps	4	37	148	4	11	44
Condenser pumps	5	15	75	0	0	0
Total pumping load (KW)			298			88

Table: Connected load reduction by pump retrofits

Few years ago, we took up a challenge of reducing 1 MW connected load in each of our 5 major locations in India – Bangalore, Mysore, Hyderabad, Chennai and Pune. Today, after retrofitting 35 chiller plants across these locations, we have achieved a reduction of about 15 MW since 2010-11 (as of September, 2015). Hence, we are now in the process of surrendering a part of our sanctioned electrical demand in many of our campuses.

The retrofit projects at Infosys had a payback period of about 2 years (average), including upgradation of equipment, automation of process, and optimizing operations. The Infosys case study serves as an example for the industry to invest in major retrofits to see significant reductions in the operations cost. This may be considered as one of the safest and most attractive investments for businesses in bad global economic times. Also, it is an economical choice with prices of natural resources such as oil and coal, increasing rapidly because of dwindling stocks.

Case Study 4: Renewing existing facilities - Building retrofits in Pune

We have demonstrated remarkable energy performance of our buildings through good building designs, retrofits, pioneering green technologies, and by making our buildings smart. We focus on building automation and controls as a strategy to control and monitor our building comfort, indoor air quality, operations, energy and water consumption patterns that in turn help us derive mechanisms to optimize our usage of these resources. We have about 7 million square feet of new buildings which have smart building management systems, ensuring high performance of buildings. We plan to bring our existing buildings to the highest efficiency standards and make them intelligent and smart. Within this initiative, we have undertaken smart building retrofit of ten of our buildings in Pune campus, covering 2.7 million square feet of area.

It was our endeavor to create a set of intelligent buildings that effectively manage multiple variables like occupancy, weather conditions, operating hours, occupant behavior, and equipment efficiencies, thereby creating a healthy work environment for the employees and achieving operational excellence.

We implemented a host of efficiency measures, including intelligent control algorithms, scheduling of equipment, occupancy based control for meeting rooms and cabins, and demand controlled ventilation system to optimize the performance of our buildings. Critical alarms due to malfunctions are notified through SMS to ensure immediate corrective action without affecting efficiency and occupant comfort.

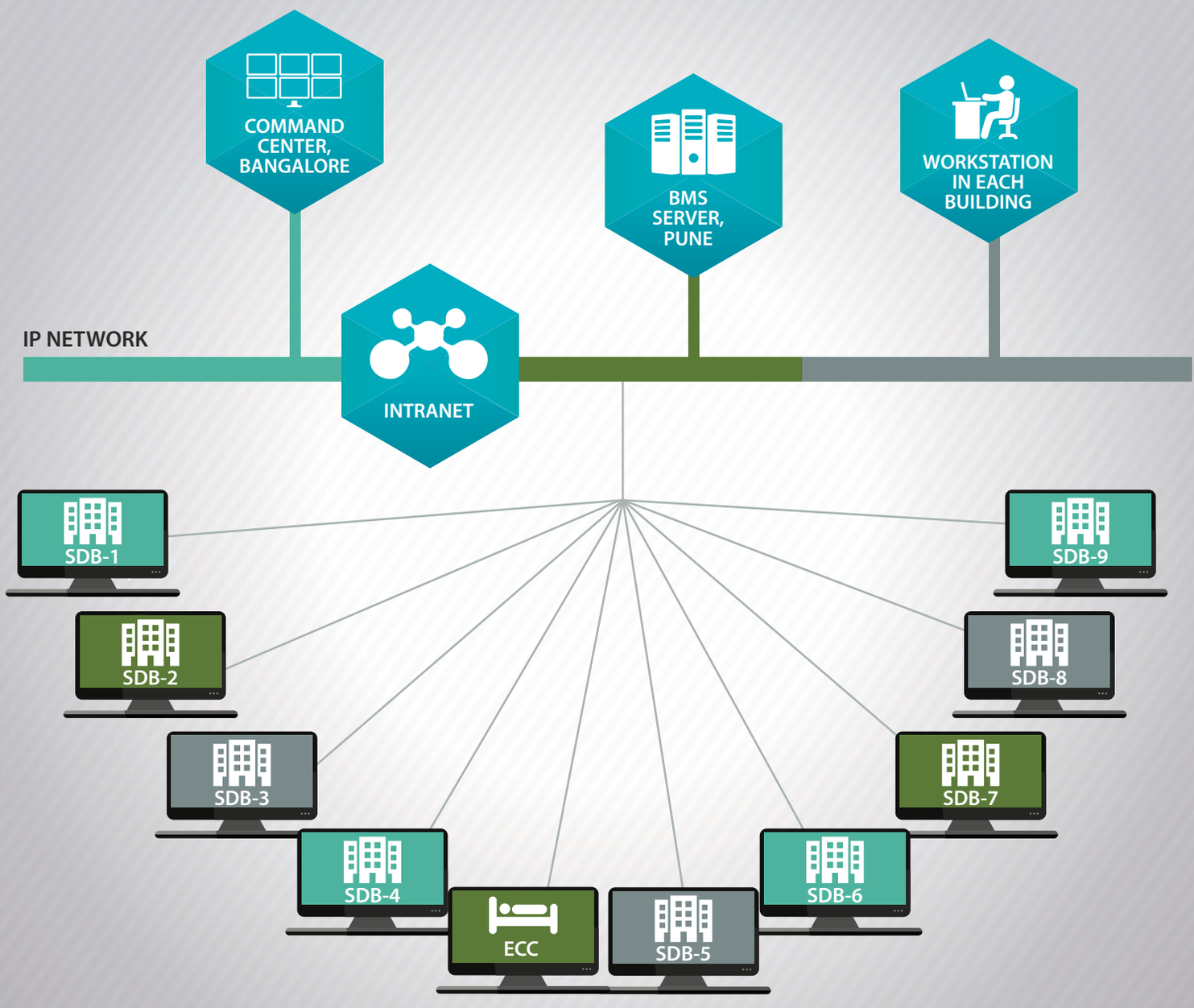
Our smart buildings use a combination of controllers, sensors, actuators, feedback systems, and energy-saving intelligence to optimize operations. Advanced BACnet DDC (Direct Digital Control) systems integrate multiple systems into a cohesive one, facilitating automated controlling and monitoring. Our robust data backup mechanisms accurately capture and store data, thereby eliminating the possibility of data loss. These smart buildings can be accessed through Infosys' intranet system globally, enabling continuous monitoring and analysis of performance data in real time by our technical experts.

All our ten buildings were retrofitted within a short duration of three months. This was attained with effective project management, communication and coordination between multiple teams, including operations, air conditioning, electrical, water management, and IT teams. This project is among the biggest and fastest smart building retrofit projects at Infosys. This has resulted into lower operating costs, enhanced equipment life, healthier indoor air quality, and improved occupant comfort & satisfaction.

Undertaken smart building retrofit of ten buildings, covering 2.7 million square feet of area.

CASE STUDY 4: RENEWING EXISTING FACILITIES - BUILDING RETROFITS IN PUNE

Our case clearly demonstrates that smart building retrofits are viable on large scale in a cost effective way. This retrofit is expected to save significant amount of energy and has an attractive payback period of just 4 years. With a high replication potential, this data-driven initiative makes an unassailable business case for large companies to undertake smart building retrofits in their existing buildings.



Case Study 5: Uninterrupted power supply with high efficiency modular systems

IT offices, including computers for employees and data centers need uninterrupted power supply (UPS) for maintaining stability of operations even at the time of power fluctuations and outages. Power failure without a reliable back up may result into unavailability of data to the users or even lead to complete loss of data. Therefore, a robust UPS system with high reliability and efficiency is the backbone of our business to deliver services to our clients and ensure business continuity.

For optimum energy utilization, we decided to retrofit inefficient UPS systems with efficient ones. Temporary shutdown of systems was required for carrying out this retrofit, thus, we meticulously planned and implemented it in a phased manner so that our daily business operations were not affected.

We replaced conventional UPS systems with energy efficient modular UPS systems to reduce installed capacity and energy consumption. Modular UPS systems offer highest level of efficiency and flexibility through a unique system design with cutting-edge architecture, consisting of independent hot swappable modules about 5 to 10 in number. These modules allow online interchangeability of UPS systems. Each module within the UPS system has a rectifier, inverter, static bypass, and a processor, thereby eliminating single point failure and supplying continuous power even if one module of the entire system fails.

The below table shows the number, installed capacity, and efficiency of the systems both before and after retrofit, across Infosys campuses in India:

Description	Old System	New System	Impact
Number of UPS systems	350	230	Elimination of 120 UPS systems
UPS Capacity	30200 KVA	20000 KVA	34% reduction
Efficiency	79%	93%	18% improvement
Number of batteries	19500	10000	49% reduction

Conventional UPS was designed for computer systems that were available at that point of time, and is now over-designed considering present day computer systems. Earlier, additional back-up system was an inherent part of the system design to eliminate the possibility of data loss and maintain business continuity. This additional system consumed substantial amount of energy even at the time it was not in use. With technological advancement, modular UPS is designed with simple independent systems which contain optimum number of supporting elements. UPS retrofit has reduced the installed capacity by 34 per cent compared to conventional system. Additionally, the modular system requires lesser number of batteries than the old system. Due to elimination of the number of systems and equipment, we have also witnessed significant reduction in maintenance and related costs.

We are continuously capturing and analyzing energy data from our UPS systems in real time across all our campuses from one single place through our central command center. This helps us identify inefficiencies and take corrective action, and eliminates energy wastage. In addition to improving system efficiency, this retrofit has also enhanced the reliability of the system, ensuring uninterrupted supply of power to the data centers and computer systems.

The average efficiency of the system has improved by 18 per cent, thereby reducing energy use and energy costs to a great extent. This deep green retrofit has helped us achieve about 10 MW connected load reduction in the last four years. For fiscal year 2015 alone, UPS retrofit has demonstrated a significant reduction of 4.4 MW in connected load. This retrofit has a short payback period of less than three years with the life of the system being more than ten years, thus making it easily replicable and viable for implementation in other commercial facilities.

Below table is an example of UPS configuration comparison between conventional and modular UPS systems:

Particulars	Conventional UPS	Modular UPS
Design Load - 80 KVA	80 KVA x 2	20 KVA x 5
Total installed KVA	160 KVA	100 KVA
Operating daytime load -70 KVA	70 KVA	70 KVA
Actual load on each UPS	44%	70%
Day time efficiency of UPS	84%	93%
Operating night time load - 35 KVA	35 KVA	35 KVA
Actual load on each UPS	22%	35%
Night time efficiency of UPS	73%	92%

Towards a brighter tomorrow

We are on our way to becoming the next superpower. A better life, we believe, is just around the corner. A life where unemployment is a long forgotten dream, there's surplus food for everyone, healthcare facilities are easily accessible, and optimism runs unbridled. However, in this pursuit of happiness, aren't we using our natural resources up too fast?

Yes, we are. Precisely why we at Infosys are investing a significant amount of time and money on finding greener ways to do business. Tapping into unconventional and renewable sources of energy, recycling waste to produce energy, controlling pollution and raising awareness about these initiatives are of top priority in our agenda. And our learnings are now being shared with the people around us. Together we can, and will build a greener planet.

We thank our partners, clients and patrons who have supported our initiatives. We also thank people who have adopted our solutions and implemented them at other organizations.

Infosys®

POWERED BY INTELLECT
DRIVEN BY VALUES

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