



SELECTO SYSTEMS PVT. LIMITED
PROJECT PRESENTATION

NOVEMBER 2009



Flagship Project
Number: BATF-08-49

INTRODUCTION



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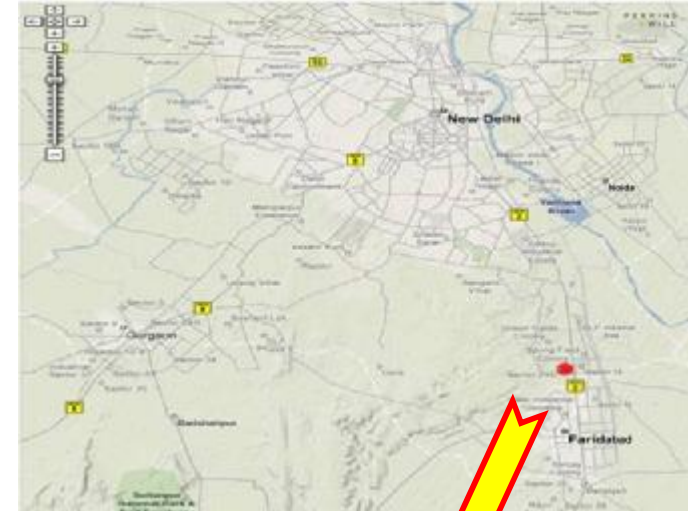
PROJECT SYNOPSIS

Total Plot Area	8.25 Acres
Location	6 Km south of Delhi on National Highway NH – 2 Latitude: 28° 26' 18" N Longitude: 77° 18' 26" E
Ground coverage	40%
FAR	250%
Built Up Area	1.75 million sft
No. of towers	4 interlinked towers (3 basements, 23 upper levels) Separate parking block (1 basement, 8 upper levels)
Facilities	IT/ IteS with Retail, Guest House, Medical, Recreation
Floor heights	3.4 M (B2, B3), 6 M (B1, Ground, Podium), 3.75 M (21 upper floors)
Occupancy	8,000 day time, 4,000 night time
No. of car parks	2,087 cars
Floor plate	4 plates per floor @ 8000 sft each



PROJECT LOCATION

- § It is located on main Mathura Road, Faridabad
- § 6 Km from Delhi on National Highway (NH) 2, six lane road access.
- § Fastest emerging growth corridor south of Delhi. Part of the National Capital Region (NCR)
- § Only Tax free Special Economic Zone located close to South of Delhi.
- § Extension of Jasola, South of Delhi business district.
- § Planned 2012 Delhi Metro Rail Link.
- § Flyover under construction at Badarpur, on NH2 for faster access from Delhi to Faridabad. It will be ready by 2010.
- § Premier local educational institutes producing more than 4000 graduates.
- § Major Residential catchments area, exceeding 2.5 million.
- § Proximity to hospitals, shopping malls, entertainment zones, golf course etc.
- § CBD & Delhi Railway Station within 25 kms.
- § International Airport within 35 kms.



PROJECT VISION

- Buildings account for 40% of all the energy used by humans on the planet.
- Energy demand is set to increase by 30% in the next 10 years
- 60% of human population will be living in cities in the next 15 years
- There is a growing preference for working and living in air-conditioned spaces
- By reducing the amount of energy used in buildings global environmental destruction is reduced.
- Greenspaces will be more meaningful for society as it will help demonstrate, and walk the talk, that it is possible to reduce the energy used by buildings from 40% to 10% in the world.
- If it can be done in India, then why not elsewhere?



PROJECT OVERVIEW

- Greenspaces at Faridabad is a notified Special Economic Zone (SEZ), situated on an 8.25 acre site, a duty and tax free zone for 5-15 year periods.
- The Promoter Mr. Kamal Meattle is the CEO of Paharpur Business Centre (PBC™-STIP), a successful business service provider, and heads Ecotrust Capital Advisors who are developing the project.
- The development is a campus style Technology / Innovation Park providing fully furnished & serviced offices, and all supporting amenities.
- Catering to software and other knowledge processing companies with mainly young occupants, 20-35 years of age.
- In June 2008 Bureau of Energy Efficiency (BEE) Govt. of India (GOI), Ministry of Power, after consultation with TERI had recommended the Project to the Ministry of Environment and Forests, New Delhi.
- The Ministry of Environment and Forests proposed our Project as a Flagship Project on 27 June 2008.
- Approved on 30th October 2008 as FLAGSHIP project under Asia Pacific Partnership (APP) and falls under Building and Appliances Task Force (BATF).



PROJECT GOALS

- Min. energy consumption A 75% reduction over a conventional A grade commercial building
- 24hr business location IT during the day ITeS at night, BPO (voice & data), recycling all waste, opportunities for carbon credits
- Healthiest work place Aimed at reducing attrition in the workplace and creating social sustainability. Maximum use of daylight, high air quality, external views, secure environments & amenities for recreation, well being, learning
- International Certification LEED 3.0 Platinum 103/110 points
TERI GRIHA 98/100 points. 5 star rating.
CDM project
BEE Star rated building
- Economically sustainable To show that 'Green is Green'. Sustainable designed commercial developments are economically viable & profitable.
- Reference project Approved Flagship Project with APP.
- Operational Standards ISO 14001:2004 for *Environment Management System*
ISO 9001:2000 for *Quality Management System*
SA 8000:2001 for *International Standard for Social Accountability*
OHSAS 18001:1999 for *Occupational Health & Safety - Management System*.
ISO 22000: 2005 for *Food Safety Management System*
Commitment to *UN Global Compact*



GREENSPACES : DESIGN APPROACH

US LEED CERTIFIED PLATINUM RATED (NC 3.0) BUILDING

aiming 103 out of 110 points



TERI GRIHA RATED BUILDING

aiming 98 out of 100 points



The Energy and Resources Institute

25 years of Excellence in Research and Innovation

BEING CONSTRUCTED AS THE WORLD'S MOST ENERGY EFFICIENT COMMERCIAL BUILDING

A CDM PROJECT



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DESIGN APPROACH



GREENSPACES - DESIGN APPROACH

Design Features

- q IT/ITES office spaces with facilities including Retail, Hotel, Medical, Recreation
- q 1.75 million sft Built Up Area
- q 8,000 (daytime) to 4,000 (nighttime) users
- q 4 interlinking towers - 3 basements, ground, podium level and 21 office floors and a greenhouse on the roof covered by PV panels
- q Independent parking block with helipad and PV panels on top
- q Floor heights: 3.4 M (B2, B3), 6 M (B1, G, Podium), 3.75 M (all upper floors)
- q 8.4 M column to column grid for efficient space utilization
- q The office floor plates are column free
- q Structural design for Seismic zone IV
- q Fully serviced office spaces
- q Optional hot desk facility



GREENSPACES - DESIGN APPROACH

Passive energy saving features

- q Orientation of building massing – minimize solar gain and maximize use of daylight
- q 16 M floor depth to maximize daylight
- q Glass technologies for greater thermal insulation with maximum permissible daylight
- q Window design to allow optimum daylight and view
- q Increased insulation to walls and roof
- q Façade wall with 25% glazed area
- q Shading of façade to reduce solar heat gain

Specifications

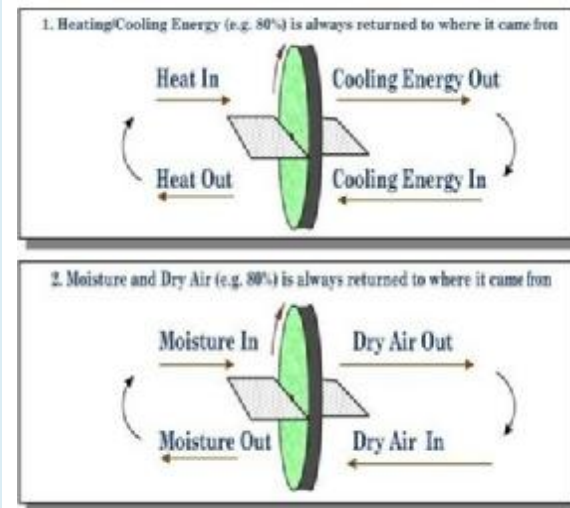
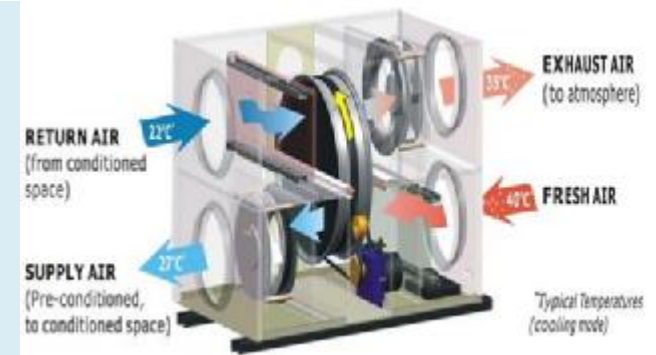
- q Extensive use of local building material - reduced carbon footprint
- q Extensive use of recycled and rapidly renewable content in building and interior finishing material - reduced carbon footprint
- q Materials with low VOC



GREENSPACES - DESIGN APPROACH

Services – HVAC

- q Heat recovery with dual wheel
- q Under floor air displacement system
- q Airflow variation linked to occupancy & temperature
- q Roof top clean outdoor air supply for free cooling during fair weather
- q Thermal Storage to shave off peak demand.
- q Ultra high efficiency Chiller with KW/TR less than 0.6.
- q Use of VFD with Screw Chilling Machine to achieve extremely low part load energy consumption.
- q Condenser water cooling through Geo thermal system.



GREENSPACES - DESIGN APPROACH

Services – ELECTRICAL

- q Onsite 66/11 kV outdoor Gas Insulated Switchgear (GIS) EHT Substation
- q Dual redundant 66 kV incoming power supply from State Electricity Board.
- q Better Stabilization of incoming Voltage through On Load tap Change on each transformer.
- q 11/0.415 kV Transformer in N+1 configuration
- q 100% emergency power generation through DG sets in N+1 configuration.
- q Very low lighting power density compared to conventional buildings
- q Energy metering for majority of services
- q 1 MW of solar power generation from roof mounted PV modules
- q Power generated shall be supplied to state grid at preferential tariff
- q Energy efficient Super T8 lamps for space lighting with digital dimmable ballasts
- q Task Lighting in Office workstations with LED lamps, linked to proximity sensors
- q Centralized green data centre
- q In-built redundancy for all services infrastructure.



GREENSPACES - DESIGN APPROACH

Electrical Distribution System

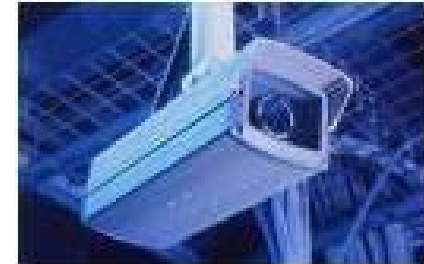
- ❑ Separate & dedicated distribution system for Lighting, UPS power & Raw power.
- ❑ Use of Copper vertical bus bars for power distribution to Offices to minimize losses and fire hazards due to cables.
- ❑ Separate distribution for inductive loads like Chillers, motors, pumps etc.
- ❑ Redundant power supply to offices.
- ❑ Centralized UPS for laptop power to offices.
- ❑ Efficiently selection of Cables/Switchgear to reduce losses.
- ❑ Dual redundant distribution for Data Centre equipments.
- ❑ Power factor correction close to unity by utilizing advanced filters.
- ❑ All transformers shall have minimum no load losses as compared to conventional transformers



GREENSPACES - DESIGN APPROACH

Services – FIRE DETECTION & ALARM, SECURITY, BMS

- q Latest generation intelligent addressable smoke detection system
- q Inergen/Nitrogen based Gas Suppression system for Data Centre
- q Water leak detection System for Data Centre
- q Oil leak detection System for HSD bulk oil storage tanks
- q Latest generation of perimeter and indoor security system with CCTV, access control, biometrics, boom barriers, etc
- q Open protocol IP based integrated building automation system



GREENSPACES - DESIGN APPROACH

Services – PUBLIC HEALTH & FIRE FIGHTING

- q Water efficiency – to make every drop count
- q Treated Waste Water for Flushing, Cooling Tower make-up and landscape
- q Drinking water will be UV treated RO water
- q low flow fixtures and waterless urinals
- q Dual flush water closets with 2/4 L for flush
- q Solar hot water system for hot water requirement
- q Rain water harvesting system
- q native/adapted landscaping thus reducing the irrigation water requirement
- q zero discharge of waste water
- q Terrace rain water is captured, stored and used for cleaning of basements, for car washing, site landscape irrigation etc
- q STP - high efficiency Membrane Bio Reactor (MBR) treatment scheme based on high efficiency ultra filtration hollow fibre membranes
- q Automatic sprinkler system on all floors
- q Recycling or sale of all generated wastes



GREENSPACES - DESIGN APPROACH

Indoor air quality

- q Use of green planting to improve IAQ by cleaning & oxygenating the Air and removal of VOC, SOX, NOX, SPM, RSP, Bacteria and Fungus

Landscape

- q Open space for landscaping with native/adaptive vegetation for reduced water needs
- q Green roofs and vertical gardens

Transportation

- q Independent parking block with helipad and PV panels on top
- q Green parking - Charging points for hybrid/ electric cars at car-park
- q Space for Bicycle parking, with showers and lockers
- q Direct access to NH2 (national highway), connecting Delhi and Agra
- q Direct access to proposed Delhi Metro stop – proposal for green certified metro station named GreenSpaces
- q Re-generative elevators for vertical transportation



GREENSPACES - DESIGN APPROACH

Green power

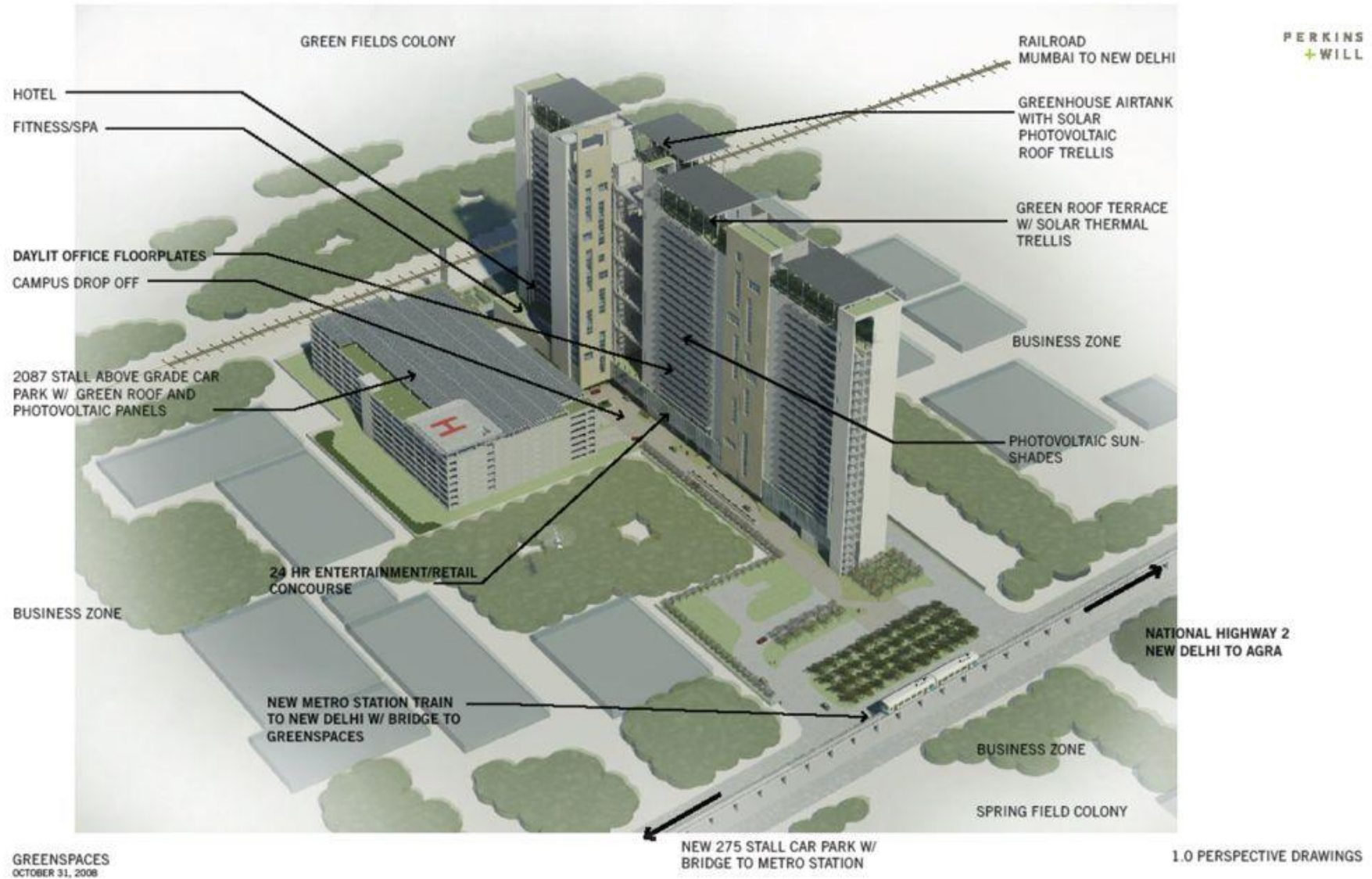
- q 1 MW of solar power generation from roof mounted PV modules
- q Bio-methanation process for generation of methane from on-site waste to power fuel-cells/ cooking gas for kitchen
- q Hydro-power to be wheeled in from available sources.

Lifestyle Changes and House Rules

- q Occupants will use energy efficient laptops.
- q Servers will be located in the green data center
- q No jackets or ties allowed during summer
- q Ventilated (bottom and back) chairs for thermal comfort
- q Food and snacks only allowed in dedicated eating area for better IAQ and hygiene



GREENSPACES - COMPONENTS



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IT/ITeS Special Economic Zone, Delhi NCR, India

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VIEWS



Flagship Project
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GREENSPACES - VIEWS



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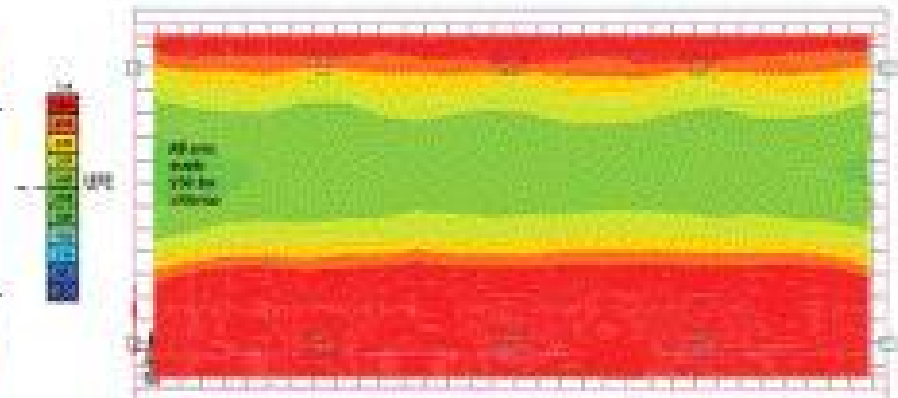
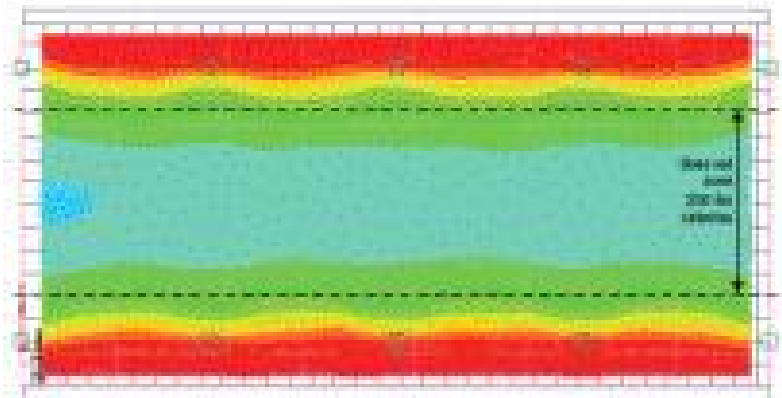
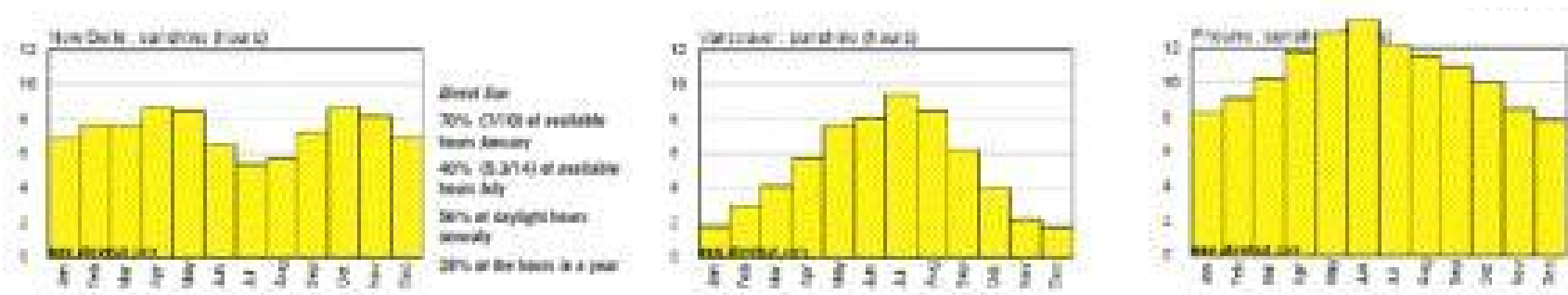
STEPS TOWARDS SUSTAINABILITY



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DAYLIGHT ANALYSIS

Design for Overcast Skies vs Direct sun

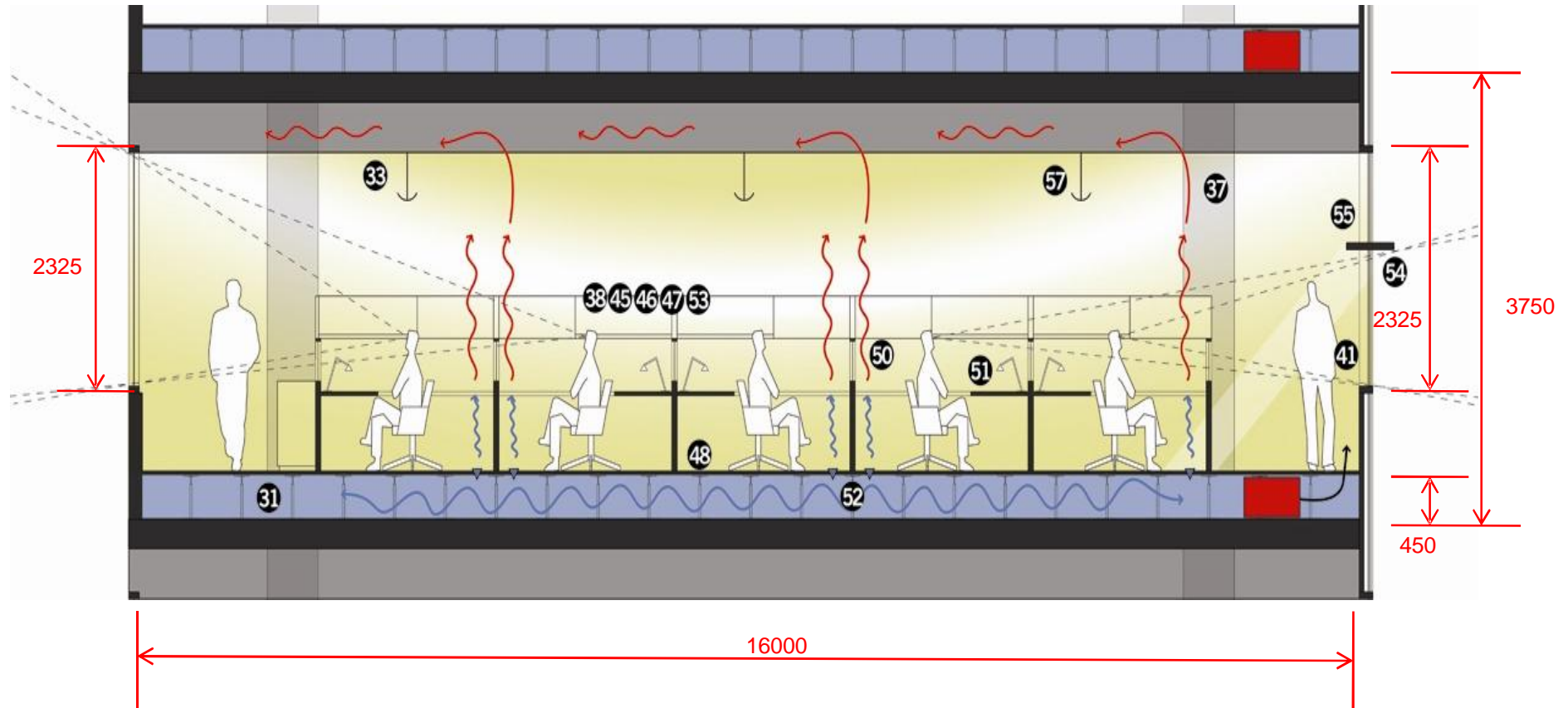


Daylighting Greenspaces
 11 June 2008



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FLOOR SECTION FOR DAYLIGHT



North and south openings

Light shelves

Shallow floor plate width

Proportionate floor height

Under floor ventilation

Task lighting



DEMAND COMPARISON

	Conventional Building	GreenSpaces
Air-conditioning Cooling Load	150 SFT/TR	600 SFT/TR
Electrical Demand Load	10 WATT/SFT	4 WATT/SFT
Lighting Power Density - office area	2 WATT/SFT	< 0.6 WATT/SFT
Lighting Power Density – retail area	4 WATT/SFT	< 1 WATT/SFT
Lighting Power Density – parking area	1 WATT/SFT	< 0.15 WATT/SFT
Potable Water Demand	45 Liters per day per person	20 Liters per day per person

Note:

§ As per Haryana Government guidelines for providing electrical connection, the demand load should be taken as **25 Watt/sft** of covered area for commercial buildings.

§ Whereas, the demand load for **GreenSpaces** is at **4 Watt/sft** – a reduction of **84%**.

§ The green data center being set up in association with IBM, with an area of 15,000 sft, is expected to have a Electrical Load Demand of an additional 2 MW. This is under review for finding ways and means to reduce it with the help of LBNL, USA.



GREENSPACES - ENERGY CONSERVATION MEASURES (ECM)

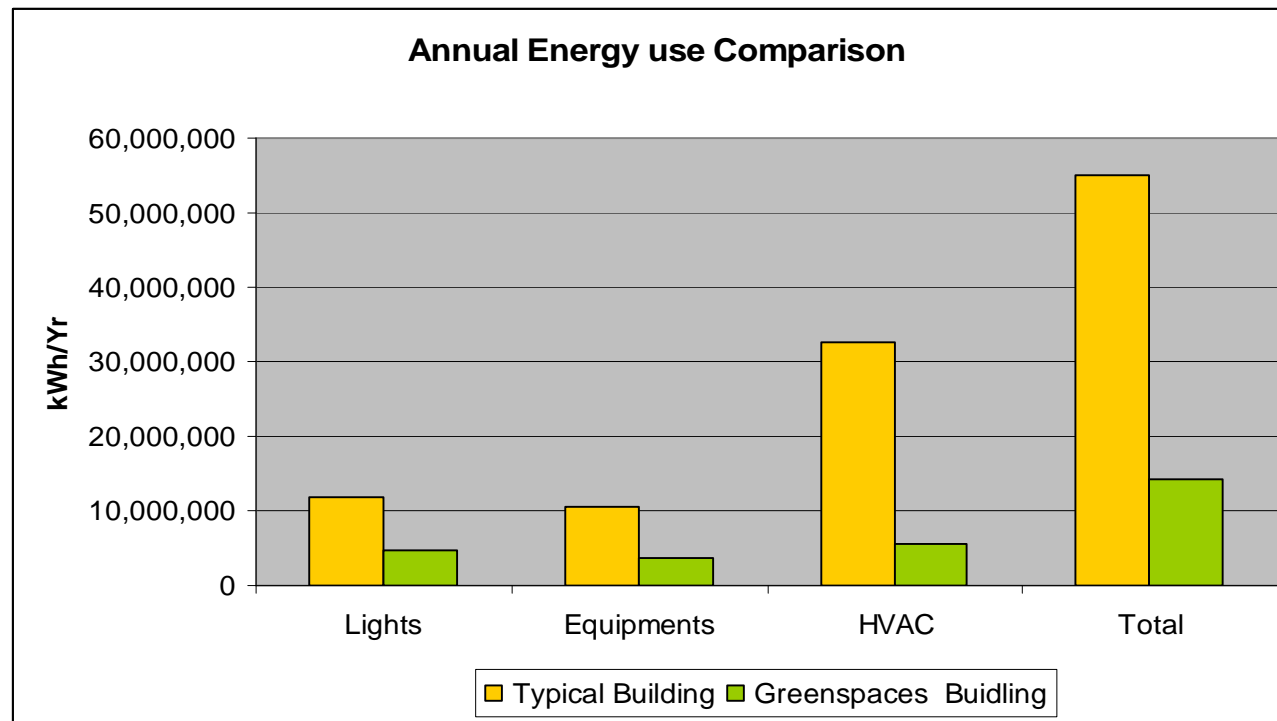
- § Insulated Wall
- § Insulated Roof
- § Fins & Overhangs
- § Lower lighting power
- § Occupancy Sensors
- § Daylight Sensors
- § Variable frequency drives on Air handling units, Secondary Pumps, Cooling towers
- § Chilling machines with high coefficient of performance (COP)
- § Thermal Energy Storage system
- § Under Floor Air Displacement System
- § Free cooling during favorable outside conditions
- § Pre cooling of fresh air by using dual wheel
- § Change in operating set point at 25°C
- § Cooling towers with approach of 1°C
- § Solar hot water



GREENSPACES – ANNUAL ENERGY USAGE COMPARISON

Electrical End-use Totals (kWh/Yr)

Alternative	Lights	Equipments	HVAC	Total	% savings
Typical Building	11,955,350	10,448,170	32,585,113	54,988,620	
GreenSpaces	4,845,896	3,743,084	5,507,870	14,096,850	74.4



LIFE CYCLE COST ANALYSIS

In June 2009. The Energy & Research Institute (TERI), New Delhi has conducted a Life Cycle Cost (LCC) Analysis on our building titled “Green building economics and impact on CO₂ emissions”

Objective

To compare the life cycle cost of a green building, versus the life cycle cost (LCC) of a conventional building, in order to establish the net savings and payback period.

Conclusion

TERI estimates that the initial incremental projected cost is approximately 58% with a payback period of 6 years.

There is a 74% reduction in the EPI of the green building as compared to the conventional building. i.e. energy use per unit area for a green building. 41 million kWh of energy will be saved per year.

Approximately 36,000 tonnes of CO₂ emissions shall be avoided on the demand side, and even more from generation of 1 MW from Photo Voltaic (PV) and electricity produced from waste.



ICE STORAGE

Status till date

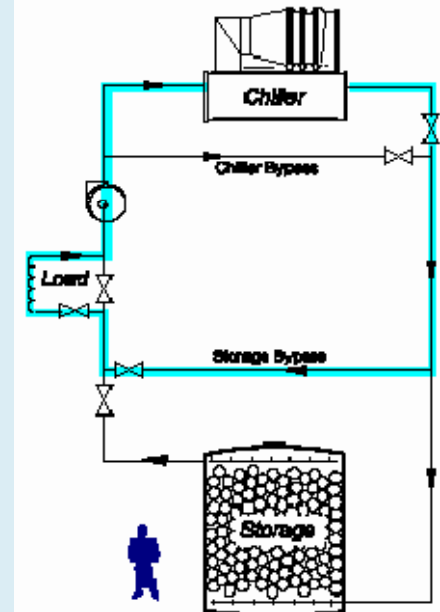
- § This technology already used in India.
- § Several thousand systems installed over the worldwide.
- § Providing 2,000 TRH Ice Storage to shave off peak demand on air-conditioning.
- § Cooling shall be drawn from the ice storage during the peak hours, and Ice Storage will be charged during the peak off period.
- § Estimated demand load variation, with fixed load 750TR for Data Centre, ranges from 1,500 TR to 2,144TR.

Path ahead

- § Use of Ice inventory Management system which will assess the facility manager to measure the energy stored during & post charging process.
- § To decide on strategy to make use of stored energy during high electricity tariff rate or during mild load period.

Challenge

- § High cost of meters & storage tanks.



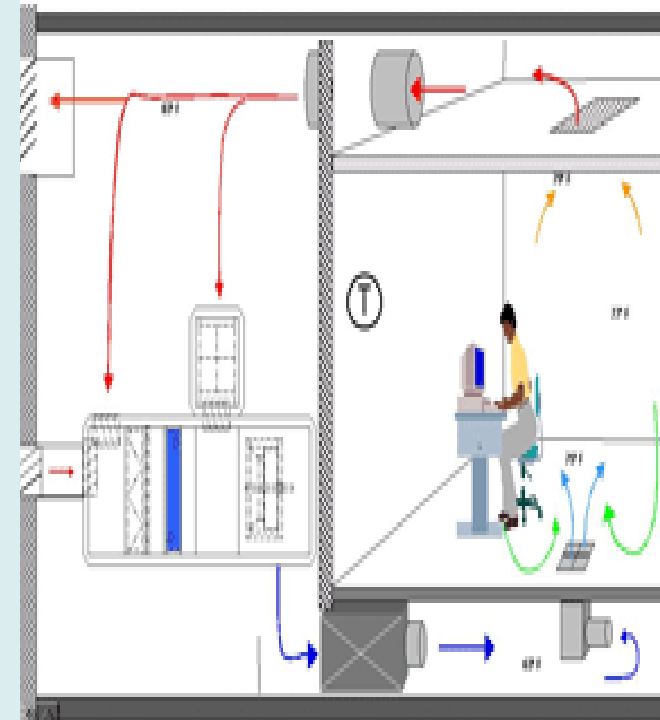
UNDERFLOOR AIR DISPLACEMENT SYSTEM

Status till date

- § Importance for achieving minimum air-conditioning load.
- § Total flexibility in use of space & lowest energy consumption for air conditioning system.
- § Designed all offices with under floor air displacement system.
- § Permitting individual temperature control for all the 8,000 users

Challenge

- High cost
- Success of the system in Delhi weather conditions



GEO THERMAL COOLING

Status till date

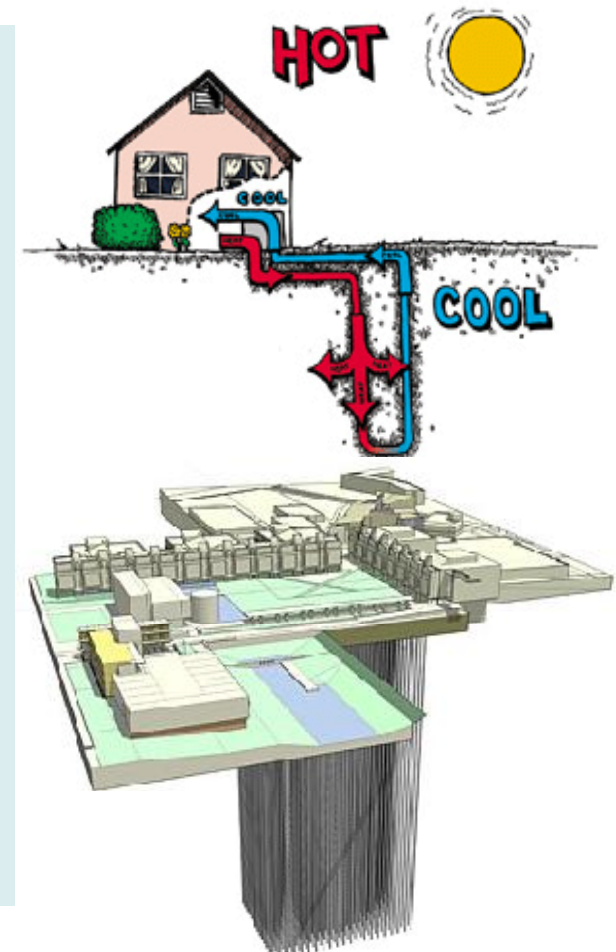
- § Geo thermal and water survey reports conducted.
- § Support from India Government for new technology use.
- § Approx. 900 TR condenser water cooling designed with Geothermal System

Path ahead

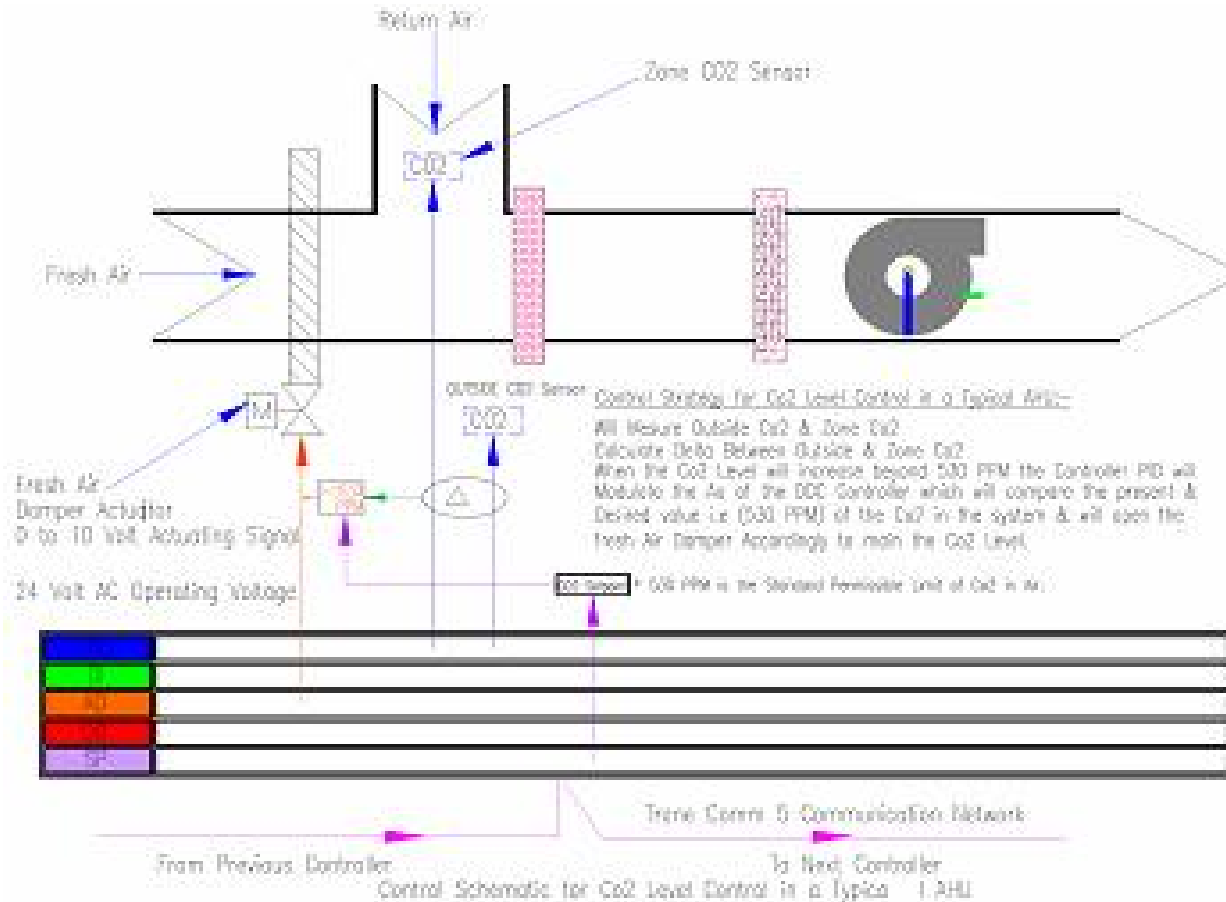
- § Use of Geothermal cooling for balance areas fed with conventional cooling tower.

Challenge

- § High cost of Geothermal cooling compared to conventional cooling towers.
- § Expertise on the designing of system.
- § We can increase the quantity of water use by Geothermal cooling ,if feasible



CO2 MONITORING LINKED TO OCCUPANCY



LED LAMPS & SUPER T-8 LAMPS

Status till date

- § LED lighting fixtures as available till date are not nearly as efficient as Super T8 lamps.
- § No mercury content in LED lamps.
- § Higher lamp life of LEDs

Path ahead

- § Use of LED lights for workstation task lighting for 8,000 desks
- § Use of lux level cum motion based sensors for efficient lighting management and day lighting control.

Challenge

- § To find a supplier providing the technology at an affordable cost.
- § Thermal management of LED source lamps.
- § Efficacy of LED lamps under typical office hour conditions.
- § To find a way to dispose off the heat generated from lighting outside through separate ventilation



REGENERATIVE ELEVATORS

Status till date

- § Elevators with regenerative power will save energy.
- § High cost of Regenerative Elevators with respect to conventional elevators.

Path ahead

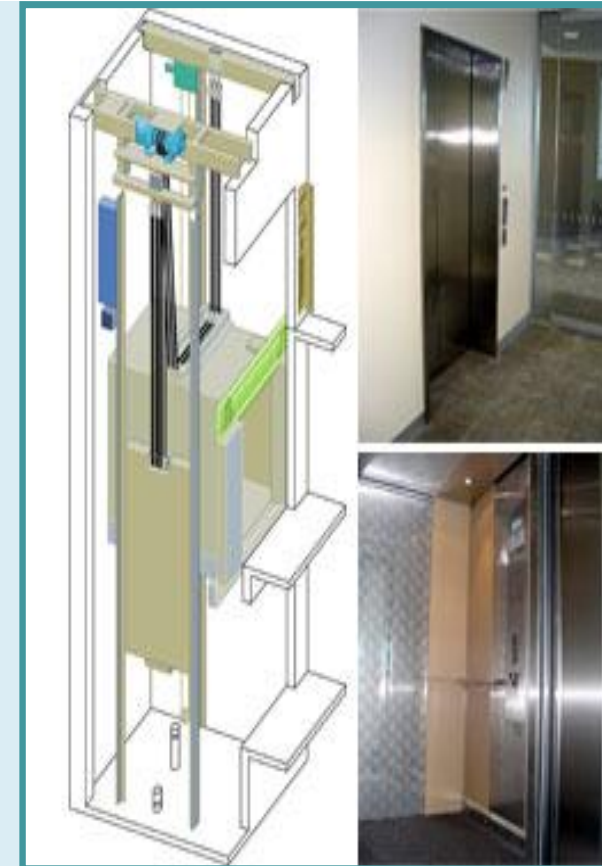
- § Utilization of power generated by elevators.

Challenge

- § Would be First Installation in India.
- § High cost of Regenerative Elevators.

Our Requirement

- 8 No. 1600 kg, 24 Persons (1.75 mps) Gearless Elevators with regenerative VVVF Drive (with machine room)
- 8 No. 1600 kg, 24 Persons (2.5 mps) Gearless Elevators with regenerative VVVF Drive (with machine room)
- 16 No. 1600 kg, 24 Persons (4 mps) Gearless Elevators with VVVF Drive (with machine room)
- 4 No. 20 Persons (2.5 mps) Parking elevators with VVVF Drive (with machine room)
- 4 No. 1000 KG Service Elevators (2.5 mps) Gearless Elevators VVVF Drive (with machine room)
- 4 No. 35 ° inclination 1.0 m wide Escalators with VVVF Drive



PV PANELS & THERMAL SOLAR

Status till date

- § The state government (HAREDA) has passed a law to use Solar Hot Water System to provided Hot Water to the usage points.
- § Huge power loss in the process of heating the water through electric geysers.
- § Solar Hot Water System for 100% hot water demand.
- § To generate 1.1 MW of electricity using PV with no storage

Path ahead

- § Higher efficiency of Solar Panels
- § Generate hot water and use in cafeteria, food courts and Hotel

Challenge

- § Lower water temperature in Winter and Rainy Seasons
- § Lower cost of PV per watt
- § Select the optimum system after comparing PV, Solar concentrators and others

Area available

- 12,000 sqm on roof top
- 2,900 sqm on south side windows



DRINKING WATER RO WATER

Status till date

- § Drinking Water Supply to all office occupants at designated locations on each floor.
- § Separate treatment of un treated water as per IS:10500 drinking water standards.
- § Separate distribution of drinking water through dedicated network of pipes and pumps.

Path ahead

- § Higher efficiency of RO based water treatment Plant.

Challenge

- § Treatment of reject from RO plant with high TDS levels.
- § High Cost of Stainless Steel tanks and RO plant
- § Find an alternative to the RO system to reduce cost



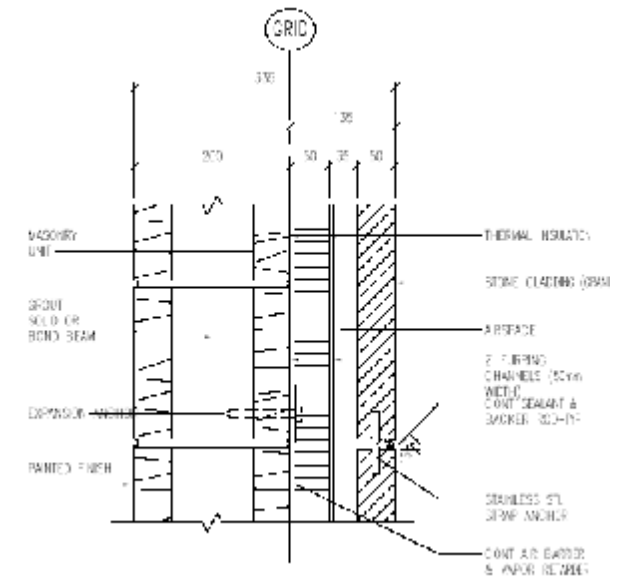
FAÇADE WORKS

Status till date

- § integrated insulated façade technology
- § currently the average façade cost is estimated at 12 US \$/ sft.

§ Path ahead

- § Assistance in finding alternative cost effective technology/ suppliers



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ONSITE BIO METHANATION

Status till date

- § Bio-methanation to produce methane from on-site waste to power fuel-cells.

Path ahead

- § To improve upon the Bio reactor technology available from TERI (TEAM – TERI's Enhanced Acidification and Methanation process)

Challenge

- § Request support for integrating fuel cell technologies
- § Find a cost effective solution to use the gas for cooking or generate electricity using Fuel cells.



WASTE WATER TREATMENT

Status till date

§ Current proposed technology is Membrane Bio Reactor

Path ahead

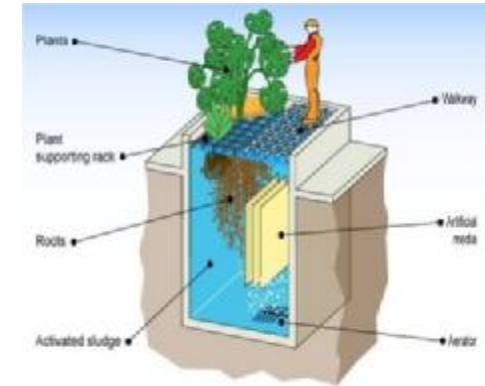
§ Exploring Sustainable waste water management technology using green plants

§ www.organica.hu

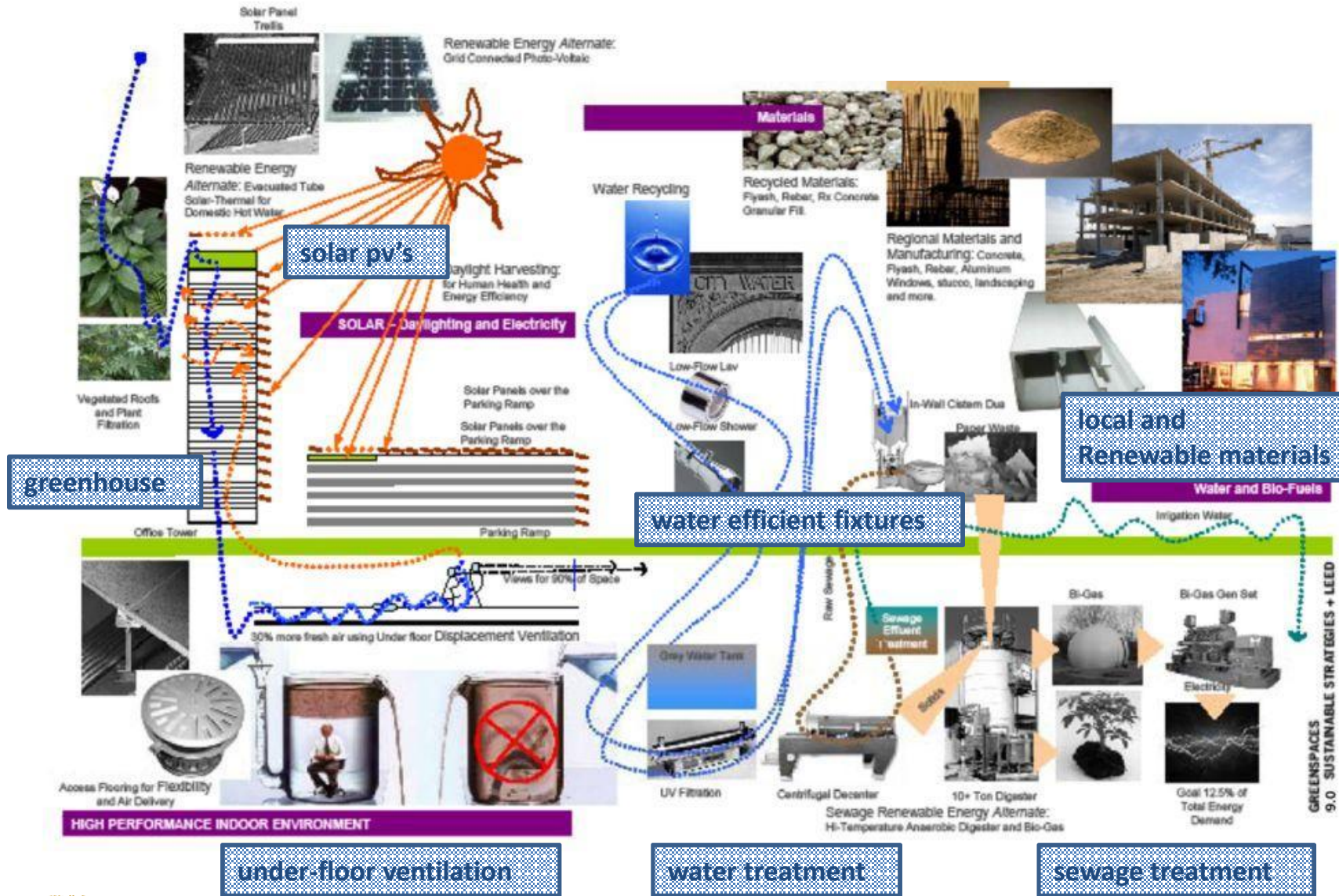
§ use of green plants for creating a sustainable ecosystem of micro-organisms for treating waste water or from another source

Challenge

§ Evaluating other similar technologies



SUSTAINABILITY STRATEGY



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IT/ITeS Special Economic Zone, Delhi NCR, India

greenspaces

TEAM



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PROJECT HON. ADVISORS

Prof. Charles L. Cooney	Professor of Chemical & Biochemical Engineering at MIT
Mahendra K. Daga	Chairman & Managing Director of Orient Ceramics and Industries Ltd.
Prof. Leon R. Glicksman	Professor of Building Technology & Mechanical Engineering at MIT
Prof. Vishal Garg	Assistant Professor & Head, Centre for IT in Building Sciences, International Institute of Information Technology, Hyderabad
David Gottfried	President, WorldBuild Technologies, Inc. and Founder of the U.S. Green Building Council
James Hartzfeld	Director, InterfaceFLOR, Co-Founder of the U.S. Green Building Council
Prof. Gilbert M. Masters	Professor of Civil and Environmental Engineering (Emeritus) Renewable and Efficient Energy Systems at Stanford University
Prof. Ernest J. Moniz	Co-Director of the Laboratory for Energy and the Environment at MIT and Director of the MIT Energy Initiative
Prof. William Moomaw	Director of the Center for International Environment and Resource Policy at The Fletcher School of Law and Diplomacy and Professor of International Environmental Policy at Tufts University
Mark Runacres	Senior Visiting Fellow at The Energy and Resources Institute (TERI), New Delhi and Former Minister and Deputy High Commissioner, British High Commission, India
Dr. Peter M. Senge	Senior lecturer at MIT and founding chair of the SoL (Society for Organizational Learning) Council
Sandy Wiggins	Chairman e3bank, Past Chair U.S. Green Building Council, Principal Consilience LLC
Dr. B. C. "Bill" Wolverton	President, Wolverton Environmental Services, Inc., author of How To Grow Fresh Air, and retired NASA scientist
Dr. Jianshun "Jensen" Zhang	Professor and Director, Building Energy and Environmental Systems Laboratory, Syracuse University



PROJECT DESIGN & CONSTRUCTION TEAM

- Selecto Systems Pvt. Ltd.
- Ecotrust Capital Advisors
- Spectral Services Consultants
- Leighton Contractors Pvt. Ltd., Australia
- Edifice Consultants Pvt. Ltd.
- Perkins+Will, USA
- Lam Partners, USA
- WSP Cantor Seinuk, USA
- Battle McCarthy, UK
- Environmental Design Solutions
- TPS Consult, UK
- Billings Design Associates, USA
- TERI
- CII/GBC
- Evans and Peck, Australia
- Godrej



TECHNOLOGY PARTNERS

- ❑ There is a consortium of Technology partners helping to achieve greenspaces.
- ❑ Current Technology/ project implementation partners include firms from Australia, Denmark, France, Germany, India, Japan, Sweden, Switzerland, UK and USA
- ❑ Technologies are being considered from a number of other countries.
- ❑ Partnerships are being sought with other technology providers specially amongst the APP member countries.
- ❑ The technology partners are assisting in ongoing design development and have offered their research & development capabilities to the project.
- ❑ MFN rates have been offered to the Project for the most advanced technology available for reducing energy consumption in buildings.



TECHNOLOGY PARTNERS



MARKET RESEARCH

Market study by CBRE Consulting

- q Investment Opportunity - Emerging areas of National Capital Region (NCR)
- q Preliminary Marketing Strategy
- q Formulation of Marketing Plan & Implementation

Retail Component study by Technopak

- q Retail Planning & Tenant Mix
- q Leasing Assistance



IT/ITeS Special Economic Zone, Delhi NCR, India

greenspaces

RESEARCH AT PBC – STIP™



**Flagship Project
Number: BATF-08-49**

www.greenspaces.in

INDOOR AIR QUALITY : RESEARCH AT PBC™-STIP

§ Mr. Kamal Meattle, CEO of Paharpur Business Centre & Software Technology Incubator Park (PBC™-STIP), New Delhi, India, heads EcoTrust Capital Advisors, developing the GreenSpaces project.

§ PBC™-STIP is a Government of India recognized private infrastructure service provider (ISP) for software exporters.

§ With only three varieties of plants, PBC™-STIP has shown how to “grow our own fresh air” indoors, to keep them healthy. It publishes its IAQ readings daily on www.pbcnet.com

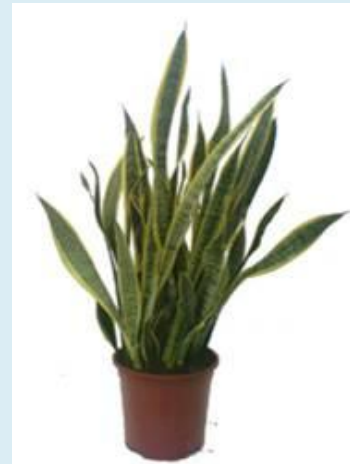
§ This also allows to have reduced fresh air supplied to buildings and yet meet Industry standards for healthy indoor air.

“The Living Room Plant”



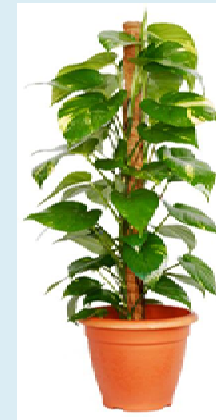
(*Chrysalidocarpus lutescens*)
Areca Palm

“The Bedroom Plant”



(*Sansevieria trifasciata*)
Mother-in-law's Tongue

“The Specialist Plant”



(*Epipremnum aureum*)
Money Plant

For more information on these plants, visit:

http://www.ted.com/index.php/talks/kamal_meattle_on_how_to_grow_your_own_fresh_air.html



STUDY ON PBC™-STIP : HEALTH & PRODUCTIVITY






Tried and tested these plants for 15 years at PBC

**It is a 20 year old, 50,000 ft² building
Over 1,200 plants for 300 building occupants**

Study found that there is a 42% probability of increasing blood oxygen by 1% if one is inside the building for 10 hours

Rated healthiest building in Delhi by the Government of India*

Compared to other buildings in Delhi, the incidence of:

Eye irritation		52%
Respiratory symptoms		34%
Headaches		24%
Lung impairment		12%
Asthma		9%

*Study published on September 8, 2008 by The Govt. of India, Central Pollution Control Board and Chittaranjan National Cancer Institute, Kolkata, India

A large number of visitors visit the facility and data is also published in its Sustainability reports.



BEST PRACTICE DISSEMINATION

Paharpur Business Centre & Software Technology Incubator Park (PBC™ – STIP)

- q PBC™ – STIP will walk the talk through USGBC Existing Building (EB) Platinum Certification, and show that a 20 year old existing building in Delhi can achieve such a certification. This will be the first in the country.
- q It has also applied for BEE Star rating for Office Buildings.
- q IAQ research data of PBC™ – STIP is posted daily at the website, www.pbcnet.com

GREENSPACES

- q Learning from the PBC™ – STIP experience and improving on it.
- q Systematic documentation of the design and construction process.
- q Live monitoring and updates of data on a dashboard on the project website
- q Regular energy consumption reviews & audits
- q Customer satisfaction feedback & monitoring



FINANCIAL STATUS



Flagship Project
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- q As per Information Memorandum (IM) provided by Deloitte, the estimated project cost is USD 263 Million
- q We are ready for financial closure and have lined up potential funding of approximately USD 223 Million, which is 85% of the project cost. This includes Debt.
- q Debt will be available from OPIC, for which, the preliminary due diligence has been completed.
- q \$40 million is currently available to additional equity investors, of which \$20 million is reserved for U.S. owned entities and citizens in multiples of US \$ 1 million or more.
- q The project cost is expected to come down due to the present day market trends.
- q As per the IM, the IRR's are + 29%.
- q In addition, we are looking at the following options for further reduction of project cost:
 - q Scope of reduction in material cost
 - q Search for efficient and more cost effective alternative technologies
 - q Active technology/ sourcing support from APP member countries



Thank you



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